

**PARTICIPATION OF RURAL WOMEN IN SOCIAL FORESTRY AT
PAIKGACHA, KHULNA**

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**PARTICIPATION OF RURAL WOMEN IN SOCIAL FORESTRY AT
PAIKGACHA, KHULNA**

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CERTIFICATE

*This is to certify that the thesis entitled, “PARTICIPATION OF RURAL WOMEN IN SOCIAL FORESTRY AT PAIKGACHA, KHULNA” submitted to the Faculty of Agriculture, Sher-e-Bangla Agricultural University, Dhaka, in partial fulfillment of the requirements for the degree of **MASTER OF SCIENCE** in **Agroforestry and Environmental Science**, embodies the result of a piece of bona-fide research work carried out by **FARZANA YEASMIN JYOTI** Registration 14-05955 under my supervision and guidance. No part of the thesis has been submitted for any other degree or diploma.*

I further certify that such help or source of information, as has been availed of during the period of her investigation has been duly acknowledged by her.

Dated: June, 2021
Place: Dhaka, Bangladesh

Md. Golam Jilani Helal
Supervisor



***DEDICATED TO
MY BELOVED
PARENTS***

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The Author

PARTICIPATION OF RURAL WOMEN IN SOCIAL FORESTRY AT PAIKGACHA, KHULNA

ABSTRACT

To determine the extent and types of activities performed by the rural women in social forestry at Paikgacha upazila of Khulna district is the main purpose of the study. The study was conducted at four villages namely Batikhali, Agorghata, Kashimnagar and Noakati under three unions namely Godaipur, Kapilmuni and Haridhali. Data was collected from 69 randomly selected women by using a pre tested interview schedule during the period of November to December 2020. The findings showed that around half of the total respondents (47.9%) take part in the Maintenance of the plantation and the rest half participate in Tree plantation and Post-harvest activities. According to the respondents, 'lack of co-operation of male' ranked first and Destruction of plantation by excessive storm, drought and flood ranked last. The final outcome is provided usually once in a year and in some cases once in six months which discourage them to participate in some extent. In spite of having some constraints, participation in social forestry has improved the socio-economic condition of the participants remarkably. The study reveals that the participation of rural women is well enough at Paikgacha and due to its positive impact. Besides, taking some necessary steps to minimize the constraints can enhance the scopes to participate in social forestry more significantly.

TABLE OF CONTENTS

CHAPTER	SL. NO.	TITLES	PAGE NO.
		ACKNOWLEDGEMENT	I
		ABSTRACT	ii
		TABLE OF CONTENTS	iii-vii
		LIST OF TABLES	Viii
		LIST OF FIGURES	Ix
		LIST OF APPENDICES	Ix
		LIST OF PLATES	Ix
		ABBREVIATIONS AND ACRONYMS	X
CHAPTER 1		INTRODUCTION	1-2
CHAPTER 2		REVIEW OF LITERATURE	2-12
	2.1	Literature on Different Aspects of Social Forestry or Related Matters	3
	2.2	Literature Related to Relationships between Selected Characteristics and their Participation	9
	2.2.1	Age	9
	2.2.2	Level of education	9
	2.2.3	Annual family income	10
	2.2.4	Duration of involvement	10
	2.2.5	Training exposure	10
	2.2.6	Knowledge on social forestry	11
	2.2.7	Constraints	11
CHAPTER 3		MATERIALS AND METHODS	12
	3.1	The Locale of the Study	12
	3.2	Population and Sample of the Study	15

TABLE OF CONTENTS (CONT'D)

CHAPTER	SL. NO.	TITLES	PAGE NO.
	3.3	The Research Design	16
	3.4	The Research Instrument	16
	3.5	Data Collecting Procedure	16
	3.6	Selection of Dependent and Independent Variables	17
	3.7	Variables and their Measurement	18
	3.7.1	Measurement of independent variables	18
	3.7.1.1	Age	18
	3.7.1.2	Level of education	18
	3.7.1.3	Annual family income	18
	3.7.1.4	Working distance	18
	3.7.1.5	Duration of involvement with social forestry program	18
	3.7.1.6	Participation in social forestry program	19
	3.7.1.7	Training exposure	19
	3.7.1.8	Knowledge on social forestry	19
	3.7.1.9	Major benefits obtained	19
	3.7.1.10	Constraints faced in social forestry program	20
	3.7.2	Measurement of dependent variable	20
	3.7.2.1	Measurement of Participation of Rural Women in Social Forestry Activities	20
	3.8	Measurement of Problem Confrontation Index (PCI) in Participating Social Forestry Activities	21
	3.9	Data Processing and Analysis	22
	3.10	Collection of data	23

TABLE OF CONTENTS (CONT'D)

CHAPTER	SL. NO.	TITLES	PAGE NO.
	3.11	Compilation of data	23
	3.12	Categorization of data	23
	3.13	Statistical techniques	24
	3.14	Hypotheses of the Study	24
	3.14.1	Null hypotheses	24
	3.15	The conceptual framework of the study	24
CHAPTER 4		RESULTS AND DISCUSSION	PAGE NO.
	4.1	Selected Characteristics of the Respondents	27
	4.1.1	Age	27
	4.1.2	Level of education	28
	4.1.3	Annual family income	28
	4.1.4	Distance of working area and its effect on participation	28
	4.1.5	Duration of involvement in social forestry program	29
	4.1.6	Participation in social forestry program	30
	4.1.7	Training exposure	31
	4.1.8	Knowledge on social forestry	32
	4.1.9	Selection of trees	32
	4.1.10	Major benefits obtained as a participant	33
	4.1.11	Frequency of receiving benefits	34
	4.1.12	Purposes behind joining social forestry	34
	4.1.13	Impacts of social forestry	35
	4.1.14	Constraints faced in social forestry program	36
	4.1.15	Opinion of the beneficiaries about social forestry	37

TABLE OF CONTENTS (CONT'D)

CHAPTER	SL. NO.	TITLES	PAGE NO.
	4.2	According to the correlation co-efficient Relationships of Selected Characteristics of the Women Beneficiaries with their Participation	38
	4.3	Relationships of Selected Characteristics of the Women Beneficiaries with their Participation in Social Forestry	39
	4.3.1	Relationship between age and dependent variable	39
	4.3.2	Relationship between level of education and Dependent variable	40
	4.3.3	Relationship between annual family income and dependent variable	40
	4.3.4	Relationship between working distance and dependent variable	40
	4.3.5	Relationship between duration of involvement and dependent variable	41
	4.3.6	Relationship between training exposure and dependent variable	41
	4.3.7	Relationship between knowledge on social forestry and dependent variable	41
	4.3.8	Relationship between training exposure and dependent variable	42
	4.3.9	Relationship between major benefits obtained and dependent variable	42
	4.3.10	Relationship between impact of social forestry and dependent variable	42
	4.3.11	Relationship between constraints faced in social forestry and dependent variable	43
	4.4	Comparative Constraints faced by the Women Beneficiaries Social Forestry Program	43

CHAPTER 5	SUMMARY, CONCLUSIONS AND RECOMMENDATIONS	PAGE NO.
	Summary of Findings	48
	Conclusion	50
	Recommendations	51
CHAPTER 6	REFERENCES	52-57

LIST OF TABLES

SL. NO.	TITLE	PAGE NO.
1	Distribution of the population, sample and beneficiaries included in the reserve list	15
2	Showing village name of the respondent from where data is collected	26
3	Classification of the respondents according to their age, education and annual income	27
4	Classes of working distance and its effect	29
5	Categorization of working years of the respondents according to their involvement	29
6	Distribution of women beneficiaries according to their participation	30
7	Categorization of beneficiaries according to training Exposure	31
8	Distribution of women beneficiaries according to their knowledge on social forestry	32
9	Indicating major benefits that is obtained from social forestry as a participant	33
10	Classes of frequency of receiving the final outcome	34
11	Categories of the reason of joining social forestry	34
12	Showing the changes created due to the impact of social forestry	35
13	Several constraints faced by the workers during their participation	36
14	Coefficient of correlation between the selected characteristics of the women beneficiaries and their participation in social forestry program	39
15	Rank order of constraints faced in social forestry program with PFI	43

LIST OF FIGURES

SL. NO.	FIGURE TITLE	PAGE NO.
1	Map of Khulna district showing the locale of the study	13
2	Map of Paikgacha Upazila of Khulna district	14
3	The conceptual framework of the study	25
4	Pie chart showing categories of tree selection	33
5	Representing the opinion of the beneficiaries to encourage social forestry.	37

LIST OF APPENDICES

APPENDIX NO.	APPENDIX TITLE	PAGE NO.
1	English Version of the Interview Schedule	58-66

LIST OF PLATES

PLATE NO.	TITLE	PAGE NO.
1	Picture showing trees at tidal condition in Batikhali Social Forestry project	67
2	Interviewing of a social forestry worker in front of Batikhali SF project.	67
3	Social Forestry near river bank in Batikhali village.	68
4	Center of Batikhali Social Forestry Project	68
5	Roadside social forestry at Agorghata.	69
6	Interviewing of a respondents at Agorghata	69

ABBREVIATIONS AND ACRONYMS

RDP	Rural Development Projects
BRAC	Bangladesh Rural Advancement Committee
CNRS	Center for National Resource Studies
CBFM	Community Based Forest Management
RDRS	Rangpur Dinajpur Rural Service
PROSHIKA	Proshikkhan Shikkha Karmo
BBS	Bangladesh Bureau of Statistics
Df	Degrees of Freedom
CFI	Constraints Facing Index
SPSS	Statistical Package for Social Sciences
SFP	Social Forestry Program
FAO	Food and Agricultural Organization
Ag. Ext. Ed.	Agricultural Extension Education
GO	Government Organization
HFA	Highly Favorable Attitude
MFA	Moderately Favorable Attitude
NGO	Non-Government Organization

CHAPTER 1

INTRODUCTION

The term “social forestry” is used interchangeably with “farm and community forestry” and “forestry for local community development”. Social forestry includes a range of activities associated with forest management, protection, and afforestation with the objective of rural, environmental, and social well-being (Hyde *et al.* 2000). The term social forestry refers to a broad range of tree- or forest-related activities undertaken by rural landowners and community groups to provide products for their own use and for generating local income. Social forestry may also include planting trees on public lands by governments or other groups to meet local village needs (Gregersen, 2010). Its aim was producing flow of protection and recreating benefits for the community and the goal of social forestry should be determined by the amount of investment which the community should make to secure these benefits. The applications of social forestry have grown beyond its original conception as seedling distribution, planting and technical assistance to incorporate watershed management and the broader class of forest contributions to the natural environment.

Social forestry is seen all the more favorably because those who benefit from it are often the most disadvantaged: women, and the rural poor, and especially landless users of the forested commons. Social forestry is highly regarded for its capacity to generate income and employment opportunities for rural, forest-dependent people apart from traditional forest management and conservation (Afroz *et al.* 2016; Poffenberger 2000). Social forestry programs usually provide food, fuel-wood, fodder, and other forest products to meet the basic necessities of the participating communities (Gilmour 2016; Casson 1997). Community participation in social forestry programs also leads to improved awareness of forest management among participatory communities (McDermott 2009).

In Bangladesh, men in general control the major resources, supported by a strong patriarchal cultural tradition (Ahmed, 1992; Wallace *et al.*, 1987). Women have limited access to resources such as land credits, information services, modern tools and technology,

and training. Women who attempt to change their political and environmental situation are, in many societies, frequently beaten down physically and mentally by their male counterparts, their society's culture, and its laws (Housman, 1992).

The National Forest Policies recognize the importance of gender issues and state in the policy that "Women will be encouraged to participate in homestead and farm forestry, and participatory afforestation programs (National Forest Policy, 1994)". In Bangladesh, in common with neighboring south Asian countries, SF is used rather flexibly for ensuring "active participation by the rural people in planning, implementation and benefit sharing of tree growing schemes" (Task Force, 1987).

This new approach took into consideration the cases of the social and class group such as landless and functionally landless farmers, women, children, disabled and handicapped persons, slum dwellers, various categories of urban and rural poor etc. The prime objectives of all these efforts are to improve the overall social, economic, political and cultural conditions of women especially the overall conditions of poor, vulnerable and destitute women of developing countries including Bangladesh.

The present study is, therefore, an effort to determine the participation of rural women and unearth the role of social forestry in improving the poor and vulnerable women's socioeconomic and cultural conditions and also to highlight whether social forestry program helps in reduction. So we have huge scope to implement social forestry in rural areas to create opportunities for the participation of rural women and to find out its applicability in Bangladesh.

Objectives

The main focus of this study is to know about the "Participation of Rural women in Social Forestry." The proposed research program has the following objectives:

- To find out the extent and types of activities performed by the rural women
- To know about the benefits and its frequency perceived by the beneficiaries through their participation
- To identify the obstacles faced by rural women during practicing community forestry.

CHAPTER 2

REVIEW OF LITERATURE

The purpose of this Chapter is to review the past studies conducted by different researchers related to the present study. As far as possible the researcher tried to review the available literature from home and abroad related to social forestry as well as other similar programs and activities.

2.1 Social Forestry

Social forestry can be defined as- Any situation that intimately involves local people in a forest activity, a set of interconnected actions and works executed primarily by local community residents to improve their own welfare (FAO, 2003).

Social forestry is a branch of forestry which deals with the involvement of people in forestry activities that are designed to promote the socio-economic well-being of the people themselves as well as the conservation of the soil, water and the forest resources (Zashimuddin, 1995).

Social forestry can take various forms, depending on the societal linkages between people and forestry activities (Rao, 1992).

A more formal definition of social forestry is ‘any forestry activities aimed at providing goods and services for the benefit of rural communities, particularly the poor’ (Huq and Alim, 1995).

Emphasizing the role of social forestry along with socio-cultural awareness as a sustainable means of creating employment opportunities and augmenting income, as an effective tool of rural poverty alleviation (Safa, 2004).

Social forestry is a concept, a program and a mission which aims at ensuring ecological, economic and social benefits to the people, particularly to the rural masses and those living below the poverty line, specifically by involving the beneficiaries right from the planning stage to the harvesting stage but not only as wage earners (GOB, 1993).

In defining social forestry Westoby (1989) stated that ‘social forestry is forestry for helping the poor. It involves tree planning and management, at the farm, village or community level, by or for small farmers and the landless’.

Any activity such as the purposive growing of trees, certain techniques in crop production, soil conservation, improved use of wild forest products, and others, of a culture bearing and symbol sharing social group, which has at its ultimate effect a movement of that group towards self-sufficiency in forest resources while at the same time lessening the pressure which that population is applying to the resources of the natural forest through more efficient and more intensive use of land (Huq and Alim, 1995).

Ahmed (1995) defined social forestry “as a sub-system of forestry designed to conserve natural resources and promote social development. It postulates that society, as a system, plays key role in any development endeavors”.

Social forestry means people-oriented forestry, with active involvement of local people of all social groups (based on gender, class, caste, ethnicity etc.) in key planning and decision-making, in implementation, in full benefit sharing (not just the receipt of wages or food for planting trees) of tree growing and forest resources management, in the overall context of the farming system and sustainable development and in local monitoring and evaluation of the results. It utilizes an extension dialogue for two-way learning and teaching, to establish a true dialogue and partnership between developers (outsiders) and rural people (locals, insiders) at each step of the development cycle (analysis, site selection, diagnosis and design, planning, implementation, management, monitoring, evaluation, benefit-sharing). In short, it is people driven forestry (Davidson, 2003).

Social Forestry” (SF) is to mean “the active participation by rural people in the planning, implementation and benefit-sharing of tree growing schemes” (GOB, 1997).

Central to the philosophy of most of social forestry is that through implementation of these components it is possible to uplift the communities who are poor, disadvantaged and voiceless (Huq and Alim, 1995).

Singh (1999) evaluated a Social Forestry Project of Orissa, in India. He reported that the financial performance of Social Forestry was better than in forestry due to additional income from agricultural crops, higher growth of trees and higher survival of trees.

Ahmed (1998) demonstrated the dynamics of social forestry as a model for protecting and preserving forests and generating income opportunity for the landless people.

Begum (1998) conducted an economic analysis of homestead agroforestry practices in selected areas of Mymensingh. She observed that the farmers practicing homestead agro forestry earn higher gross margin from fruits and vegetables. In general, farmers appeared to be rational in the use of resources in producing vegetables. The overall production potential of homestead vegetable gardening is, however, profitable.

Khan (1996) in his paper on Patronage and Social Forestry in Bangladesh revealed that the participating farmers in the Social Forestry Project were engaged in deep- rooted dependency on the local elites (the patrons). The patrons, in turn, utilize the patronage network in influencing the selection of the target farmers for the project, to capture the benefit of the project and to use the farmers as support-bases in local political 'power' struggles. He also found that Social Forestry Project has done little to rescue farmers from these exploitative and unequal social relations.

Mangaraj and Raj (1996) found that perception of involved extension personnel about Social Forestry Project was not sufficient. Although they had acquired sufficient skill in the establishment of plantation but there was insufficient skill in motivating, involving and promoting participation of people in the plantation program.

A study conducted by Islam (1991) reported that involvement of NGOs has the potential to support social and community forestry activities.

Das (1995) observed that NGOs are highly active in forestry extension programs in Bangladesh. Das concluded that the NGOs, including Caritas with their social forestry extension program, could bring a change among the rural poor and marginal farmers, as well as achieving environmental conservation. The study also identified various problems and constraints of social forestry planning and implementation.

Khan and Khan (1993) argued that the scope and scale of extension of community forestry could be expanded by NGOs. Community forestry programs managed by NGOs have a positive impact on livelihood as well as generating management practices towards sustainable environment.

Malik *et al.* (1995) stated in a discussion of traditional forest management practices, which have variously been termed community homestead social forestry which compares economic returns and ecosystem benefit with those from developed industrial forest management. It is noted that most economic analysis fail to take into account non-market benefits of community forestry can maintain a critical balance between economic and ecosystem sustainability.

Mahapatra (1995) identified non-cooperation of rural youth, women's traditional believes, improper education, poor finance, no planning for care and maintenance of plantation, political interference and inadequate technical guidance inhibit the success of the Social Forestry Project.

Sekar and Sahoo (1995) reported that Social Forestry Program in Orissa, fourteen landless tribal families was allocated 0.5 hectare of land, on which 2000 multipurpose trees were established (as seedling) at 4 x 1 m spacing, in two rows. Agricultural crops were raised between the rows. Trees survival rates were mostly high and all the tribal were able to sustain their families for 6 to 8 months each year.

Availability of material goods from social forests helps to lower pressure on the nearby reserve forest resources (Khan *et al.*, 1998).

Fattah and Akhtar (1994) found that afforestation and agro-forestation had drastically reduced the rate of desertification of land in Pakistan.

Sarker (1990) reported that Social Forestry is an attempt to create forestry in the inhabitant areas of a country in the face of mass destruction of forestry.

Shah (1988) reported that social forestry production had direct effect on agricultural production. In a tropical country like India, it was feasible to produce more food and more wood by integrating social forestry with agriculture in form of a three dimensional mixed

production system. Under harsh climatic conditions, selected trees in the form of windbreaks and shelterbelts provide a protective umbrella to agriculture. Trees help to ameliorate the effects of climatic excesses and erosion.

According to Rashid and Khan (2014); Khan and Begum (1997), the basic notion of introducing participatory forestry approaches is to restrict the growing biodiversity loss at the same time creating alternative livelihood options of the forest-dependent communities, and accordingly a noticeable change in the forest governance has taken root through decentralization and devolution of decision making power to the rural community.

Ahmed (1989) stated that participation is a situation where two or more social actors with explicit interest and concerns about a set of natural resources are engaged in its management. Participation promotes decentralization of decision-making power.

Mukul and Quazi (2012) reported that creating a pro-people governance mechanism is one of the crucial objectives of promoting community participation in forest management.

Fisher and Prabhu (2007) stated Community forestry programs began with a “focus on involving communities in government programs for reforestation and forest protection and have gradually evolved toward more devolution of decision-making power and more active use of forests by the local communities”.

According to Rashid *et al.* (2017) Social forestry includes the range of activities associated with forest products, the rural environment, and subsistence agricultural communities. Social forestry programs give local people a share in the authority to design and sustain projects that will meet their demands.

Mukul *et al.* (2012) reported social forestry can also be linked to external development assistance intended to benefit participating communities and their environment.

Social forestry is now considered as an alternative to traditional forestry management with its ability to provide communities with firewood, fodder, and small timber resources to meet the local biomass needs and relieve pressures on natural forests (Baynes *et al.* 2015; Poffenberger 2000).

The 1988 Forest Policy in India, for example, also emphasized to respond to the needs of rural people, giving them priority over commercial requirements:

Social forestry is highly regarded for its capacity to generate income and employment opportunities for rural, forest-dependent people apart from traditional forest management and conservation (Afroz and Cramb 2016; Gregersen 2010).

Social forestry programs usually provide food, fuelwood, fodder, and other forest products to meet the basic necessities of the participating communities (Casson, 1997).

Community participation in social forestry programs also leads to improved awareness of forest management among participatory communities (McDermott, 2009).

Community forestry evolved as a branch of forest management with a view to generate income from forest resources with the active involvement of the community as a beneficiary of the program in addition to sustain biodiversity conservation (Cronkleton *et al.* 2010).

In developing countries like Bangladesh ,social forestry activities not only helped in expanding green coverage but also paved paths for substantial income for the participants (Rashid and Khan 2014; Mukul *et al.* 2012, 2014).

Social forestry programs are also associated with sustainable forest outcomes in many countries as they control illegal forest use and improve forest condition (Gilmour 2016).

One of the benefits associated with social forestry is its link to equity, which is generally considered to incorporate fairness and social justice (Meadows 1992).

While social forestry has proven to be particularly successful in increasing forest areas, community empowerment, and poverty alleviation in some countries, it has also been criticized due to its failure to promote equity among participating members (Mukul *et al.* 2014).

Social forestry needs government support in various forms, including providing a legal basis and technical assistance to ensure community members' communal rights on forest produce (Hodgdon 2010; Pulhin *et al.* 2010).n influenced opinion of the women about project activity and adoption of vegetables gardening animal husbandry etc.

2.2 Selected Characteristics and its impact of different aspects

2.2.1 Age

Rashid (2001) found that there was no relationship between age of the beneficiaries and their living condition in his study in participation and women's empowerment in selected area of Mymensingh district.

Begum (1998) in her study found that age of the rural women had no significant relationship with their poverty alleviation owing to Participation in social forestry activities.

Basak (1997) in his study entitled "Impact of BRAC Rural Development Activities as Perceived by the Participating women" showed that the age of the rural women under BRAC had no significant relationship with their impact of participation in social forestry.

2.2.2 Level of education

Begum (1998) in her study entitled "Poverty Alleviation of the Rural Women Organized by Association for Social Advancement" observed that education of the rural women had a positive significant relationship with their poverty alleviation owing to participation in SFA.

Mahapatra (1994) in his study found that education of the rural women had a positive significant relationship with their impact of participation in rural development activities.

Rahman (1997) found that the level of education of the farmers had insignificant relationship with the impact of homestead afforestation.

Hassan and Hadi (1994) found that education had positive impact on members' household endowment. They also observed that the female category of RDP households appeared systematically better endowment according to education level, in comparison with their male counterparts.

Kaur (1988) observed that education influenced opinion of the women about project activity and adoption of vegetable gardening, animal husbandry etc.

2.2.3 Annual Family income

Mortoza *et al.* (2004) found that family income had significant positive relationship with livelihood.

Waheduzzaman (2004) concluded that family income of women beneficiaries of CARITAS had significant positive relationship with their impact of NGO intervention on livelihood.

Rahman (2002) found that family income of PETRRA farmers had no significant relationship with their impact of livelihood assets building.

2.2.4 Duration of involvement

Ali (2003) in his study on Impact of micro-credit in the poverty alleviation of BRAC women beneficiaries in a selected area of Dinajpur district found that the relationship between duration of involvement with BRAC of the respondents and their change in income was positively significant.

Rokanuzzaman (2004) reported that there is no significant relationship between participation in income generating activities towards CNRS of the CNRS- beneficiaries and their change in livelihood due to participation in CBFM-2 Project.

Waheduzzaman (2004) concluded that the participation in income generating activities of the women beneficiaries of CARITAS had non-significant relationship with their impact of NGO intervention on livelihood.

2.2.5 Training exposure

Miah (1994) found that there was a significant relationship between training received of women and their impact of NGO intervention on livelihood.

Rahman (1999) observed that training exposure of the persons involved in Proshika activities and their change in income were significantly and positively related.

Nair (1998) in his study found that there was no significant relationship between training received of rural women and their impact of participation in BRAC rural development activities.

Rahman (1996) found that after having skill development training under the auspices of Comprehensive Village Development Program (CVDP) women had started undertaking relevant income generating activities and thereby supplementing their family income.

2.2.6 Knowledge on social forestry

Sultan (2006) concluded that the knowledge on homestead agroforestry of the farmers had significant positive relationship with the socio-economic condition as perceived by the respondents in the selected area of Sharia Kandi Upazila of Bogra District.

Rokanuzzaman (2004) in his study of “impact of community based fisheries management project on livelihoods of a fishing community in a hoar area of sunamgonj District” found no significant relationship between knowledge and fisheries management with the change in livelihood status due to the participation of CBFM-2 project.

Amin (2002) performed a study entitled “impact of PETRRA project in improving livelihood status of the beneficiaries of RDRS”. He reported that there was a significant positive relationship between knowledge of the beneficiaries of PETRRA project of RDRS and their livelihood change.

2.2.7 Constraints

Basak (1997) stated that problem awareness of the rural women and their impact of participation in BRAC rural development activities were significantly and positively related.

CHAPTER 3

MATERIALS AND METHOD

In any scientific research, materials and method plays an important role. To perform a research work systematically, careful consideration is a must. It should be such that it would enable the researcher to collect valid and reliable information to arrive at correct decisions. The methods and procedures followed in conducting this study have been described in this chapter.

3.1 Locale and Population

This study was conducted at the area of Paikgacha Upazila, Khulna. This covered 3 unions of Paikgacha upazila of Khulna district. Those unions were selected because social forestry activities were more concentrated in that areas in comparison with the other villages of Paikgacha upazila. The study was conducted in four villages namely Batikhali, Agorghata, Kashimnagar and Noakati under three unions namely Godaipur, Kapilmuni and Haridhali. For clarity of understanding, one map of Khulna district showing Paikgacha upazila and another map of Paikgacha upazila showing the study area has been presented in Figure 1 and Figure 2 respectively.

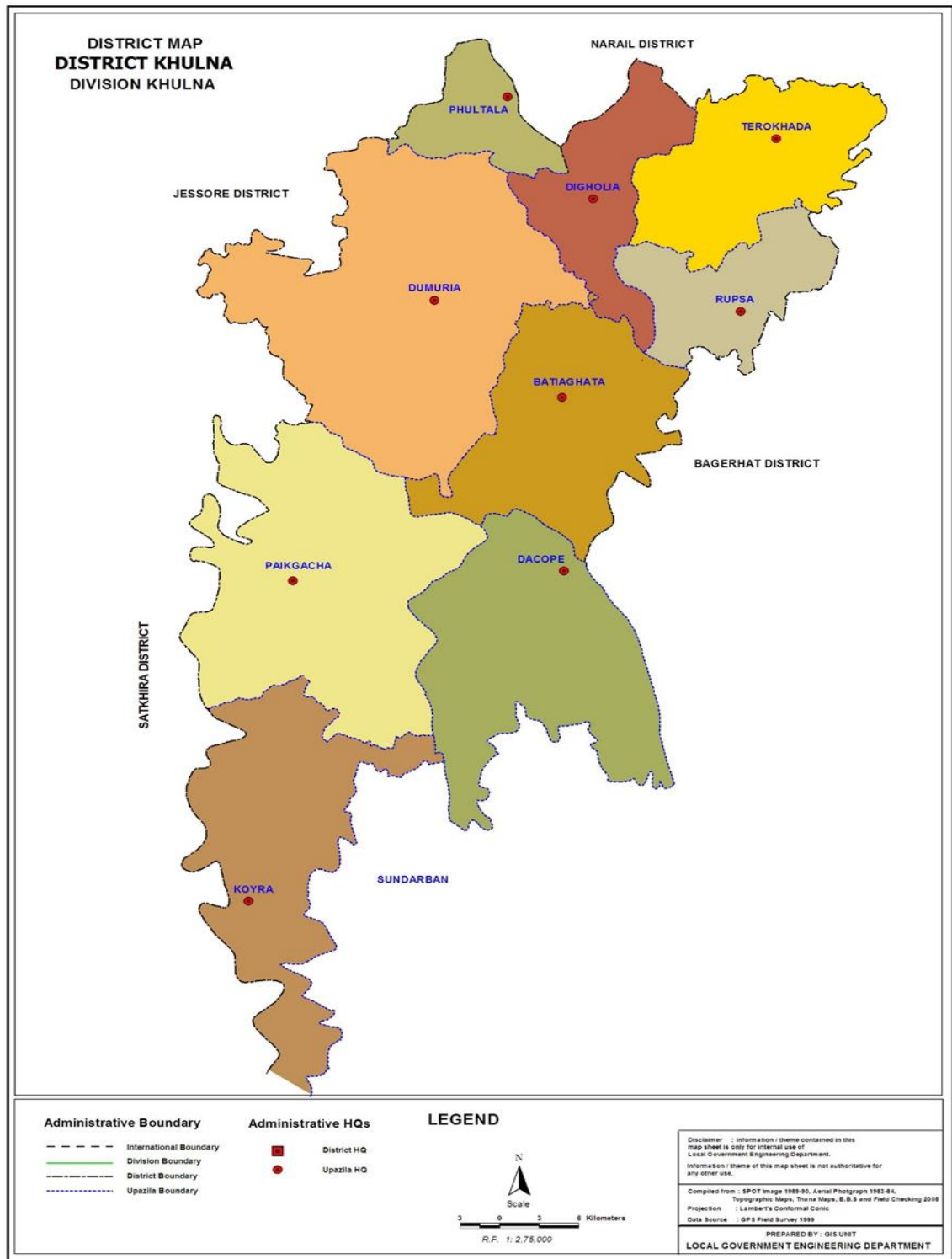


Figure 1. Map of Khulna district showing the locale of the study

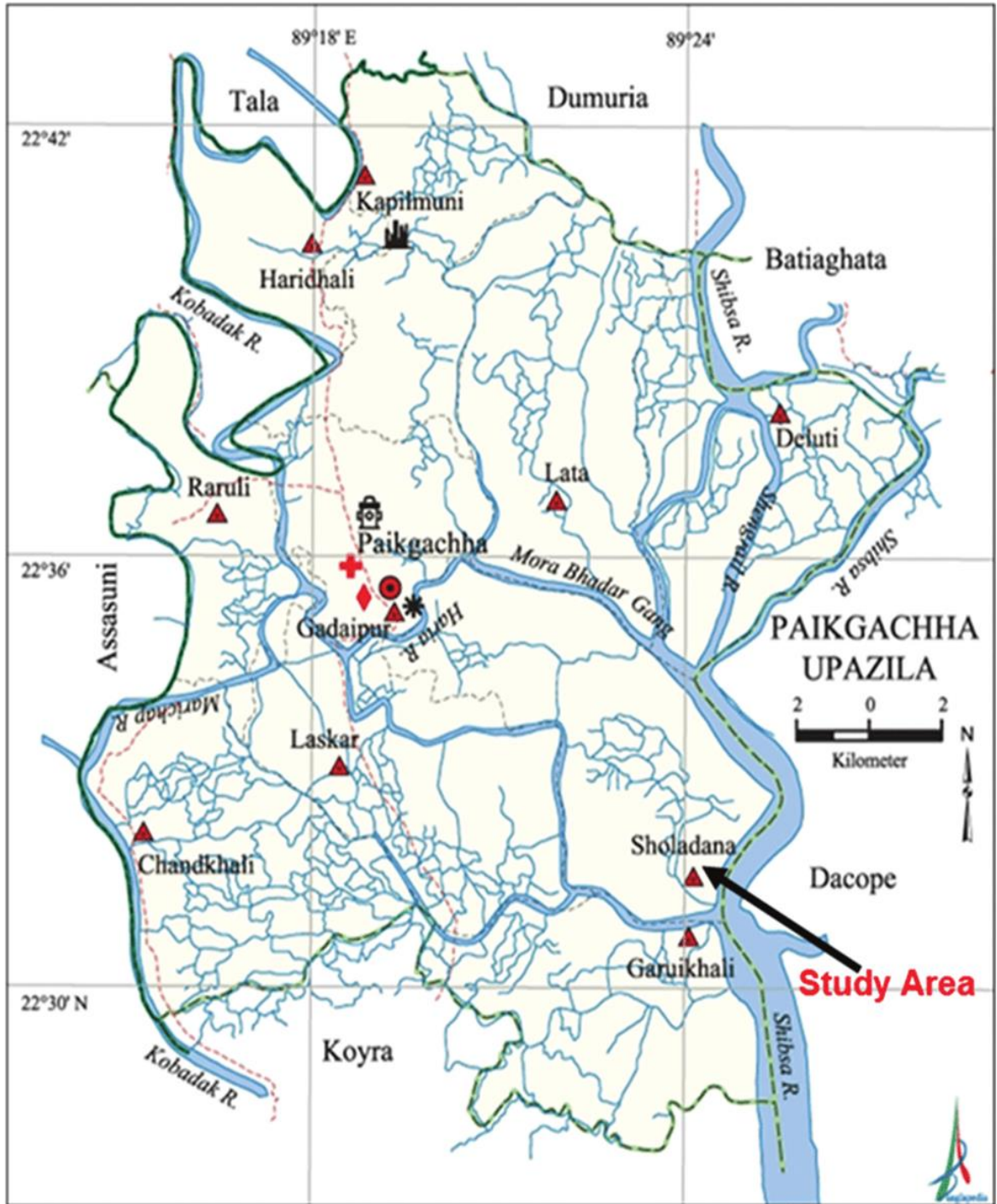


Figure 2. Map of Paikgachha upazila of Khulna district

The rural women of the selected four villages were considered as the population of the study. A list of rural women who are currently involved with social forestry was prepared with the help of Upazilla Forest Officer. The number of rural women of the selected four villages was 452 which constituted the population of the study. Sample was selected proportionally from the selected villages as the sample by following random sampling method. Thus, 69 rural women were taken as the sample of the study. Moreover, a reserved list of 8 rural women was prepared for use when the rural women under sample were not available during data collection. The distribution of the rural women included in the population, sample and those in the reserve list appears in Table 1.

Table 1. Distribution of Population, Sample Size and Reserve List Size of Respondents in four selected Villages of Paikgacha Upazilla of Khulna District

Sl. No.	Name of the Villages	Total number of the rural women	Number of respondents	Number of rural women in the reserved list
1.	Batikhali	145	24	2
2.	Agorghata	98	13	2
3.	Kashimnagar	117	20	2
4.	Noakati	92	12	2
	Total	452	69	8

3.2 Sampling Procedure

Data for this study were collected from a sample rather than the whole population. In this connection, random sampling method was followed in order to select the respondents. An updated list of all women beneficiaries at least 3 months of participation of social forestry program (SFP) of the selected Upazilas was collected. There were about 69 women beneficiaries under social forestry program in those three upazilas. Those women beneficiaries constituted the population of the study. The selected upazila following the criteria was prepared with the help of Upazilla Forest Officer. The total numbers of union under Paikgacha upazila were 10 and the three unions have been selected.

The populations were selected as sample by using systematic random sampling technique using a table of random numbers. Thus 69 beneficiaries of 4 villages were the sample size

of this study. A reserve list of 8 beneficiaries were made so that data would be collected from those in case any absence of the main sample.

3.3 The Research Design

The research design followed in the present study was ex-post facto (method in which groups with qualities that already exist are compared on some dependable variables), because of uncontrollable and non-manipulating variables. The ex-post facto research, being a systematic empirical inquiry, the scientists have no direct control over independent variables (Kerlinger, 1973). Further, the simultaneous measurements on independent and dependent variables were recorded with great care.

3.4 The Research Instrument

An interview schedule was prepared for data collection from the women beneficiaries of social forestry program who had at least one 3 months participation in social forestry program.

The questions and statements contained in the schedule were simple, direct and easily understandable by the respondents. The schedule contained both open and closed form questions. The schedule was prepared in Bengali language for clear understanding of the respondents. However, an English version of the questionnaire has been presented in Appendix-I. Prior to final data collection, the completely developed interview schedule was pre-tested among 5 respondents. Corrections, alterations and adjustments were done in the schedule on the basis of the pre-test result and this finalized schedule was used for data collection.

3.5 Data Collecting Procedure

Data were collected through personal interviewing by the researcher herself. Prior to data collection, the researcher requested the field level workers and respective officials to provide necessary help and co-operation. Respective workers of the study area introduced local leaders and group leaders who were also very helpful for the researcher in collecting data. The researcher made all possible efforts to establish rapport with the respondents so that they could feel easy to respond to the questions contained in the schedule. All possible

efforts were made to explain the purpose of the study to the respondents and their answers were recorded sincerely. Whenever, any respondent felt difficulty in understanding any question, care was taken to help her getting understand of the same. The researcher in collecting data faced no serious problem. Though the researcher made every endeavor to arrive all of the respondents' house and field, it was not possible to collect data from two farmers of the samples, as they were not available during interviewing. Therefore, the researcher compelled to replace the unavailable respondents by two individuals from the reserve list. Collection of data took 30 days from 1 November 2020 to 1 December 2020. Data collected thus from the respondents were compiled, tabulated and the qualitative data were converted into quantitative form by mean of suitable scoring whenever needed.

3.6 Selections of the Variables of the Study

In scientific research, selection and measurement of variable constitute an important task. Participation of the rural women was the main focus of this study that is the dependent variable. The researcher employed adequate care in selecting the variables of the study. Considering personal, economic, social and psychological factors of the rural community, time and resources availability to researcher, reviewing relevant literature and discussing with relevant expert, the researcher selected the variables for the study.

Two types of variables were used in this study e.g., independent and dependent variable. According to Townsend (1953) an independent variable is that factor manipulated by the experimenter in his attempt to ascertain its relationship to an observed phenomenon and dependent variable is that factor which appears, disappears, or varies as the experimenter introduces, removes or varies the independent variables. Impact of social forestry program as perceived by the women beneficiaries was the main focus of this study and it was considered as the dependent variables. The researcher selected following characteristics of the respondents as the independent variables. These were age, level of education, Annual family income, duration of involvement in social forestry program, participation in social forestry program, training exposure, knowledge on social forestry and constraints faced in social forestry program.

3.7 Variables and their Measurement

Measurements of variables constitute an important task of social research. This section contains procedures for measurement of independent variables and dependent variables of the study.

3.7.1 Measurement of independent variables

The operationalization of independent variables is shown below:

3.7.1.1 Age

Age of a respondent of rural women referred to as the period of time from her birth to the time of interview. A score of one was assigned for each year of her age.

3.7.1.2 Education

Education was measured on the basis of completed years of schooling by a respondent in the educational institutions. A score of 1 was given for each completed year of schooling. A respondent who did not know how to read and write was given the score of zero. A score of 0.5 was given to a respondent who only could sign her name.

3.7.1.3 Annual family income

Annual family income of a respondent was measured in taka on the basis of total yearly earning of the respondents from agriculture, livestock, poultry, fishery, business and services according to his response. A score of one (1) was assigned for each '1000' taka of the annual family income of a respondent.

3.7.1.4 Working distance

Working distance of the participants was measured in kilometer (km) and it indicates the distance between the house and the site they work.

3.7.1.5 Duration of involvement with social forestry program

Duration of involvement with social forestry program was determined by total number of years of involvement by the respondents with social forestry program. A score of one (1) was assigned for each year of involvement.

3.7.1.6 Participation in social forestry program

Participation in social forestry program was measured with seven activities by developing a rating scale. A respondent was asked to indicate his opinion about each of the activity along with a four point scaling as not at all, low, medium and high participation. Scores were assigned for these opinions as 0, 1, 2, and 3 respectively. The total participation score of a respondent was computed by adding her scores for all the seven items. Thus, the participation in social forestry program could range from 0 to 21, where 0 indicating no participation and 21 indicating the highest participation.

3.7.1.7 Training exposure

Training exposure was determined by total number of days of training received by the respondents in her entire lifetime on agriculture or forestry related topics organized by any organization. A score of one (1) was assigned for each day of received training.

3.7.1.8 Knowledge on social forestry

For measuring the knowledge on social forestry of a respondent, a knowledge scale was developed. For this, each respondent was asked 11 questions covering the different aspects of social forestry. Each question had a predetermined assigned score of 2, making a total score of 22. For correct responses to all the 11 questions, a respondent could secure a total score of 22. Otherwise for wrong responses to all the questions she could get a score of zero (0). For partial correct responses, scores were assigned accordingly. The sum of total scores for all the 11 questions yielded the knowledge score of a respondent. Thus, knowledge on social forestry score of the respondents could range from 0 to 22, when 0 indicates no knowledge and 22 indicates very high knowledge on social forestry.

3.7.1.9 Major benefits obtained

The respondents were asked about the final product or the main benefits they get through participating in social forestry and they mentioned some name like cash, fuel wood, timber or other products which is described in this part.

3.7.1.10 Constraints faced in social forestry program

As many as 10 constraints in connection with social forestry were included in constraint facing scale in the interview schedule after pre-testing of the schedule. The respondents were asked to give their response as 'not at all', 'low', 'medium' and 'high' for each constraint included in constraint facing scale based on their extent of constraint facing in different social forestry and relevant activities. The weights for 'not at all', 'low', 'medium' and 'high' constraints faced responses were 0, 1, 2 and 3 respectively. Thus constraints faced in social forestry program score could range from 0 to 30, where 0 indicates no constraints and 30 indicates very high constraints faced in participating social forestry program.

3.7.2 Measurement of dependent variable

Rural women generally perform a number of social forestry activities. However, their participation in social forestry activities has been confirmed to (i) tree plantation (ii) maintenance of the plantation, (iii) post-harvest activities as dependent variables for the study. Before selecting the dependent variables, the researcher discussed with the resource personnel in this area and visited the study area for better identification of dependent variables.

3.7.2.1 Measurement of Participation of Rural Women in Social Forestry Activities

To measure participation of the rural women in four selected areas, following items were selected under each of the social forestry activities which are as follows:

1) Participation in tree plantation

- a) Land selection and preparation
- b) Tree species selection
- c) Selection of intercrops

2) Participation in the maintenance of plantation

- a) Nutrient management
- b) Pest management

- c) Irrigation/drainage
- d) Intercultural operations

3) Participation in post-harvest activities

- a) Harvesting
- b) Processing
- c) Sorting
- d) Grading
- e) Marketing

Thus, 12 items were selected to measure rural women's participation in social forestry activities which were categorized under three classes named tree plantation, maintenance and post-harvest activities.

3.8 Measurement of Problem Confrontation Index (PCI) in Participating Social Forestry Activities

The rural women of the study area might have faced various types of problems in participating social forestry activities. But the investigator gained an experience through personal contact regarding common problems faced by the respondents at the time of data collection. Besides, the researcher gained knowledge through consultation with experts, pre-testing experience and reviewing previous research findings. Finally, the researcher prepared a list of ten possible problems in this regard. A scale was prepared to indicate the extent to which each of the ten problems was applicable in the case of a respondent. The respondents were asked to indicate the degree of severity of the problems in a 5-point scale as 'high problem', 'moderate problem', 'low problem'. Weights were assigned to those responses as '3', '2' and '1' respectively.

To measure Problem Confrontation Index (PCI), the following 10 (ten) items were selected:

- i. Lack of cooperation from male partner

- ii. Problem of plantation in low land
- iii. Plant destruction by cattle and goat
- iv. Complexity in sharing trees at the end land
- v. Saplings and trees are stolen by thief
- vi. Social restriction of women to participate in social forestry'
- vii. Religious restriction on participating social forestry program
- viii. Lack of required land
- ix. Difficulties in pest control
- x. Destruction of plantation by excessive storm, drought and flood

The Problem Confrontation Index (PCI) for each problem was computed by using the following formula:

$$PCI = (Ph \times 3) + (Pm \times 2) + (Pl \times 1) + (Pn \times 0)$$

Where,

Ph =Percentage of rural women who confronted high problem

Pm =Percentage of rural women who confronted moderate problem

Pl =Percentage of rural women who confronted low problem

Pn =Percentage of rural women who confronted no problem at all

3.9 Instrument for data collection

In order to collect valid and reliable information from the women beneficiaries, an interview schedule was carefully designed keeping the objectives in mind. Sample and direct questions and different scales were used to obtain information. Direct questions were included to collect information about age, education etc. and scale were used to measure the change in income, knowledge about social forestry, change in decision making ability etc.

An English version of the interview schedule has been presented in Appendix A. the interview schedule was pre-tested with 5 sample respondent from the study area during November, 2020. Necessary corrections change and modifications were made in the interview schedule on the basis of the pretesting information. The modified and corrected interview schedule was then printed in the final copy.

3.10 Collection of Data

The researcher herself collected essential data through personal interview with the individual respondent. The researcher first selected the target clients in selected areas from the list of upazila forest office. The researcher took all possible care to establish rapport with the respondents so that the respondents do not hesitate to furnish proper responses to the questions and statements. For this study data were collected during 1st November to 30th November, 2020.

3.11 Compilation of data

After completion of field survey data from all the interview schedules were coded, compiled, tabulated and analyzed in accordance with the objectives of the study. In this process, all the responses in the interview schedule were given numerical coded values. Local units were converted into standard units and qualitative data were converted into quantitative ones by means of suitable scoring system whenever necessary. The responses to the questions in the interview schedules were transferred to a master sheet to facilitate tabulation.

3.12 Categorization of data

For describing the different characteristics and impact of social forestry program as perceived by the women beneficiaries, the respondents were classified into several categories. These categories were developed by considering the nature of distribution of data, general understanding prevailing in the social system and possible scores system. Qualitative data were converted into quantitative data by means of suitable scaling wherever necessary. Descriptive statistics and correlation such as number and percentage distribution, range, mean, standard deviation were used in describing the variables and their relationship of the study.

3.13 Statistical techniques

The computer software SPSS (Statistical Package for Social Sciences) was used to analyze the data. The following statistical treatments were used to describe, represent and explanation of the relationships and contributions of the variables included in the study. Descriptive statistical measures such as frequency, range, mean, number and percentage distribution, valid percentage, cumulative percentage, standard deviation, coefficient of variation, rank order, indices etc. were used to describe and interpret the data.

3.14 Hypotheses of the Study

In order to guide collection of relevant data and analysis and interpretation of the same a set of hypothesis was formulated for empirical testing. As defined by Godoy and Claudio (1998) a hypothesis is proposition which can be put to a test to determine its validity. According to Kerlinger (1973) a hypothesis is a conjectural statement of the relation between two or more variables. Hypothesis are always in declarative sentence form and they are related, either generally or specifically from variables to variables.

3.14.1 Null hypotheses

To find out relationship between variables a researcher first formulates research hypothesis which narrates anticipated relationships between the variables. Based on review of literature and development of conceptual framework, the following research hypotheses were formulated:

“Each of the selected characteristics (level of education, annual family income, working distance, duration of involvement in social forestry program, participation in social forestry program, training exposure, knowledge on social forestry, main benefits obtained, effects and constraints faced in social forestry program) of the women beneficiaries has significant relationships with their perceived impact of social forestry program.

3.15 The Conceptual Framework of the Study

Properly constructed hypothesis of any research contain at least two variables namely, “dependent variable” and “independent variable”. Selection and measurement of those variables is an important task. A dependent variable is that which varies as the researcher

introduces, remove or varies the independent variables (Townsend, 1953). An independent variable is that factor which is manipulated by the researcher in his attempt to ascertain its relationship to an observed phenomenon.

This study was concerned with the participation of social forestry by the women Beneficiaries which may be affected through interacting forces of many independent variables. It is not possible to deal with all independent variables in a single study. It was therefore, necessary to limit the independent variables, and eight selected characteristics of the women beneficiaries were considered which included age, level of education, annual family income, duration of involvement in social forestry program, participation in social forestry program, training exposure, knowledge on social forestry, major benefits obtained and constraints faced in social forestry program.

The present study tried to focus two concepts: the first, the selected characteristics of rural women and the second, participation of the rural women in social forestry. In view of prime findings and foregoing discussion, the researcher constructed a conceptual framework of the study which is presented in Figure 1.

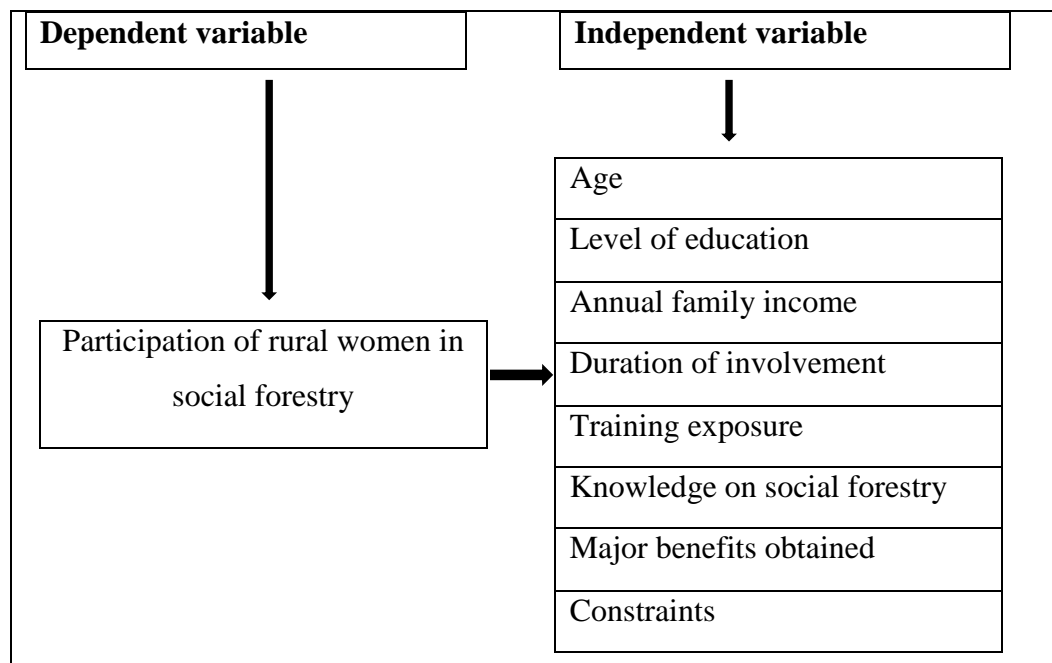


Figure 3: The conceptual framework of the study

CHAPTER 4

RESULTS AND DISCUSSION

In this chapter the findings of the study and their interpretations have been conveniently presented according to the objectives of the study. In accordance with the objectives of the study findings are presented in five sections. The first section, eight selected characteristics of the women beneficiaries are discussed. In the second section, the extent of change in income, food consumption, housing environment and in decision-making ability of the beneficiaries are presented. In the third section, discussions have been made on the relationships between selected characteristics of the respondents and impact of social forestry as perceived by them. In the fourth section, contributions of selected characteristics of the respondents to the impact of social forestry have been focused. The fifth section, comparative constraints faced by the women beneficiaries in social forestry program has been discussed.

Table 2. Showing village name of the respondent from where data is collected

Village name	Frequency	Percent
Agorghata	13	18.8
Kashimnagar	20	29.0
Batikhali	24	34.8
Noakati	12	17.4
Total	69	100.0

From the above table, the name of the villages has shown from where data is collected. Respondents are selected from 4 different villages named Agarghata, Batikhali, Kashimnagar, and Noakati. According to the table, Batikhali has the highest frequency 24. On the other hand, Noakati shows the least frequency 12. That means women of Batikhali villages are comparatively more involved in social forestry and lowest participation has found in the village Noakati.

4.1 Selected Characteristics of the Respondents

According to the objectives of the study, data were collected from a sample of 69 women beneficiaries. Followings are the findings of each of the selected characteristics of the respondents in separate table along with the interpretations.

Table 3. Classification of the respondents according to their age, education and annual income

Age based categories (in years)	Frequency	Percent	Educational level based categories (in year of schooling)	Frequency	Percent	Annual family income based categories (in '000' Taka)	Frequency	Percent
Young (24 to 29)	31	45.1	Illiterate (<1)	27	39.1	Low (19 to 50)	62	89.9
Middle aged (30 to 39)	24	34.6	Primary (1 to 5)	20	29	Moderate (51 to 100)	6	8.7
Old (up to 55)	14	20.3	Secondary (6 to 10)	19	26.6	High (>100)	1	1.4
Total	69	100	Higher (>10)	3	5.3	Total	69	100
			Total	69	100			

4.1.1 Age

The age of the women beneficiaries ranged from 24 to 55. On the basis of age the respondents were classified into 3 categories viz. 'young', 'middle aged' and 'old'. The distribution of the women beneficiaries according to their age is presented in Table 3.

As per the above table, age of the respondents limits from 24 to 55 years old. Most of the respondents are young aged (45.1 percent) followed by middle aged having age within 30 to 39 years. Women within the range of 40 to 50 years are less likely interested in social forestry as they show the lowest frequency of respondents involved. Copp (1958) in his

study concluded that younger and middle aged peoples seemed to be more inclined to adopt new practices than that of older ones. In the present study, vast majority (79.7 %) of the women beneficiaries felt under young and middle aged category. So necessary attention and appropriate strategies can be taken to involve those young and middle aged people in different programs and activities in order to achieve sustainable development.

4.1.2 Level of education

The educational scores of the women beneficiaries ranged from 0 to higher education. Based on their educational scores, the women beneficiaries were classified into four categories such as 'illiterate' (<1), 'primary education' (1 to 5) 'secondary education' (6 to 10) and higher secondary (up to 12). The distribution of the women beneficiaries according to their level of education has been presented in Table 3 where 39.1 percent of total respondents were illiterate, 29 percent completed primary education followed by 26.6 percent completed secondary and 5.3 percent higher secondary education. Rashid (2004) observed a similar finding of the present study up to primary educational level which somewhat supported the findings of the present study.

4.1.3 Annual family income

Annual family income of the respondents ranged from 19 to more than 100 thousand taka. On the basis of their Annual family income, the farmers were classified into three categories, such as low family income, moderate family income and high family income. The distribution of the women beneficiaries according to their annual income has been presented in Table 3. Most of the women (about 90%) in this study are under low annual income category.

4.1.4 Distance of working area and its effect on participation

In this study distance means the space between the home and working place of the participants which is measured in kilometer (km), number of participants within the range and if their participation is hampered or not due to distance is also shown in the table 4.

Table 4. Classes of working distance and its effect on participation in social forestry

Working Distance	Number of Participants	Percentage	Effect of distance on participation	
			Yes (%)	No (%)
0 to 0.5	25	36.23	12 (48)	13 (52)
0.5 to 1	32	46.38	20 (62)	12 (38)
1 to 2	12	17.39	7(58.33)	5 (41.67)
Total	69	100.00		

From table 4 it can be said that almost half of the participants are within the range of 0.5 to 1 km which is 46.38%. Also majority said distance hinders participation. As a woman has to play vital role in case of looking after the family so lower distance will probably be an advantage to them in case of participation.

4.1.5 Duration of involvement in social forestry program

Duration of involvement of the women beneficiaries in social forestry which ranges from 1 to 10 years with a mean, standard deviation and variance 1.36, 0.593 and 0.352 respectively. According to the duration they are classified into three categories short duration (1 to 5 years), medium (5 to 10 years) and long duration (more than 10 years). The distribution of the women beneficiaries according to duration of involvement in social forestry program is presented in table 5.

Table 5. Categorization of working years of the respondents according to their involvement

Duration based categories (years)	Frequency	Percent
Short duration(1 to 5)	49	71.0
Medium(6 to 10)	19	27.5
Long duration (> 10)	1	1.4
Total	69	100.0

According to the above table, working years of respondents are different, limiting from 1 up to 10 years. Here, most of the respondents have been working for 1 to 5 years which has the highest frequency 49 (71 percent) out of 69 followed by medium duration with the number 19 (27.5 percent).

4.1.6 Participation in social forestry program

Participation means involvement in social forestry program. According to their activities, the respondents were classified into three categories viz. "participation in tree plantation, 'maintenance of plantation' and 'post-harvest activities'. The distribution of the women beneficiaries according to their participation in social forestry program has been presented in Table 6.

Table 6. Distribution of women beneficiaries according to their participation

Categories	Activities	Frequency	Percent	Total particip ator	Percent
Participation in tree plantation	Land selection and preparation	10	38.5	26	37.7
	Tree species Selection	7	26.9		
	Selection of Intercrops	9	34.6		
Maintenance of plantation	Plant nutrient Management	5	15.1	33	47.9
	Pest management	8	24.3		
	Irrigation	7	21.2		
	Intercultural operations	13	39.4		
Post-harvest activities	Harvesting	3	30	10	14.4
	Processing	2	20		
	Sorting	1	10		
	Grading	2	20		
	Marketing	2	20		
Total				69	100

Table 6 indicates that 26 participators take part in tree plantation which is 37.7 percent of total respondents. Maintenance of plantation constitute the highest proportion (47.9 percent) and the lowest in post-harvest activities (14.4 percent). Active participation is another crucial factor for getting impact of any program. The concerned authority should take appropriate strategies and policies to make active participation of the women beneficiaries in social forestry program and that will be helpful for the women beneficiaries for getting high impact.

4.1.7 Training exposure

Training exposure means acquiring practical knowledge on related subject matter before or during joining social forestry. Based on their training exposure scores, the respondents were grouped into four categories as ‘no training’, ‘training on farm forestry’, ‘training on tree plantation and protection’ and ‘training on tree crop management’. The distribution of the women beneficiaries according to their training exposure is shown in Table 7

Table 7. Categorization of beneficiaries according to training exposure

Name of Training	Organization	Frequency	Percentage
No Training	-	8	11.4
Training on Farm Forestry	BRAC ¹	30	38.3
Training on Tree Plantation and Protection	DALIT	20	34.2
Training on Tree Crop Management	ASA ²	11	16.1
	Total	69	100

¹BRAC- Bangladesh Rural Advancement Committee

²ASA -Association for Social Advancement

³DALIT- Organization mainly work for rural women

Data in Table 7 revealed that the majority of the women beneficiaries had received training among them 38.3 percent received training on Farm Forestry which has the highest frequency (30) followed by 34.2 percent who received training on Tree Plantation and Protection and 16.1 percent on Tree Crop Management. But 11.4 percent of the respondents were found under no training exposure category. Training generally increases knowledge

and skills of individuals, which they can apply to their farm operations. Therefore, a trained woman would like to update and incorporate her knowledge and skill to her farm operations and seems to get more impact from it.

4.1.8 Knowledge on social forestry

On the basis of observed knowledge scores, the respondents were classified into three categories namely, ‘poor knowledge’, ‘moderate knowledge’ and ‘adequate knowledge’. The distribution of the respondents according to their knowledge is given in table 8.

Table 8. Distribution of women beneficiaries according to their knowledge on social forestry

Knowledge based categories (Score)	Frequency	Percent
Poor knowledge (0-8)	7	6.7
Moderate knowledge (9-15)	37	56.6
Adequate knowledge (16-22)	25	37.7
Total	69	100.0

Data of Table 8 reveals that majority (56.6 percent) of the respondents fell in moderate knowledge category followed by 37.7 percent in adequate knowledge category and 6.7 percent in poor knowledge category. Knowledge is considered as vision of an explanation in any aspect of the situation. It is the state of understanding; clear perception of fact or truth, that helps an individual to foresee the consequence she may have to face in future. It makes individuals to become rational and conscious about related field. Hence, the concerned authority should give appropriate emphasis to increase the knowledge level of the women beneficiaries in different aspects of social forestry.

4.1.9 Selection of trees in the social forestry program

There are some basic principles of selecting trees those are best suited for a successful social forestry program. Selection may vary due to location, soil and moisture condition, atmosphere, marketing facilities, local demand etc. In this section a classification is made on the basis of tree selection procedure which is shown in figure 4.

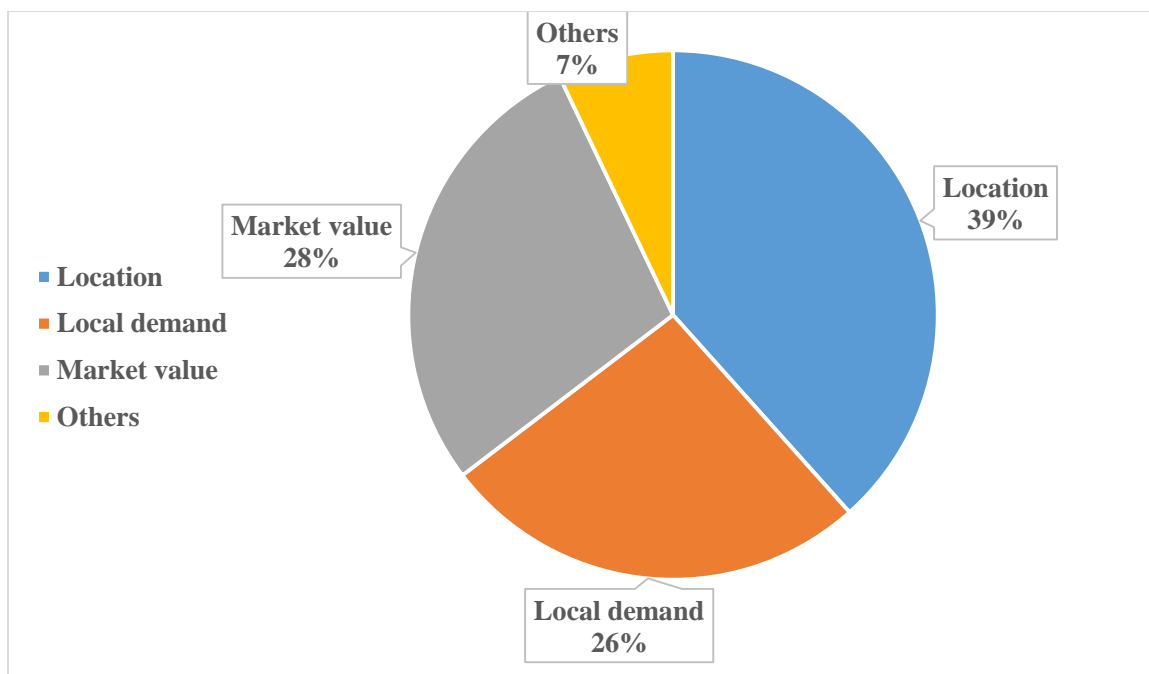


Figure 4. Pie chart showing categories of tree selection

4.1.10 Major benefits obtained as a participant

As the respondents are rural women and most of them are poor. So there must be a reason to join social forestry. They have different reason on joining social forestry such as for economic benefit where they get direct cash as their major benefit environmental benefit or for other purposes which is shown in table 9.

Table 9. Indicating major benefits that is obtained from social forestry as a participant

Categories	Frequency	Percent
Cash	31	44.9
Wood	27	39.1
Others	11	15.9
Total	69	100.0

This table indicates that majority (44.9 percent) obtain cash as their major benefits from social forestry. 27 respondents (39.1 percent) state that timber or fuel wood is their major

benefit and rest (15.9 percent) obtain other benefits. This table indicates that if money is provided as the final outcome, more women will be interested in joining social forestry.

4.1.11 Frequency of Receiving Benefits

They respondents usually get money, wood or other benefits as their final outcome. In this section we will see the frequency of receiving the outcome which is categorized into 3 classes in every 3 months, in every 6 months, once a year and once every 2 years is shown in table 10.

Table 10. Classes of frequency of receiving the final outcome

Categories of Frequency	Number of Respondents	Percentage
In every 3 months	11	15.94
In every 6 months	18	26.09
Once a year	31	44.93
Once every 2 years	9	13.04
Total	69	100.0

From the above table it is seen that about half of the respondents (44.93%) receive the outcome once a year followed by in every 6 months (26.09%), in every 3 months and once every 2 years. But according to their opinion it would be better to be paid in every 3 months as most of them are poor people.

4.1.12 Purposes behind joining social forestry

The respondents were asked the actual reason behind joining social forestry. According to their reply the table 4.9 is classified into economic purpose, environmental purpose and just for enjoyment.

Table 11. Categories of the reason of joining social forestry

Classes of Purposes	Number of Participants	Percentage
Economic purpose	49	71.02
Environmental purpose	11	15.94
Enjoyment purpose	9	13.04
Total	69	100.0

From table 11 it is said that almost two third participants joined because of economic purpose and a few are of environmental purpose followed by enjoyment. It is a natural scenario as for those poor helpless people who can't ensure of their basic needs properly.

4.1.13 Impact of social forestry

Impact means possible changes that is observed before and after involvement or joining in social forestry. Remarkable changes has observed among the participants due to their participation changes are noticed in house condition, food consumption, sanitation, drinking water sources and decision making which is shown in table 12.

Table 12. Showing the changes created due to impact of social forestry

Characteristics	Before Involvement		After Involvement	
Housing Condition				
Kacha	32	46.38	21	31.0
Bamboo	30	43.48	35	53.2
Tin	7	10.14	13	15.8
Total	69	100.0	69	100.0
Food Consumption				
Can't manage to eat properly	13	18.84	2	2.90
Rice or Bread (daily)	21	30.43	30	43.48
Fish , meat, milk, egg (weekly)	26	37.68	28	40.58
Fruits (weekly)	9	13.04	9	13.04
Sanitation				
Half sanitary	48	69.57	23	35.67
Sanitary	21	30.43	46	66.67
Drinking water source				
Pond or others tube well	51	73.91	19	27.54
Own tube well	18	26.09	50	72.46
Role in decision making				
No role at all	34	49.28	5	7.25
Education of children	10	14.49	15	21.74
Marriage of children	8	11.59	14	20.29
Family planning	9	13.04	15	21.74
Crop production and selection	8	11.59	20	28.99
Total	69	100.0	69	100.0

Table 12 shows the differences of some basic rights of the participants before and after involvement with social forestry. Most of the cases it is noticed that their situation has been improved after joining social forestry as they started making money and thus their social and economic status has improved.

4.1.14 Constraints faced in social forestry program

Participating in social forestry is not at all easy for women beneficiaries due to various social and religious restrictions. Constraints that are usually faced by the participants are classified into several categories such as Plant destruction by cattle and goat, Complexity in sharing trees at the end, Seedling and trees are stolen by thief, Social restriction of women to participate etc. shown in Table 13.

Table 13. Several constraints faced by the workers during their participation

Constraints	Number of Participants	Percentage
Lack of co-operation of male partner	5	7.25
Lack of required land	7	10.14
Plant destruction by cattle and goat	4	5.80
Complexity in sharing the final output during distribution	9	13.04
Problem of plantation in low land and salinity	10	14.49
Difficult to control pest	7	10.14
Destruction of transplanted plant by excessive storm, drought and flood	8	11.59
Saplings are stolen by thief	6	8.70
Social restriction of women to participate in social forestry	7	10.14
Religious restriction on the women to participate in social forestry program	6	8.70
Total	69	100.0

From the above table it can be said that according to the respondents among several constraints Plantation in low land as well as salinity is the upper most constraints in a successful social forestry program. Complexity in sharing the final output during distribution is the second major constraints thus followed by other constraints and Plant destruction by cattle and goat is found as the lowest constraints. So appropriate strategies

and policies should be taken to reduce the constraints to achieve maximum output from social forestry program. Appropriate communication and motivational programs can be taken in this context.

4.1.15 Opinion of the beneficiaries about social forestry

After the overall session the respondents were asked to share their opinion about social forestry to know actually what they think about it, is it beneficial or not and also can it be encouraged or not to others those are not participating yet. The opinion of the beneficiaries are shown in figure 5.

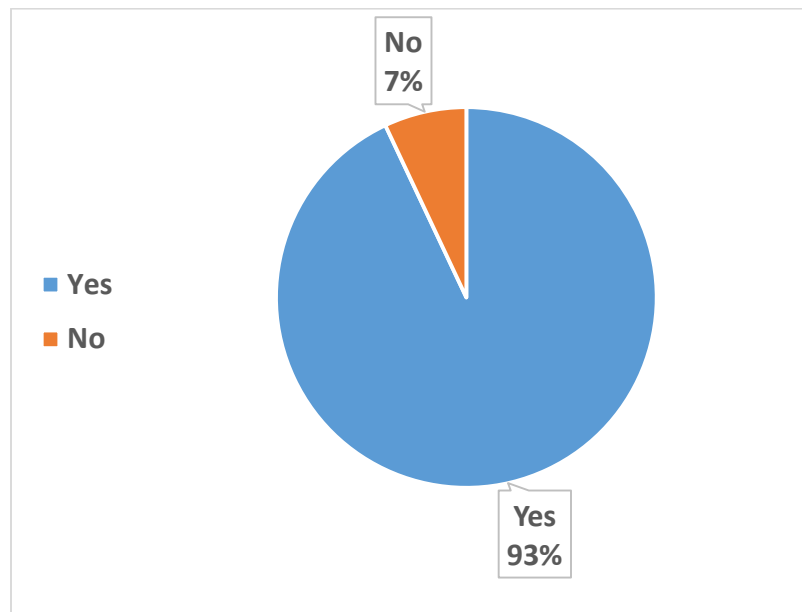


Figure 5. Representing the opinion of the beneficiaries to encourage social forestry

The above figure represents the opinion of the participant and it is showed that maximum respondents (94%) said it is a beneficial program that can change a person through changing their economic and social status and thus improves living standard. Rest (7%) are against it because of the constraints they have to face. So they think following proper strategies if constrains can be minimized then social forestry can be one of the best media to ensure their basic rights as well as bring prosperity and happiness to the helpless rural women.

4.2 According to the correlation co-efficient relationship between the selected characteristics of rural women and their participation in social forestry

The purpose of this section is to explore the relationship between the selected characteristics of the rural women and their participation in social forestry. The selected characteristics constituted the independent variables and the participation in social forestry was the dependent variable. Karl Pearson's correlation co-efficient 'r' was used to test the null hypothesis between the two concerned variables. A hypothesis was rejected when the observed 'r' value was greater than the tabulated value of at 0.05 level of probability.

Pearson's Product Moment Co-efficient of Correlation (r) has been used to test the hypothesis concerning the relationship between two variables. Five percent and one percent level of probability were used as the basis for rejection of a hypothesis. The summary of the results of the co-efficient of correlation indicating the relationships between the selected characteristics of the respondents and their participation in social forestry is shown in Table 14.

Table 14. Correlation coefficient between the selected characteristics of the rural women with their participation in social forestry

Dependent Variable	Independent Variables	Correlation Co-efficient	Tabulated value of 'r' at 68 degree of freedom	
			0.01 level	0.05 level
Participation in social forestry	Age	0.164		
	Education	0.254*		
	Annual income	0.290*		
	Working distance	0.235*		
	Duration of involvement	0.346*		
	Knowledge on social forestry	0.665**	0.501	0.232
	Training exposure	0.248*		
	Impact	0.809**		
	Participation	0.598**		
	Major benefits obtained	0.487*		
	Constraints	0.854**		

*Means significant at 5 percent (0.05) level of significance

**Means significant at 1 percent (0.01) level of significance

4.3 Relationship between the Selected Characteristics of the rural women and their Participation in social forestry

4.3.1 Relationship between age of the rural women and dependent variable

Computed value of the co-efficient of correlation between age of the rural women and their participation was 0.164. The computed value of r (0.164) was smaller than that of the tabulated value (r=0.232) with 68 degrees of freedom at 0.05 level of probability as shown in Table 14. Hence, the concerned null hypothesis was accepted and it was concluded that

age of the rural women had no significant relationship with their participation in social forestry.

Similar findings were reported by Ahmed (1995), Wahiduzzaman (2004), Asaduzzaman (2003), Ali (2003) in case of food consumption and Amin (2002).

4.3.2 Relationship between education and dependent variable

The computed value of r (0.254) was greater than that of the tabulated value ($r=0.232$) with 68 degrees of freedom at 0.05 level of probability as shown in Table 14. Hence, the concerned null hypothesis was rejected and it was concluded that education of the rural women had significant relationship with their participation in social forestry.

This indicates that increased level of education results increase of participation in social forestry program as perceived by the women beneficiaries. The educated persons are more conscious about new technologies. Consciousness towards social forestry program may lead them to perceive more impact from social forestry program. Similar findings were obtained by Wahiduzzaman (2004), Asaduzzaman (2003), Ali (2003), Amin (2002) and Kabir (2001) in their respective studies.

4.3.3 Relationship between annual family income and dependent variable

The computed value of r (0.290) was greater than that of the tabulated value ($r=0.232$) with 68 degrees of freedom at 0.05 level of probability as shown in Table 14. Hence, the concerned null hypothesis was rejected and it was concluded that family income of the rural women had significant relationship with their participation in social forestry.

4.3.4 Relationship between working distance and dependent variable

The computed value of r (0.235) was greater than that of the tabulated value ($r=0.232$) with 68 degrees of freedom at 0.05 level of probability as shown in Table 14. Hence, the concerned null hypothesis was rejected and it was concluded that working distance from the house of the rural women had significant relationship with their participation in social forestry.

4.3.5 Relationship between duration of involvement and dependent variable

The computed value of r (0.346) was greater than that of the tabulated value ($r=0.232$) with 68 degrees of freedom at 0.05 level of probability as shown in Table 14 with a positive trend. Hence the null hypothesis was rejected and it was concluded that duration of involvement of the rural women had significant relationship with their participation in social forestry.

This indicates that participants with long duration of involvement had more participation and perceived more impact of social forestry program. The finding was supported by Alam (2001).

4.3.6 Relationship between knowledge on social forestry and depend variable

The computed value of (0.665) was greater than that of the tabulated value ($r=0.232$) with 68 degrees of freedom at 0.05 level of probability as shown in Table 14. Hence, the concerned null hypothesis was rejected and it was concluded that knowledge on social forestry of the rural women had significant relationship with their participation in social forestry.

Knowledge broadens the horizon of outlook of an individual and it helps an individual to be conscious about different issues of development. Thus, respondents with more knowledge on different issues of social forestry are more involved in social forestry and get more impact of social forestry. Similar findings were reported by Amin (2002) and Islam (2000).

4.3.7 Relationship between training exposure and dependent variable

The computed value of r (0.248) was greater than the tabulated value ($r=0.232$) with 68 degrees of freedom at 0.05 level of probability as shown in Table 14. Hence, the concerned null hypothesis was rejected. The findings indicated that training exposure of the rural women had significant relationship with their participation in social forestry.

This indicates that increased training exposure of the women beneficiaries results increased participation and impact of social forestry program as perceived by them. Training helps an individual to be acquainted with advantages and limitations of different technologies.

Farmer having training exposure tries to acquire related information and as a result they enjoy participating more. The study of Wahaduzzaman (2004), Asaduzzaman (2003) and Kabir (2001) supported the present result.

4.3.8 Relationship between impact of social forestry and dependent variable

The computed value of r (0.809) was greater than the tabulated value ($r=0.232$) with 68 degrees of freedom at both 0.05 and 0.01 level of probability as shown in Table 14. Hence, the concerned null hypothesis was rejected. The findings indicated that participation and impact had great significant relationship.

4.3.9 Relationship between participation and dependent variable

The computed value of r (0.598) was greater than the tabulated value ($r=0.232$) with 68 degrees of freedom at both 0.01 and 0.05 level of probability as shown in Table 14. Hence, the concerned null hypothesis was rejected. The findings indicated that training exposure of the rural women had significant positive relationship with their participation in social forestry.

This indicates that with the increase of the participation in different aspects of social forestry program by the women beneficiaries results increased impact of social forestry program as perceived by them.

4.3.10 Relationship between major benefits obtained and dependent variable

The computed value of r (0.487) was greater than the tabulated value ($r=0.232$) with 68 degrees of freedom at 0.05 level of probability as shown in Table 14. Hence, the concerned null hypothesis was rejected. The findings indicated that major benefits obtained by the rural women had significant positive relationship with their participation in social forestry.

This indicates that the major benefits perceived by the beneficiaries has positive effects in case of their participation. That means if they get cash as benefit the rural women will participate more in social forestry.

4.3.11. Relationship between constraints and dependent variable

The computed value of r (0.854) was greater than the tabulated value ($r=0.232$) with 68 degrees of freedom at both 0.05 and 0.01 level of probability as shown in Table 14. Hence, the concerned null hypothesis was accepted. The findings indicated that constraints faced by the rural women had great significant relationship with their participation in social forestry.

4.4 Comparative Problem Confrontation of the Rural Women in Participating social forestry

The problem faced index (PFI) was calculated to find out major problems confronted by the rural women for participating social forestry. It is obvious that the rural women face a number of problems or constraints in performing social forestry activities, the extent and types of problems are diversified as they are mostly controlled by nature. However, after discussion with the respondents ten major problems were selected to measure the extent of problem faced. In order to understanding the comparative importance, the problems have been arranged in rank order according their PFI as shown in Table 15.

Table 15. Rank order of constraints faced in social forestry program with PFI

Sl. No.	Constraints	Opinion on extent of problem				PFI	Rank Order
		Not at all	Low	Medium	High		
1	Lack of co-operation of male partner	0	6	23	71	238.2	1
2.	Problem of plantation in low land and salinity	6	5.0	19.9	60.5	211.6	2
3.	Complexity in sharing trees at the end	8	14	29	48	84.7	3
4.	Plant destruction by cattle and goat	1.9	6.6	80	11.5	54.3	4
5.	Seedling and trees are stolen by thief	70.5	11.3	12.5	5.7	32.5	5

6.	Social restriction of women to participate in social forestry	96.1	0	2.0	1.9	21.6	6
7.	Religious restriction on participating social forestry program	93.3	1.8	3.9	1.0	15.8	7
8.	Lack of required land	96.1	2.1	1.8	0	4.2	8
9.	Difficulties in pest control	100	0	0	0	0	9
10.	Destruction of transplanted plant by excessive storm, drought and flood etc.	100	0	0	0	0	10

From Table 15 it was observed that –

(1) On the basis of Problem Confrontation Index (PCI), ‘lack of co-operation of male’ ranked first with a PCI of 238.2. It was found that most of the cases there was lack of required land to practice social forestry. As majority of the respondents are in small and marginal farm size categories, they cannot arrange necessary land for cultivating tree species. They try it to the marginal area of own homestead and road sides and embankments of ponds and to other similar places.

(2) According to the PCI, plantation in low land and salinity ranked second with a PCI of 211.6. Tree plantation requires comparatively high land. Due to lack of high land as well as salinity only some specific types are only planted in those area. Being coastal region salinity problem is faced with water flooding condition which hampers the planted trees and indicated as another major problem.

(3) On the basis of Problem Confrontation Index (PCI) complexity in sharing trees during distribution ranked third with a PCI of 84.7. Problem arises at the end of the program when benefits are distributed among the beneficiaries and which affects participation of the rural women negatively.

(4) Problem Confrontation Index indicates that plant destruction by cattle and goat complexity in sharing trees at the end ranked fourth with a PCI of 54.3. Cattle and goat damage the plantation severely and shows negative impact on social forestry.

(5) Stealing of seedlings and trees after plantation by thief indicates PCI 32.5 which ranked fifth according to the Problem Confrontation Index.

(6) In our society women have to face various types of restriction in any case. Social restriction is such a case which indicates PCI 21.6 according to the Problem Confrontation Index which hinders the participation of rural women in social forestry.

(7) Religious restriction is another major constraint which is more familiar in case of rural area and rural women are the victims that hinders the participation of rural women in social forestry. Problem Confrontation Index shows a PCI with 15.8 and which ranked as seventh major constraints faced by rural women during participating social forestry.

(8) On the basis of Problem Confrontation Index (PCI), 'lack of required land' ranked eighth with a PCI of 4.2. In our existing social system male always tries to dominate female. So without their cooperation it is hard for women to participate in social forestry.

(9) Pest infestation is a serious problem of tree plants of the study area especially for the fruit trees in some cases pest may destroy the plantation severely when controlling the pest delays or sometimes control may not be possible. According to the Problem Confrontation Index 'difficulties in pest control' is ranked as tenth major constraints with a PCI of 0.

(10) Destruction of transplanted plant by excessive storm, drought and flood etc. natural calamities which is out of human control ranked ninth on the basis of Problem Confrontation Index with a PCI of 0.

The study was conducted to get idea about the extent and types of activities performed by the women beneficiaries in social forestry mainly. Beside this the frequency of benefit sharing mechanism and major shortcomings faced by the participants were also included. The independent variables of the study were age, education, family income, duration of involvement, training exposure, knowledge on social forestry, major benefits and the constraints faced by the participants and the following results were found out.

In case of age 45.1 percent of the respondents were in the young aged category compared to 34.6 percent middle aged and 20.3 percent old aged category. As for education 39.1 percent of the women belonged to the illiterate category compared to 29 percent and 26.6 percent of the rural women belonged to primary level and above secondary level education respectively. Rest 5.3 percent belongs to higher educated category. The highest proportion of the respondent (89.9 percent) had low income while 8.7 percent had moderate income and only 1.4 percent had high income. Almost half of the participants (46.38 percent) live within 0.5 to 1 km from the working site and the rest are within the range of 0 to .5 km and 1 to 2 km. Also majority agreed that long distance hinders participation. In case of duration of involvement 71.0 percent of the respondents had short duration, compare to 27.5 percent medium duration and 1.4 percent high duration. Among their activities maintenance of plantation constitute the highest proportion (47.9 percent), followed by 37.7 percent in tree plantation and 14.4 percent took part in post-harvest activities. As for main outcome almost half of the participants (44.9 percent) got cash as their major benefits, compare to wood (39.1 percent) or other benefits (15.9 percent). In case of receiving training 72.5 percent received training on several aspects related to forestry, compared to few (11.4 percent) received no training at all. 56.6 percent of the women beneficiaries had adequate knowledge on social forestry, compared to 36.7 percent moderate knowledge and 6.7 percent poor knowledge.

A remarkable change is observed in case of the chanced occurred in before and after involvement in social forestry. Almost all the respondents (93.9 percent) have upgraded their food consumption, housing, drinking water and sanitation condition. They can also play role in decision making.

Several obstacles were faced during participating social forestry among them majority said plantation in low land as well as salinity is the major constraints. Complexity in sharing the final output during distribution is the second major constraints thus followed by other constraints and Plant destruction by cattle and goat is found as the lowest constraints.

According to the correlation co-efficient analysis age of participants has no relation with the participation but education, annual income, duration of involvement, working distance, training exposure, knowledge on social forestry, major benefits etc. have significant positive relationship with the participation.

As for recommendations motivational activities along with training program, incentives, regular and equal distribution of benefit sharing mechanism, salinity tolerant plant varieties and effective measures to minimize constraints can lead to ensure maximum and satisfactory participation of rural women with remarkable positive impacts and so further study may be recommended.

CHAPTER 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

SUMMARY

This study was conducted at Paikgacha upazilas of Khulna district to observe the Participation of Rural Women in Social Forestry Four villages named Batikhali, Agorghata, Kashimnagar and Noakati at Paikgacha upazila under Khulna district were the locales of the study. The selected characteristics of the workers were age, level of education, annual income, distance of working area, duration of involvement, training exposure, knowledge on social forestry, participation in social forestry, major benefits obtained, impact and constraints faced by workers during participation. Total population was 452 and among them 69 respondents were selected randomly as the sample of the study. The data were collected from 1 November, to 30 November, 2020 using a pre-tested interview schedule. The collected data were then compiled, tabulated and analyzed in accordance with the objectives of the study. The summery of the findings are given in this section.

The highest proportion (45.1 percent) of the respondents felt in the young aged category compared to 34.6 percent middle aged and 20.3 percent old aged category. The highest proportion (39.1 percent) of the women belonged to the illiterate category compared to 29 percent and 26.6 percent of the rural women belonged to primary level and above secondary level education respectively. Rest 5.3 percent belongs to higher educated category. The highest proportion of the respondent (89.9 percent) had low income while 8.7 percent had moderate income and only 1.4 percent had high income. Almost half of the participants (46.38 percent) live within 0.5 to 1 km from the working site and the rest are within the range of 0 to .5 km and 1 to 2 km. Also majority agreed that long distance hinders participation. Highest proportion (71.0 percent) of the respondents had short duration, compare to 27.5 percent medium duration and 1.4 percent high duration. Maintenance of the plantation constitute the highest proportion (47.9 percent), followed by 37.7 percent in tree plantation and 14.4 percent took part in post-harvest activities. Almost half of the

participants (44.9 percent) got cash as their major benefits, compare to wood (39.1 percent) or other benefits (15.9 percent). Majority (72.5 percent) received training on several aspects related to forestry, compared to few (11.4 percent) received no training at all. Majority (56.6 percent) of the women beneficiaries had adequate knowledge, compare to 36.7 percent moderate knowledge and 6.7 percent poor knowledge. A remarkable change is observed in case of the chanced occurred in before and after involvement in social forestry. Almost all the respondents (93.9 percent) have upgraded their food consumption, housing, drinking water and sanitation condition. They can also play role in decision making. Several constraints were faced during participating social forestry among them majority said plantation in low land as well as salinity is the major constraints. Complexity in sharing the final output during distribution is the second major constraints thus followed by other constraints and Plant destruction by cattle and goat is found as the lowest constraints.

According to the correlation co-efficient analysis age of participants has no relation with the participation but education, annual income, duration of involvement, working distance, training exposure, knowledge on social forestry, major benefits etc. have significant positive relationship with the participation.

CONCLUSIONS

A conclusion may be concluded as an inference based on the findings of experimental study, relevant facts and unbiased judgments. On the basis of the findings of the study the researcher enabled to draw the following conclusions:

1. The women beneficiaries mainly participate in activities like tree plantation, maintenance of plantation and post-harvest activities. Yet majority are involved in the maintenance such as nutrition management, pest management, intercultural operations etc.
2. Usually the participants receive the benefits once a year and in some cases once in six months which was discouraged by the participants because most of the participants normally take part in social forestry due to economic purposes although in maximum cases they are deprived of their rights.
4. Distribution of the final outcome is one of the major reasons that inhibits their participation willingly. Besides different social and religious restrictions, poor disease and pest management system, lack of land and suitable tree varieties are also considered as major constraints.

RECOMMENDATIONS

Recommendations are made on the basis of observation and conclusions drawn from the findings of the study and have been given below:

- 1) To ensure satisfactory participation it is, therefore, recommended that necessary steps should be taken to motivate the rural women in participating social forestry.
- 2) It may be recommended that non-formal education with training programs should be organized for the beneficiaries.
- 3) More plants should be selected or developed that can cope up with the salinity and coastal environment.
- 4) Incentives can be provided to encourage the participants as well as increase participators.
- 5) The benefits (money or other products) should be given more frequently (in every month).
- 6) Benefits should be provided rationally among the beneficiaries.
- 7) Measures can be taken to minimize the constraints as far as possible.

CHAPTER 6

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APPENDIX 1

English Version of the Interview Schedule

Department of Agroforestry and Environmental Science

Sher-e-Bangla Agricultural University, Dhaka- 1207

An Interview Schedule for a research study entitled

PARTICIPATION OF RURAL WOMEN IN SOCIAL FORESTRY AT PAIKGACHA UPAZILA OF KHULNA DISTRICT

(Please answer the following questions)

Sample No:

Name of the respondents:

Village:

Union:

1. Gender:

- a) Male b) Female

2. Age

What is your present age?Years

3. Educational Qualification

(Please mention your educational qualifications)

- a) Can't read or write
b) Can sign only
c) Have studied up to class

4. Marital Status

- a) Married
b) Single

- c) Widow/Widower
- d) Divorce/Separation

5. Annual income

(Please mention your family income from the following sources)

Sl. No.	Source of income	Amount of income (in Tk.)
1.	Agriculture/ livestock/ fisheries	
2.	Business	
3.	Services	
	Total Annual Income	

6. Name of working area

.....

7. The distance of your working area from your home

..... Km.

8. Do distance affect your participation?

Yes..... No.....

9. How often do you receive the support?

- a) Once a year b) Twice a year c) Once every two years

10. Why did you join in social forestry?

- a) Economic benefit
- b) Environmental Benefit
- c) Others

11. Duration of your involvement in social forestry program

..... years

12. I would like to ask you some questions about the frequency of attending in different meetings.

Below we have listed some questions in relevance to this. To what extent would you answer them? Please rate them on a scale from 1 to 4 where 4 represent “Regular” and 1 “Never”

Sl. No.	Contents	Regular	Often	Sometimes	Never
1.	What is the extent of your attending the project meetings?	4	3	2	1
2.	What is the extent of your visiting the project area?	4	3	2	1
3.	What is the extent of attending meetings by the Union Parishad Chairman and employees?	4	3	2	1

13. Training experience

Did you receive any training related to agriculture or forestry?

Yes..... No.....

If yes, please mention the following information

Sl. No.	Duration of training	Sponsoring Organization

14. Participation in social forestry related training and topic of training

(Please mention your extent of participation in social forestry program)

Sl. No.	Activities	Extent of Participation			
		Not at all	Low	Medium	High
1.	Nursery development and management				

2.	Homestead afforestation				
3.	Afforestation in field and pond				
4.	Joining meeting on social forestry program				
5.	Fencing, supporting, pruning, irrigation and other related cares				
6.	Disease, insect, weed and other pest control				

15. Knowledge on social forestry

(Please answer the following questions regarding social forestry)

Sl. No.	Questions	Score	
		Assigned	Obtained
1.	Mention two advantages of social forestry	2	
2.	What types of trees will you consider for social forestry?	2	
3.	What kinds of intercultural operation are necessary for trees?	2	
4.	Name two plants from those we get timber	2	
5.	How insect can be controlled when top of the plant infested?	2	
6.	Why the seedlings are tied with stick?	2	
7.	Mention the best season for tree plantation	2	
8.	Please state the method of pit preparation for planting seedlings	2	
9.	Please mention the name of two medicinal trees	2	
10.	Please name two multipurpose trees	2	
11.	Please mention the name of two fast growing trees	2	
	Total	22	

16. Trees are selected according to

- a) Local demand
- b) Market value

- c) Both local demand and market value
- d) Others

17. Please mention the name of some tree species which is normally selected for plantation

.....

18. Associated crops incorporated with tree

Yes..... No.....

19. Annual income

Please furnish the annual family income from different sources after and before involvement with social forestry program.

Sources of income	Before involvement (Tk./ year)	After involvement (Tk./ year)
Agricultural sources		
Rice and other cereal crops, vegetables, fruits		
Nursery, seed production		
Poultry, goat, cattle rearing		
Fisheries		
Others		
Non-agriculture sources		
Government or private service		
Small business, grocery or tailoring		
Day laboring		
Others		
Total		

20. Changes in food consumption

Please mention the quantity of the following food items you used to up take before involvement with social forestry and uptake at present.

Sl. No.	Food Items	Intake before involvement (times)	Intake after involvement (times)
1.	Rice or bread (daily)		
2.	Fish , meat, milk, egg (weekly)		
3.	Fruits (weekly)		

21. Change in life style after involving in social forestry

a) Change in housing unit:

Please give information relating to type of your housing environment

Sl. No.	Type of Housing Unit	Before involvement	After Involvement
1.	No house at all		
2.	Kacha ghar with straw roof		
3.	Bamboo-made kacha ghar		
4.	Kacha ghar with tin roof		

b) Change in sanitation condition

Please mention the type of latrine used by your family.

Sl. No.	Type of latrine	Before involvement	After involvement
1.	Bushes or open places		
2.	Kacha latrine		
3.	Half sanitary latrine		
4.	Sanitary latrine		

c) Change in source of drinking water

Please give the information of your source of drinking water

Sl. No.	Type of drinking water source	Before involvement	After involvement
1.	Water from river or pond		
2.	Tube well of others people		
3.	Own tube well		

22. What is the major benefit that you obtain from social forestry as a beneficiaries?

- a) Money
- b) Fuel wood
- c) Timber
- c) Others

23. Profit or benefits obtained at the end of the program

- a) Satisfactory
- b) Sufficient and equally distributed
- c) Insufficient but equally distributed
- d) Not equally distributed

24. Decision-making ability after involving social forestry

Sl. No.	Items	Level of Decision Making			
		Full decision	Half decision	Only discussion with husband	No influence
1.	Education of children				
2.	Marriage of sons or daughter				
3.	Family planning				
4.	Crop production				
5.	Others				

25. Constraints faced by the women participation in social forestry program

Please mention the extent of constraints you faced to participate in social forestry program

Sl. No.	Constraints	Extent of constraints			
		Not at all	Low	Medium	High
1.	Lack of cooperation of male partner				
2.	Lack of required land				
3.	Destruction of plants by cattle and others				
4.	Destruction of transplanted plant by excessive storm, drought and flood				
5.	Problem of plantation in low land				
6.	Difficult to control pest				
7.	Complexity in sharing trees of social forestry				
8.	Seedling and trees are stolen by thief				
9.	Social restriction on the women to participation in social forestry program				
10.	Religious restriction on the women to participate in social forestry program				

26. Impact of social forestry

Please mention the extent of change occurred due to involvement in social forestry program regarding the following items

Sl. No.	Items	Degree of change			
		Large change	Moderate change	Little change	No change
1.	Increase of family income due to plantation				
2.	Availability of fuel, fodder, fruits, foods				
3.	Supply of timber, house making materials, agricultural				

	implements, raw materials for industry				
4.	Strengths to cope with any economic shocks of family				
5.	Use of fallow land				
6.	Creation of employment opportunity in establishing nursery and garden				
7.	Improvement of social prestige				
8.	Increase of family decision making ability				

27. Do you think this project is beneficial for rural people?

Yes..... No.....

28. Given your experience, do you encourage others to join the project?

Yes..... No.....

Thank you for collaborating me by spending your priceless time

Date:

(Signature of the interviewer)

LIST OF PLATES



Plate 1. Picture showing trees at tidal condition in Batikhali Social Forestry project.



Plate 2. Interviewing of a social forestry worker in front of Batikhali SF project



Plate 3. Social Forestry near river bank in Batikhali village.



Plate 4. Center of Batikhali Social Forestry Project



Plate 5. Roadside social forestry at Agorghata.



Plate 6. Interviewing of a respondents at Agorghata

