



Role of NGOs on livelihood improvement and forest resource conservation: Experiences from Bangladesh

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Abstract: In Bangladesh many non-government organizations (NGOs) have been launched with involving local people in managing livelihood enhancement with forest resource conservation for sustainable development. The study analyzed the nature of supports provided by the different NGOs in order to assess the impact of their projects on the livelihoods capitals (Social, human, economical, physical and natural) enhancement of the rural poor. The study used both qualitative and quantitative data collection tools in all over the Bangladesh during 2014 to 2019. Most of the forest dependent farmer groups showed moderate level of livelihood capitals improvement. The results revealed that the capacity building towards the human capital improvement of the forest dependent people were the main achievement of the NGOs activities in Bangladesh. However, natural, social, physical and utilization of human capital through livelihood strategies have been provided the security and also improved the livelihood capitals of the forest dependent people. Therefore, the study concluded that the NGOs activities towards livelihood improvement of the forest dependent people have been noticeable and would need further improvement for sustainable resources conservation in Bangladesh.

Key words: Role of NGOs, livelihood, forest resource, conservation, Bangladesh

Introduction

The Government of Bangladesh has been implementing wider programmes to promote a much larger diversification of the economy for poverty reduction of the rural masses. The major programmes include afforestation (community forestry/social forestry), cattle, goat and poultry rearing, handicrafts, small and cottage industries, etc. so that poor people can generate employment and income to come out from the vicious circle of poverty. With this in view, the Government of Bangladesh has been paying much attention and channeling more money towards the community forestry programmes since the early 1980s, taken as an approach to poverty reduction and environmental amelioration. Along with the government programme more than 100 national and international NGOs are also engaged in community forestry programmes as part of their strategy for environmental development and poverty alleviation. Some integrated production systems such as agrisilvicultural system, agrisilvipastoral system, aquasilvicultural system, etc. have been applied in this regard. In addition, other production systems such as apiculture, sericulture, mushroom culture, lac culture, etc. are also being practiced in the community forestry programmes.

Several forest management programs have been launched by the Forest Department of Bangladesh since 1980s. The 1st attempt at community forestry in Bangladesh can be traced back to the Betagi and Pomra community forestry projects in 1979 and 1980, respectively, in the Rangunia subdistrict of Chittagong (Zashimuddin 2004; Islam 1998). Some 160 ha of government denuded khas hilly land was selected for this pioneering project. The project was financed by Grameen Bank in the form of credit to individual farmers at the usual interest rates of commercial banks. The Betagi-Pomra community Forestry project has given the landless an identity of their own and sense of direction in life. The community forestry practices have provided the previously landless families with stability and security. Subsistence needs were fulfilled, and income was generated. The returns from community forestry appear to be quite favorable (Bhuiyan 1993). Development of a Forest Extension Service began in 1980 using the community forestry approach. The main

activities of this program were established of nursery, village afforestation and roadside tree planting.

Government also implemented anti-poverty programs include rural infrastructure development, social safety nets, micro-credit for income generation and pilot projects for developing better intervention model for self-reliance building with sustainability orientation. Consumption poverty which is dependent more on the economic growth was found to have increased considerably in the remote rural areas where physical and social infrastructure facilities were least developed. The NGOs sector together with Community Based Organizations has shown a steady growth in members, especially subsequent to the adaptation of the economic adjustment policies by the respective governments. The NGOs sector has grown to severe the rural poor, especially after the respective governments adopted the economic reform policies. Most of the NGOs have proved themselves capable of interacting with the rural poor and this has been well recognized by the government. However, only some of the NGOs adopt a holistic approach to poverty alleviation program for forest dependant people. The BRAC, Caritas Bangladesh, World Vision Bangladesh, Arannak foundation and Palli Daridro Bimochan Foundation and several other NGOs have been working with the government as a development partner in different sector. Livelihood improvement is a complex process, having multiple aspects: improve food security, increase household income, personal well-being and reduced vulnerability. Both GOs and NGOs have been playing a significance role in engaging forest dependent farmers in income generating activities, which were considered to assist them in having a more significant role in the family, especially with regards to improving the livelihood and forest resource conservation.

Materials and Methods

Chittagong and Moulavibazar covered by evergreen and semi evergreen forest area, Tangail and Sherpur covered by Salforest area and Sathkhira covered by Mangrove forest area were the locale of this study. The study was conducted among forest dependent farmers of the study area were considered as population of the study. Multi-stage purposive and random sampling procedures were

followed to obtain the desired sample. Having minimum three years of membership in different NGOs and took facilities to implement IGAs from aforesaid organizations. A sample of 330 forest dependent farmers constituted the actual sample of the study IGAs participation out of 3,330 poor household was selected following random sampling procedure. Data were collected through a pre-tested interview schedule. In addition, focus group discussion (FGD), scored causal diagrams (SCDs), key informant interview (KII), and direct field observation were also employed to obtain necessary information. Interview schedule, FGD, SCD, observations and Key Informant Interview were used for data collection. Data were collected from forest dependent farmers, who were the member of different NGOs (World Vision Bangladesh, Arannyak Foundation, BRAC, Caritas Bangladesh, Bangladesh Daridro Bimochon Foundation) selected by multistage random sampling procedure during May 2015 to July 2017. The livelihood improvement of forest dependent farmer was the focus variable of the study. This variable measured by computing a composite livelihood asset score based on each of five components of livelihood pentagon: human capital building score, natural capital building score, financial capital building score, physical capital building score and social capital building score.

Results and Discussion

Livelihood status of the forest dependant farmers: The primary focus of the study was to determine the livelihood

Table 1. Distribution of forest dependent people according to their livelihood status

Dimensions	Categories				Range	Mean	SD	CV (%)
	Low	Medium	High	Total				
Training experience	18	53	259	330	1-16	11.77	3.086	26.21
	(5.5)	(16.0)	(78.5)	100				
Employment status	9	169	152	330	6-24	18.69	3.909	20.91
	(2.7)	(51.2)	(46.1)	100				
Ability to provide family education	132	152	46	330	0-8	3.23	2.179	67.46
	(40.0)	(46.1)	(13.9)	100				
Health situation	78	156	96	200	4-23	14.13	4.974	35.20
	(23.6)	(47.3)	(29.1)	100				

Employment status: It is measured on the basis of accessibility to work throughout the whole year of his/her family. The employment status is determined by aggregated time spent the whole year in farm activities. However, employment status score among farm household ranged from 6-24 months with a mean of 18.69, standard deviation of 3.909 and CV 20.91%. A majority of 51.2 percent of forest dependant farmers were found to have medium employment in farming followed by 46.1 percent high and only 2.7 percent low as shown in Table 1.

Ability to provide educational opportunity for children: Ability to provide family educational opportunity for children scores of the forest dependant farmer ranged from 0 to 8 with a mean, standard deviation and CV of 3.23, 2.179 and 67.46%, respectively. A majority of 46.1 percent of the farmers were found to have medium ability followed by 40.0 percent low ability and only 13.9 percent high ability as shown in the Table 1.

Health Situation: Based on health situation scores, farmers were grouped into three categories: poor health

enhancement status of the forest dependant farmers through livelihood interventions. This was dependable variable and measured with 25 indicators with five assets of livelihoods namely human, physical, natural, financial and social capital. Firstly, indicator wise improvement status has been presented. Secondly overall livelihood improvement status of the forest dependent farmers have been discussed and interpreted. Distribution of the forest dependent farmers according to different livelihood assets and indicators of livelihood has been shown in Tables 1, 2, 3, 4 and 5.

Human capital building indicators

Human capital denotes the skills, knowledge and ability to work available in the participant population. At household level, human capital is a factor in the amount and quality of labor available, this varies according to household size, skill levels, health status, etc (DFID, 2001).

Training experience: The farmers were grouped into three categories: low, medium and high to specify their different levels of training experience. Farmers training experience ranged from 1-16 days with a mean of 11.77, standard deviation of 3.086 and CV 26.21% respectively. Majority (78.5 percent) of the sampled farmers were found to have high training experience followed by 16.0 percent high and only 5.5 percent low training experience shown in Table 1.

status (up to 10), medium health situation (11 to 16) and excellent health situation (>16). Farmers' health situation scores ranged from 4-23 with a mean of 14.13, standard deviation of 4.974 and CV 35.20% as shown in the Table 1. A majority of 47.3 percent of the farmers expressed their medium health situation. Other 29.1 percent and 23.6 percent of the farmers possess excellent and poor health situation respectively.

Physical Capital building indicators

Physical capital is comprised of basic infrastructure and producer goods needed to support livelihoods. It includes assets as housing, the tools and equipments that people own, rent or use and the public infrastructure that they have access to (DFID, 2001).

Housing condition: Housing is normally one of the most important assets for rural poor households as it is used for shelter and reproductive purposes and for productive or income-generating purposes (Moser 1998). Farmers' housing condition score ranged from 9-21 with a mean, standard deviation and coefficient of variation of 14.66, 2.325 and 15.86%, respectively. Majority (57%) of the forest dependent farmers had medium condition of

housing compared to 30.9 % having low condition of housing and 12.1 percent having high condition of

housing as shown in Table 2.

Table 2. Distribution of forest dependent people according to their livelihood status

Dimensions	Categories				Range	Mean	SD	CV (%)
	Low	Medium	High	Total				
Housing condition	102 (30.9)	188 (57.0)	40 (12.1)	330 100	9-21	14.66	2.325	15.86
Family assets	84 (25.5)	109 (33.0)	137 (41.5)	330 100	19-96	63.38	20.574	32.46
Access to water facilities	77 (23.3)	125 (37.9)	128 (38.8)	330 100	14-44	30.86	9.085	29.43
Electricity availability	139 (42.1)	113 (34.3)	78 (23.6)	330 100	1-3	1.82	0.791	43.46

Family assets: The family assets scores of the forest dependent farmers ranged from 19 to 96 with a mean, standard deviation and coefficient of variation of 63.38, 20.574 and 32.46%, respectively. The distributions of the forest dependent farmers regarding family assets have been presented in Table 2. Most (41.5%) of the forest dependent farmers having high possession of assets compared to 33.0% having medium possession of assets and 25.5% having low possession of assets.

Access to water facilities: Access to water facilities scores of forest dependent farmers ranged from 14 to 44 with a mean, standard deviation and coefficient of variation of 30.86, 9.085 and 29.43%. A majority of the farmers (38.8 percent) had high access water facilities followed by 37.9 medium and 23.3 percent low access water facilities (Table 2).

Electricity accessibility: The electricity accessibility scores of the households ranged from 1 to 3 with a mean of 1.82, standard deviation 0.791 and coefficient of variation of 43.46% respectively. Most of the farmers

(42.1 percent) had low electricity accessibility while 34.3 percent had medium and 23.6 percent had high electricity accessibility as shown in Table 2.

Natural capital building indicators

Natural capital is the term used for the natural stocks from which resources flow and from services, useful for livelihoods, are derived (DFID, 2001). It refers to environmental assets such as land and common property resources or free (open access) natural resources such as forests, water and grazing land.

Area under agroforestry practices: A productive farm land is the core natural capital upon which farmers' livelihoods is built. Area under agroforestry practices of the farmers ranged from 0 hectare to 4 hectare with a mean, standard deviation and co-efficient of variation 1.35, 1.051 and 77.85 percent respectively. The data presented in Table 3 reveal that most (77.3 percent) of the farmers had small area under agroforestry practices. 13.5 percent had medium area and only 10.0 percent had large area under agroforestry practices.

Table 3. Distribution of forest dependent people according to their natural capital development

Dimensions	Categories				Range	Mean	SD	CV (%)
	Low	Medium	High	Total				
Area under Agroforestry practices (ha)	235 (77.3)	42 (12.7)	33 (10.0)	330 100	0-4	1.35	1.051	77.85
Permanent trees in household area	33 (10.0)	146 (44.2)	151 (45.8)	330 100	0-5	3.56	1.320	37.08
Access to natural resource market opportunity	126 (38.2)	150 (45.4)	54 (16.4)	330 100	10-36	21.0	6.288	29.94
Dependency on natural forest	14 (4.2)	65 (19.7)	251 (76.1)	330 100	1-4	3.26	0.776	21.59
Sustainable use of homestead resources	37 (11.2)	11 (3.3)	282 (85.5)	330 100	0-30	23.66	8.908	37.65

Permanent timber trees in household area: Permanent timber trees in household area of the farmers scored ranged 0-5 with a mean of 3.56, standard deviation of 1.320 and co-efficient of variation 37.08%. The distribution of household according to their permanent timber trees in household area score is presented in table 3. A majority of 45.8 percent of the farmers was found to have a good number of trees in household areas, followed by 44.2 percent medium and 10.0 percent low category.

Access to market opportunity: The access to natural resource market opportunity scores of the forest dependent farmers ranged from 10 to 36 with a mean of 21.0, standard deviation of 6.288 and coefficient of variation of 29.94% respectively. Most of the farmers

(45.4 percent) had medium access to market opportunity while 38.2 percent had low access to market opportunity and only 16.4 percent had high access to market opportunity as shown in Table 3.

Dependency on natural forest: The measurement of the support function of forests to rural wellbeing and livelihood resilience is perhaps the biggest contribution this research has made to understanding of forest dependency. Dependency on natural forest score of the farmers ranged from 0 to 3 with a mean of 2.71, standard deviation of 0.585 and coefficient of variation of 21.59% respectively. Most of the farmers (76.1 percent) had highly forest dependency while 17.7 percent had

medium and 4.2 percent had low forest dependency in Table 3.

Sustainable use of farm/homestead resources: Sustainable use of farm resources ranged from 0 to 30 with a mean, standard deviation and coefficient of variation of 23.66, 8.908 and 37.65% respectively. The distribution of the forest dependent farmers in this regard have been presented in Table 3. Most of the farmers (45.4 percent) had high category while 11.2 percent had low and only 3.3 percent had medium categories.

Financial capital building indicators

Financial capital denotes the financial resources that participants use to achieve their livelihood objectives (DFID, 2001). Income from the sale of labor was often one of the most important assets for the rural people. There are two main sources of financial capital: available stock (e.g cash, bank deposit or liquid assets)

and regular flow of money (e.g. remittance, pension, sale labor, etc.).

Per Capita Income: Per capita income of the forest dependant farmers was found to range from Tk. 18.8 thousand to 139.0 thousand with mean, standard deviation and coefficient of variation of 79.97, 16.266 and 20.34% respectively. Most of the farmers (90.3 percent) were found belonging to medium income group followed by 7.6 percent high and 2.1 percent low income group as shown in Table 4.

Annual Household Expenditure: The estimated total annual household expenditure score ranged 46 to 247 with a mean of 121.46, standard deviation of 54.015 and coefficient of variation of 44.47%. More than half of the farmers (52.4 percent) were found belonging to medium expenditure group followed by 29.7 percent low and 17.94 percent high expenditure group as shown in Table 4.

Table 4. Distribution of forest dependent people according to their financial capital development

Dimensions	Categories				Range	Mean	SD	CV (%)
	Low	Medium	High	Total				
Per capita annual income	7 (2.1)	298 (90.3)	25 (7.6)	330 100	18.8-139	79.97	16.266	20.34
Annual expenditure	98 (29.7)	173 (52.4)	59 (17.9)	330 100	46-247	121.46	54.015	44.47
Savings	59 (17.9)	183 (55.4)	88 (26.7)	330 100	6-111	56.09	21.55	38.42

Savings: The savings mechanisms reported by forest dependent people included informal (cash savings at home) and formal savings (cash savings in Samity of NGO and Credit Union). The score of savings the farmers ranged from Taka 6.00 to 1110.00 thousand with a mean of 56.09, standard deviation 21.554 and coefficient of variation of 38.42%. The data presented in table 4 indicate that the highest proportion (55.4 percent) received medium amounts of savings, while 26.7 percent received high amount of savings, and 17.9 percent received less amount of savings.

Social capital building indicators

There is much debate about what is exactly meant by the term ‘social capital’ (DFID 2001). Social capital refers to a network of mutual support that exists within and between households, extended family and communities, which people can utilize to gain, for example: loans, childcare, food, accommodation and information about employment and opportunities (Dersham and Gzirishvili 1998; Moser 1998). In addition, social capital is a valuable and critical resource for poor people, especially during times of crisis and socioeconomic change.

Table 5. Distribution of forest dependent people according to their social capital development

Dimensions	Categories				Range	Mean	SD	CV (%)
	Low	Medium	High	Total				
Organizational participation	64 (19.4)	176 (53.3)	90 (27.3)	330 100	0-9	6.03	2.106	34.93
Food security	15 (4.5)	141 (42.8)	174 (52.7)	330 100	12-36	28.22	3.932	13.93
Participation in social and right based activities	39 (11.8)	197 (59.7)	94 (28.5)	330 100	5-15	11.19	2.201	19.67
Relation with different stakeholders	100 (30.3)	158 (47.9)	72 (21.8)	330 100	7-35	21.02	9.387	44.65

Organizational participation: Access to social capital enables forest dependent people to secure resources and opportunities. To understand the dynamics of social capital in the context of rural Bangladesh, this study inquired about forest dependent people membership with different NGOs working with the communities. The organizational participation scores of the forest dependent people were 0 to 9 with a mean, standard deviation and coefficient of variation of 6.03, 2.106 and 34.93 respectively. The data presented in Table 5 indicate that the highest proportion (53.3 percent)

farmers were found to be medium participation, followed by 27.3 percent farmers were found to be high participation and 19.4 percent farmers were found to be low participation.

Food security: The food security scores of the forest dependent people ranged from 12 to 36 with a mean, standard deviation and coefficient of variation of 28.22, and 3.932 and 13.93% respectively. Quite a majority of 52.7 percent of the farmers could affirm a high of household food security, leaving 42.8 percent medium

and 3.932 percent low food security as shown in the Table 5.

Participation in social and right based activities: The participation in social and right based initiatives scores of the forest dependent people ranged from 5 to 15, with a mean of 11.19, standard deviation of 2.201 and coefficient of variation of 19.67% as shown in table 5. Among the respondents, 59.7 percent medium high social and right based activities participation while 28.5 percent had high social and right based activities participation and only 11.8 percent of them low high social and right based activities participation.

Relationship with different stakeholder: Stakeholder management is a critical component to the successful delivery of any project, program or activity. A stakeholder is any individual, group or organization that can affect, be affected by, or perceive it to be affected by a program. Stakeholder management creates positive

relationships with stakeholders through the appropriate management of their expectations and agreed objectives. The relationship with different stakeholder scores of the farmers ranged from 7 to 35 with a mean of 21.02, standard deviation 9.387 and coefficient of variation of 44.65%. Most of the farmers (47.9 percent) had medium relationship with stakeholders while 30.3 percent had low relationship and only 21.8 percent had high relationship with different stakeholders as shown in Table 5.

Asset-wise livelihood enhancement status of forest dependent farmers

Five assets of livelihood in the present study: these were human, natural, financial, physical and social capital. Distribution of the farmers according to different assets of livelihood has been shown in Table 6 and describe below.

Table 6. Asset-wise livelihood improvement status of the participants

Livelihood assets (measuring unit)	Range		Category	Participants		Mean	SD
	Possible	Observed		Freq.	Percent		
Human capital index (%)	0-100	35-84	Low (0-49)	13	3.6	66.58	8.955
			Medium (50-75)	260	79.1		
			High (>75)	57	17.3		
Physical capital index (%)	0-100	40-92	Low (0-49)	11	3.3	66.47	10.329
			Medium (50-75)	241	73.1		
			High (>75)	78	23.6		
Natural capital index (%)	0-100	20-93	Low (0-49)	28	8.5	66.52	10.970
			Medium (50-75)	241	73.0		
			High (>75)	61	18.5		
Financial capital index (%)	0-100	35-86	Low (0-49)	76	23.0	57.61	9.784
			Medium (50-75)	236	71.5		
			High (>75)	18	5.5		
Social capital index (%)	0-100	43-92	Low (0-49)	9	2.7	68.85	9.307
			Medium (50-75)	234	70.9		
			High (>75)	87	26.4		

Livelihood improvement status regarding human capital index

The possible range of livelihood status of the farmers regarding human capital could vary from 0 to 100 percent while the observed range 35 to 84 percent with an average and standard deviation, 66.54 percent, 8.955 respectively as shown in the table6. The highest proportion (79.1 percent) of the participants had medium status of livelihood improvement regarding human capital followed by 17.3 and only 3.6 percent of them having high and low livelihood status, respectively.

The impact of the NGOs projects activities on the livelihoods of the forests dependent participants was measured in terms of the SL framework by the changes of five resource capitals. In regards to human capital, this study considers training (acquired skills and capacity) as well as workshops for the participating poor as a key factors affecting human capital. Training on tree plantation, agroforestry and farm management techniques have had a sizable effect on the income level of participants (Islam *et al.* 2010). The employment status is measured on the basis of accessibility to work throughout the whole year of his/her family. The employment status is determined by aggregated time spent the whole year in farm activities. NGOs interventions create job opportunity to the farmers. The

scope of better paid off-farm employment opportunities are increasingly widened today. The surplus labor force of farm households is now increasingly utilized in off-farm activities. If the household labor force is to remain intact for utilization in farm activities, the farm enterprises must remain profitable to a considerable extent. Through the forest dependent farmers a number of training sessions, workshops and field visits were conducted by the NGOs. These training sessions and workshops were conducted at local level with the aim of raising the level of awareness and skills for the participants and were an example of the human capital developed by the project. The data from the local participants showed that the three and five day training sessions offered by the NGOs played a valuable role in building the capacity and skill development of the participants. The ethnic participants mentioned that the antagonistic relationship between the FD and themselves was the main reason for this difference. These trainings helped participants enhance their knowledge and skills related to forest management, community development, organizational management and leadership developments, which in turn, affect the social capital of the participants. In reality, it was observed that the participants, who had received or joined full training, managed the activities in more efficient ways than those

with no training (Islam *et al.* 2010). In the case of ability to provide educational opportunity for children, it was found that both the ethnic and non-ethnic participants had a similar percent of literacy; albeit the level of ethnic minority was slightly lower. Often the government health facilities were located far from their homes; in addition, government social service subsidies were not well implemented and consequently these agencies were not capable of redistributing income (Barret and Beardmor 2000). This study observed that due to training, the awareness of the participating people of health care has increased and that it ultimately improves their family health care system.

The observed range of livelihood status of the farmer regarding physical capital varied from 40 to 92 percent while possible ranged was 0 to 100 percent. The average and standard deviation were 66.47 percent and 10.329 respectively as shown in the table 6. The highest proportion (73.1 percent) of the participants had medium status of livelihood improvement regarding physical capital followed by 23.6 and only 3.3 percent of them having high and low livelihood status, respectively.

Physical capital is comprised of the basic infrastructure and producer goods needed to support livelihoods. It includes assets such as housing, the tools and equipment that people own, rent or use and the public infrastructure that they have access to (DFID 2001). Housing is normally one of the most important assets for poor rural households as it is used both for shelter and reproductive purposes and for productive or income-generating purposes (Moser 1998). Physical assets, especially in housing, differed significantly between the rural and urban people. Nowadays, houses made using brick walls and tin roofs represent the standard house structure in the rural areas of Bangladesh.

Livelihood improvement status regarding natural capital

The observed range of livelihood status of the farmer regarding natural capital varied from 20 to 93 percent while possible ranged was 0 to 100 percent. The average and standard deviation were 66.52 percent and 10.970 respectively as shown in the table6. The highest proportion (73.0 percent) of the participants had medium status of livelihood improvement regarding natural capital followed by 18.5 and 4.5 percent of them having high and low livelihood status, respectively.

Natural capital is the term used for the natural stocks from which resources flow and from which services, useful for livelihoods, are derived (DFID 2001). It refers to environmental assets such as land and common property resources or free (open access) natural resources such as forests, water or grazing land. Livelihoods and natural resources have a close relationship to each other and the decline of one of these elements puts additional pressure on the other (Rigg 2006). According to the participants' perception, the decrease of the forests, reduction of soil quality and increases in crop diseases were the main external environmental factors that affected their livelihoods. In the forest dependent participants had good tree stock on their own homestead land. Ethnic participants mentioned that sometimes they cut down their

forest trees illegally because of the antagonistic relationship with the FD and their feelings of social insecurity. Seasonal crop income was another cash flow used to achieve subsistence and purchase other household goods for the participants in sal and hill forest areas. The natural capital of the NTFPs was one of the sources of financial income for the participants. In cases of land tenure conflicts between ethnic participants and the FD, the beneficiary was badly affected and the number of trees decreased. The ultimate adverse effect was concentrated on the natural Sal forests reserve, which was also mentioned by (Gain 2002) in his report. Land is an important natural capital and the respondents were categorized as landless (having 0 to 0.2 ha land), marginal (0.2 to 0.6 ha), small (0.61 to 1.0 ha), medium (1.0 to 2.0 ha) and large (>2.0 ha) farmer according to their farm land area (Iqbal 2007). The access to forests was already protected for local people and this study observed that the ethnic population depended heavily on forest resources (e.g. firewood). Traditionally ethnic participants had been cultivating medicinal plants in their household areas as well as practicing Jhum cultivation in mostly cleared Sal forest and hill forest land. Nowadays, Jhum cultivation has stopped and ethnic participants do not have any free/bare forest areas for agriculture practices. As a consequence, their life-style has shifted from Jhum cultivation to encroachment on Sal forests (Gain 2002) or involvement in PFPs and other projects. Initially, it was anticipated that the PFP might be helpful in resolving the land tenure issue but the reality turned out to be different. However, the land tenure issue was the key factor for maintaining natural capital, as without land tenure/access the participants did not take care of their tree assets and were involved in the Sal forests degradation activities.

Livelihood improvement status regarding financial capital

The observed range of livelihood status of the farmer regarding financial capital varied from 35 to 86 percent while possible ranged was 0 to 100 percent. The average and standard deviation were 57.61 percent and 9.784 respectively as shown in the table6. The highest proportion (71.5 percent) of the participants had medium status of livelihood improvement regarding financial capital followed by 23.0 and 5.5 percent of them having low and high livelihood status, respectively.

Financial capital denotes the financial resources that participants use to achieve their livelihood objectives (DFID 2001). Income from the sale of labor was often one of the most important assets for the rural poor. There are two main sources of financial capital: available stock (e.g. cash, bank deposit or liquid assets) and regular flow of money (e.g. remittance, pension, sale labor, etc). According to participants' income sources, this study revealed that agricultural income was the main sources of their total annual income. Findings also indicated that participants who had less crop output from the agriculture, faced more food shortages and relied more on daily labor to maintain their normal living. The financial capital especially the savings and remittance (others income) played an important role during family crisis or in the context of vulnerability. Due to their

social relationships or better communication with the nearby community, the non-ethnic participants could sell their labor more easily than the ethnic participants. In general, it was observed that NGOs activities did create some employment opportunities for both groups of participants. The most of the participants were not able to manage highly savings due to their low income and high living expenditure.

Livelihood improvement status regarding social capital

The observed range of livelihood status of the farmer regarding social capital varied from 43 to 92 percent while possible ranged was 0 to 100 percent. The average and standard deviation were 68.85 and 9.307 percent, respectively, as in the table 6. The highest proportion (70.9 percent) of the participants had medium status of livelihood improvement regarding social capital followed by 26.4 and 2.7 percent of them having high and low livelihood status, respectively.

There is much debate about what is exactly meant by the term ‘social capital’ (DFID 2001). Social capital refers to a network of mutual support that exists within and between households, extended family and communities, which people can utilize to gain, for example: loans, childcare, food, accommodation and information about employment and opportunities (Dersham and Gzirishvili 1998; Moser 1998). In addition, social capital is a valuable and critical resource for poor people, especially during times of crisis and socioeconomic change. Moreover, these acquired skills and knowledge had an impact on the social capital such as: building relationships and encouraging self-capacity within the participating groups. Although social capital is an attribute of an individual in a social context (Sobel 2002), the growth of social capital depends on the institutions, relationships, attitudes and values that govern interactions among participants and contribute to economic and social development (World Bank 2002) and are therefore difficult to measure.

The NGOs intervention created a small social network among the participants whereas the network between the participants and other communities was weak. As a consequence, natural capital was negatively affected, which agrees with the report of Gain (2002) and Alam *et al.* (2008) which showed that participatory forestry programs together with rubber plantations, were one of the actual causes of the Sal forests deforestation. In the case of the ethnic population, they had been living in the same area for over a decade (Gain 2002) and the participating ethnic people built a strong network within them. Stakeholder management is a critical component to the successful delivery of any project, program or activity. The study revealed that the participants possessed a positive relationship among themselves, whereas they had a negative relationship with the FD officials. Access to social capital enables forest dependent people to secure resources and opportunities. To understand the dynamics of social capital in the context of rural Bangladesh, this study inquired about forest dependent people membership with different NGOs working with the communities. The numbers of

social organizations (NGOs) involved in the study area were more or less equal in the ethnic and non-ethnic participants’ areas. Organizations were working to improve the livelihoods of the poor population and allocated easy loan, microcredit facilities, input support and providing training on different subjects for forest dependent participants. Moreover, due to an overall negative relationship to FD, a sense of collective action had not arisen among the forest dependent communities. Collective action is considered an asset for sustainable management of natural resources. This action existed within the participating members but not within society as a whole.

A comparative observation of the Table 6 gives a clear idea that the highest variation among the participants farmers existed regarding natural capital having a standard

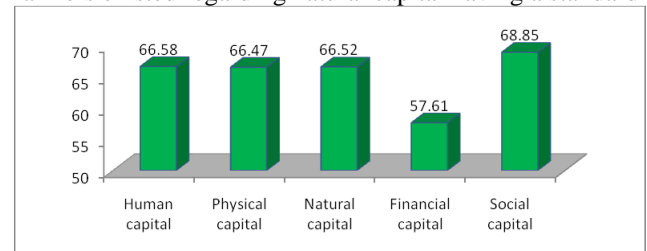


Figure 1. Livelihood Enhancement Status in Different Assets Base

deviation of 10.970. On contrary, lowest variation (standard deviation 8.955) was in livelihood improvement status regarding human capital. However, the variation regarding different assets of livelihood was small, nevertheless the highest status of livelihood improvement was observed in incase of social capital and that was the lowest in case of financial capital. This has shown in Fig.1, which illustrates that average livelihood improvement status of social capital was the highest (68.85 percent) followed by human (66.58 percent), natural (65.15 percent) and physical (66.47). Livelihood improvement status regarding financial capital was secured the lowest average score for livelihood status of the forest dependent farmers through NGOs’ livelihood interventions. It was found that limited options, less capital, unavailable structured of marketing channel in the forest area the respondents are not able to utilize their financial capital in large scale. Consequently, livelihood enhancement concerning financial capital was the lowest among the five capitals of livelihood assets.

Livelihood enhancement status measured by cumulative percentage score

The livelihood status of forest dependent farmer was obtained by calculation of percentage scores of 25 livelihoods. The observed score of livelihood enhancement status of the forest dependent farmers ranged 48.0 to 80.0 percent while possible range was 0 to 100 as shown in the Table 7. The mean livelihood enhancement status was 65.20 percent with standard deviation 6.232. Based on the observed range of livelihood enhancement status of the farmers, they were classified into three categories. Findings show that among the forest dependent farmers, majority of them (97.3 percent) had medium status enhancement while 2.1 percent had high and only 0.6

percent had low status of livelihood enhancement. The findings implied that most of the forest dependent farmers

were clustered around the medium category of livelihood enhancement status.

Table 7. Categorization of the forest dependent farmers according to their overall livelihood enhancement status

Range (%)		Category	Participants		Mean	SD
Possible	Observed		Frequency	Percent		
0-100	48-80	Low (0-49)	2	0.6	65.20	6.232
		Medium (50-75)	321	97.3		
		High (>75)	7	2.1		

The overall livelihood enhancement status of the forest dependent farmers was medium. This indicates that at least improvement occurred regarding livelihood status among the farmers. But still it is possible to improve their livelihood status of the farmers because only 2.1 percent of the farmers had highly enhancement status. Based on the above findings, it can be said that there is an ample scope for the development workers to work with the forest dependent farmers for creating awareness towards better utilization of existing resources for improved livelihoods. The concerned GO and NGOs can organize capacity building activities and motivational campaign for the forest dwellers for changing their existing outlook towards the involvement of char women in development activities which in turn can improve quality of living standards.

Problems faced by the forest dependent farmers

The forest dependent farmers faced a variety of multi-dimensional difficulties and constraints (economic, social, legal, psychological and political) that affected the participation in income generating activities as well as their livelihood. Constraints cited by forest dependent farmers were: unemployment, financial inability to arrange farmed and non-farm inputs, incapability of use the credit properly for not getting in time, inadequate training program to run IGAs, lack of land ownership, harassment by foresters and hijackers, poor marketing system, high price of agricultural and non-agricultural inputs, scarcity of drinking water, natural calamities, social insecurity, mistaken policy intervention, wild animal attack, local NGOs take high rate of interest, lack of education and technical knowledge, absence of monitoring program and lack of GO, NGO co-operation and negative attitude towards forest dependent community.

Way out of the problems: During interview each of the respondents was asked to mention their opinion for probable measures to solve the constraints as perceived by them. They were suggesting following solutions to minimize the constraints: providing sufficient government and NGOs support, providing need based training, increase the rate of literacy, creating opportunity to alternative IGAs, diversified income earning sources, providing credit in time, increase social security, creating good relationship with forest department and necessary steps to protect the harassment, good governance, strong law enforcement and effective management system may be ensuring for actual benefit from the forest resource and improving livelihoods of dependents communities.

Conclusion: The average livelihood improvement status of the forest dependents was 65.20 where most of the

respondents were cluster in the medium category and few of the respondents had high livelihood improvement status. Thus, it may be concluded that there is ample scope to enhance the livelihood improvement status of the forest dependent people. Most of the GOs and NGOs in Bangladesh including selected organizations (BRAC, AF, Caritas Bangladesh, World Vision, PDBF, etc.) of the study area are working for livelihood improvement of the forest dependent people along with extreme poor. Education, health, IGAs training on IGAs, motivation, and awareness building gender issues etc. are greatest concern in this regards.

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