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DECLARATION

I, Krishna Roy, declare that the entire research work is submitted as a Thesis Work (FWT-5112) towards the partial fulfillment for the MS degree from Forestry and Wood Technology Discipline in Khulna University, is the result of my own work. It has not been submitted or accepted for a degree in any other University.

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DEDICATION

This piece of work is dedicated to my beloved parents

who sent me to school and encouraged me to fulfill this work.

APPROVAL

Project thesis submitted to Forestry and Wood Technology Discipline, Khulna University, Khulna, Bangladesh, in partial fulfillment of the requirements for MS degree in Forestry. I have approved the style and format of this project thesis.

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ABSTRACT

Our women were lagging behind in the past in many aspects compared to our men although women happened to be initiator of sowing seeds and post harvest activities. It is expected that the participation of women development process could contribute significantly in the balanced socio-economic growth and development of the country. A realization on women's contribution in the national economy as well as development process have been arising out from different corners of the society and as such women are being given due importance in the various development activities undertaken by the Governmental and Non-governmental agencies. By social forestry practice women can improve their social status, decision making power, self-respectence etc. From the study it was observed that housing condition, no. of literate members, land ownership, medical care, sanitation, lighting facilities and income of the participants are improved than non-participant. It is clear that the socio-economic condition of the participant is better than the non-participants. So it can be said that the resources of the social forestry participants are improved than non-participants.

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CHAPTER ONE: INTRODUCTION

1.1 BACKGROUND OF THE STUDY

For many years, development activities are centered on men only and women are considered as the burdens of the family. Each and every day, women encounter different types of social, cultural and economic exploitation and are deprived of education, health and optimum nutrition.

Women's work remains unrecognized and formally unorganized despite the fact that women's contributions to the family are vital; in many cases women are the breadwinners and work longer hours than men (UNDP, 1995). This underestimation reflects women's lower status in the family and locality; they have very little or no say in household decision-making. Disparities in responsibilities and income share received ample attention in the Human Development Report 1995: ''Men received the lion's share of income and recognition for their economic contribution while most women's work remains unpaid, unrecognized and undervalued'' (UNDP, 1995).

This is the result of a faulty concept of participation in the labor force that does not include household or domestic work as economic activity, mainly because of the focus on use value rather than exchange value (Donahoe, 1999). This indicates a reason for the neglect of women's economic contributions to the household in particular and to society in general (Ironmonger, 1999). Gender bias in intra-household allocation of resources, participation in decision-making, and time spent within and outside the house need to be studied further (Buvinic, 1999). The most striking characteristic of household labor is that, whether employed or not, women continue to do most of the housework around the globe (Shelton and John, 1996).

Women are the breadwinners in many households, in contrast to the common perception that they are economically dependent on their male counterparts; if their work is monetarized, they earn more than men and contribute to significantly household economic security. These estimates are an undervaluation and do not reflect the actual contribution of women owing to the omission of many activities, underreporting, and multitasking. Women work primarily in nonmarket household production activities, whereas men are engaged in paid market

activities. Gendered division of labor is evident and women's work remains outside the formal economy (Sidh and Basu, 2011).

Our women were lagging behind in the past in many aspects compared to our men although women happened to be initiator of sowing seeds and post harvest activities (Ahmed and Miah, 1996). It is expected that the participation of women development process could contribute significantly in the balanced socio-economic growth and development of the country (Salahuddin, 1992). A realization on women's contribution in the national economy as well as development process have been arising out from different corners of the society and as such women are being given due importance in the various development activities undertaken by the Governmental and Non-governmental agencies (Miah *et al.*, 1994).

Women are more dependent on nature by virtue of the sexual division of labour. It is said that women are primarily responsible for the gathering of fuel, fodder and wild foods and the growing of subsistence crops for survival, whereas men are seen as mainly responsible for the growing of cash crops for profit (Leach and Green, 1995). Women are seen as being the 'most' appropriate participant in environmental conservation as the main victims of environmental degradation (Shah and Shah, 1995). Thus it is implied that women have a special connection with environment that are somehow close to nature and men (Leach and Green, 1995). The WED (Women Environment and Development) understanding of women's relationship to the environment implies that the central issues for community forestry are formal provisions for women's representatives plus recognition of women's resource-use roles and their special knowledge and values about the environment.

The fact that women have a 'special' connection with the environment derives much weight for its explicit articulation in Ecofeminism. Ecofeminism presupposes a direct connection between women's biology and women's relationship with the environment. In proposing a natural affinity between women and environment, Ecofeminism has been seen as retrogressive by the women's movement, because it proposes a direct connection between women's biology and women's relationship with the environment (Locke, 1999). Whenever women reacted against ecological destruction and chances of annihilation of life, they became concerned about the violence against them. Aggressions against environment was perceived almost physically aggression against female body (Mies and Shiva, 1997).

The idea of social forestry came along with loans from the Asian Development Bank (ADB) in late with a view to involving women and local poor people to have an alternative source of income and to overcome rural fuel crisis through planting of some quick growing tree species. Unfortunately, this program did never look for any quick growing local trees. Consequently, all over Bangladesh indigenous trees in natural forests began to be replaced by exotic species of Acacia and Eucalyptus under ADB funded Thana Aforestation and Nursery Development Project and Forestry Sector Project (FSP) of the Forest Department (Salahuddin, 1992).

In Bangladesh a traditional bound structured, subsistence oriented socio-economic frame, women for centuries are subjugated under male domination, suffer from an inferior status and occupy a subordinate position in the society (Bhuiyan, 1988). It is a burning question how to get rid of this situation. Both Govt. and private sector can play a vital role involving women by incorporating them in social forestry, horticulture, bamboo, cane base handicrafts, nursery, agroforestry and so on besides formal development projects and activities.

Social forestry being a resource system and is basically an interaction of three interdependent elements land, people and technology in a particular space and time (Salahuddin, 1992). If social equity is lowered upon primarily in terms of access to forest goods, services and opportunities then social forestry is primarily for the people who have been deprived of or by passed by the productive benefits of the forests, landless laborers, and seasonal workers etc (Ahmed and Miah, 1996).

There are five major constraints to women's formal participation in social forestry initiatives which result in their exclusion from the decision-making process– traditional rule, social and cultural barrier, limited experience of women in public speaking (e.g. illiteracy), logistic constraints like time and double work burden and preference of male members by the male forest department staff involved in social forestry (Sarker and Das, 2001).

1.2 OBJECTIVES

- To compare the resources of the social forestry participant and non-participant of rural women of Madhupur upazilla in Tangail District.
- To assess the effect of the social forestry in poverty alleviation of rural women of Madhupur upazilla in Tangail District.

CHAPTER TWO: LITERATURE REVIEW

2.1 SOCIAL FORESTRY

2.1.1 DEFINITION OF SOCIAL FORESTRY

Over the past decade or so, the government of most developing countries like Bangladesh have been investing large amount of money in tree planting with the cooperation of international agencies because they realized- "the necessity of taking forestry outside the forests, of involving people throughout the country side in growing trees to meet their own requirements, as well as to protect the land on which many of their fellow citizens, town dwellers and farmers alike, directly or indirectly depend" (Zashimuddin, 1995).

Various terms have been used to describe social forestry. These are community forestry (village forestry), farm forestry (homestead or household forestry), participatory forestry and rural forestry. In the literature and in many forums, social forestry is often used interchangeable with community forestry, while farm forestry is viewed as one model (a component) of community and social forestry. But it is quite clear with that social forestry is a broader, more encompassing category than community forestry (Zashimuddin, 1995).

Social Forestry" (SF) is to mean "the active participation by rural people in the planning, implementation and benefit-sharing of tree growing schemes" (GOB, 1990).

Social Forestry (SF) is those activities 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 (Alam *et al.*, 2012) .

Social forestry is any practice, method, technique/technology or natural resource management system that enhances forest resource governance and makes forestry economically viable, and ecologically sounds (GOI, 1976).

Any situation that intimately involves local people in a forest activity, a set of interconnected actions and works executed primarily to by local community residents to improve their own welfare (Davidson, 2003).

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).

SF is a concept, a programme 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).

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).

Zashimuddin (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 Endeavour's".

SF 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 planning 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).

The improved definition of social forestry is: forestry development in which local people are actively involved, assume major parts or all of the responsibility, and through which they derive the benefits from their own efforts. In modern development parlance, this means empowering local people to manage their own affairs, without undue influence and coercion from outsiders. The involvement of local people themselves in planning, implementing, assessing and monitoring SF activities improves effectiveness, increases benefits locally and empowers by instilling local self-confidence and development through a sense of ownership. SF requires that foresters change their roles and rules of engagement with local people from protectors as extension agents at the local level (Davidson, 2003).

Social forestry is the forestry by the people and for the people, whose main purpose is to fulfill the needs of forestry which are - manure, food, fruit, fibre and productive capacity. As a whole social forestry's main objective is to reconstruct the ecosystem and conserve the environment. The National Commission for Farmers has determined the following objectives for social forestry -

- To cooperate soil conservation and to prevent spoiling the productive capacity of soil.
- To increase fuel availability and to increase the food modification by increasing fruit production.
- To encourage plantation of large and beautiful trees which provide shadow to enhance the natural beauty and to plant all around the cultivation field to increase production.
- To encourage environment conservation by plantation and to create general consciousness regarding environment conservation.
- To enhance the natural beauty of the villages and cities by plantation.

Social forestry programme has certain problems. These are

- The lack of information among people and ignorance regarding social forestry programme.
- Illegal tree-cutting.
- In many states there are unsatisfactory activities regarding social forestry.
- Social forestry has not been implemented extensively.
- Corruption and misuse of the fund which is for the purpose of social forestry (Schreckenberg and Luttrell, 2009).

2.1.2 GUIDING PRINCIPLES OF SOCIAL FORESTRY

- It should ensure to cater to the needs of the rural people.
- People's participation in planning and managing forest resources is a prerequisite.
- It should contribute to socio-economic, as well as ecological development of the people through employment, economic growth and better quality of life.
- It should target the unprivileged falling under rural population, landless poor, marginal farmers and agricultural laborers (Schreckenberg and Luttrell, 2009).

2.1.3 COMPONENTS OF SOCIAL FORESTRY

- Farm Forestry or Private Forestry
- Community Forestry or Extension Forestry
- Agroforestry
- Recreational Forestry

2.1.4 INCENTIVES AND BENEFITS SHARING MECHANISM

In the "Community Forestry Development Project" located in the North-Western part of Bangladesh it was apparent that without people's active participation and community involvement and provision for reasonable incentive for such participation, the project so designed cannot be implemented with desired success. With this end in view, in consultation with the land owning agencies and beneficiaries, a benefit sharing mechanism has been approved by ECNEC on and also adopted by the National Project Coordination Committed (NPCC). This new benefit sharing mechanism has introduced the participation of NGOs as organizers of people's participation at grass roots level (Huq and Alim, 1995). Their role is to organize the local SF farmers' and work in ensuring their participation. NGOs will receive 200 taka (3.5 US$) for giving service to every SF farmer. The participant beneficiaries would get –

a) in case of woodlot and agroforestry plantations established on lands under the control of Forest Department

i) Forest Department 45%

ii) Beneficiaries 45%

iii) Tree farming Fund 10%

b) in case of Sal Forest

i)Forest Department 65%

ii) Beneficiaries 25%

iii) Tree farming Fund 10%

c) in case of strip plantation raised on the lands owned by public or statutory body other than the Forest department

i) Forest Department 10%

ii) Beneficiaries 55%

iii) Tree farming Fund 10%

iv) Land Owning Agency 20%

v) Local Union Parishad 5%

All the intermediary benefits will go to the participant beneficiaries. Direct and willing involvement and participation of local community in planting and upkeepment is a pre-requisite for the successful execution of the project after the trees are established, their protection from damage due to grazing, illicit cutting etc is of equal importance (Huq and Alim, 1995).

2.1.5 BENEFITS OF SOCIAL FORESTRY

SF is not confined to growing trees only. It has integrated into it sideline occupations and short-term income generating activities. This includes beekeeping, sericulture, bamboo growing, and mushroom growing. These activities keep the community's interests while the trees are growing and likely to benefit them in the long term. They are getting integrated into social forestry. Decentralization of decision making, enhancing involvement of women and children and other disadvantaged people in general, fostering the role of NGOs and prominent local level organizations, has become part of social forestry. These are features, which were never included in conventional forestry before. Management systems for social forestry are also different from conventional forestry and this aspect has to be considerably significant (Huq and Alim, 1995).

2.1.6 TRADITIONAL AND SOCIAL FORESTRY COMPARED

SF envisages a new dimension in forestry management systems by making it participatory. People's participation is a process by which rural people enabled to organize themselves and they will be able to identify their own needs. Rural people can also implement and evaluate their participatory action. They will be able to do so through their own organization (Alam, 1995).

SF approach requires fundamental changes in the role and orientation of professional foresters as well as their technical repertoire. The most important thing is to involve the local people in the decision-making and planning stage in growing trees. The traditional forestry management approach followed top-down approach but the SF brings transformation in this process and followed the bottom up participatory approach by the people.

Social forestry is now seen "as the most viable alternatives to traditional forestry and as the most useful tool to halt deterioration of the natural environment" while significantly contributing to the process of "increase of income opportunities of rural people" (Huq and Alim, 1995). 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).

2.1.7 SOCIAL FORESTRY DEVELOPMENT WORLDWIDE

Until the early 1970s, it was thought that the development of natural resources by governments would automatically 'trickle-down'7 in most forestry projects in developing countries so that the benefits would eventually reach the rural poor. Major development activities were large scale and centrally driven forestry management. Forestry was technically oriented (tree centered) and forest departments were typically mandated to both exploit and 'protect' or 'conserve'. The failure of forestry development programmes proved that 'trickle-down' was not working and would not work. One of the earliest institutional responses to this realization was a programme of the FAO called 'Forestry for Local Community Development' (Davidson, 2003). This received an international boost with the holding in 1978 of the Eighth World Forestry Congress in Jakarta, Indonesia, with the theme 'Forests for people' (Davidson, 2003).

By the mid 1980s, different governments realized that social forestry projects were benefiting wealthy and powerful individuals rather than rural poor, and that they were not meeting people's needs at 'the bottom'. Moreover it was found in FAO's different monitoring programmes that many governments and aid agencies characterized local villagers as enemies and destroyers of the forest state (Davidson, 2003). Governments were also responding to the pressure of 'structural adjustment' programmes, promoted such bodies as the International Monetary Fund, with dramatic downsizing of government staffing levels. This means that they could no longer conceive of 'protecting' the government forest estate through policing and enforcement activities. It was also recognized that government staff could not provide effective services to rural people without institutional development and support. Many governments felt that there was no alternative to involve villagers as active partners with government in the protection, planning, management, utilization and further development of the forest estate and in practices encouraging more trees on farms (Davidson, 2003).

SF programmes then started to truly involve individual farmers and whole communities in a participatory process, based on local needs and local management capacity. The concept of indigenous management was explored and documented by social scientists working alongside foresters. Over time, to speed up the process, special methodologies were developed. The rapid diagnostic and participatory tools inherent in Rapid Rural Appraisal (RRA) from the mid 1970s onwards, and Participatory Rural Appraisal (PRA) and Participatory Learning and Action (PLA) from the mid 1980s onwards. These have been found useful in facilitating dialogue with local people, and for planning and implementing participatory development (Davidson, 2003).

Today social forestry management partnerships engaging government and local people, together, to varying degrees are found throughout Asia and the World including Africa, Latin America, Australia, the Pacific Islands, North America and Europe. Thus, social forestry is no longer a uniquely 'developing country' paradigm, but global, including some of the most 'developed' countries. In reviewing global social forestry, a striking observation emerges-that programme development and stakeholder involvement are strengthened by the active role of both academic researchers and non-governmental organizations (NGOs, both local and international). Together their combined advocacy and insights have greatly strengthened many national attempts at people-centred development (Davidson, 2003).

2.1.8 SOCIAL FORESTRY DEVELOPMENT IN BANGLADESH

Bangladesh lies in the north-eastern part of South-Asia between 20°34' and 26°38' north latitude and 88°01' and 92°41' east longitude. The area of the country is 14.757 million hectares. Here sub-tropical climate prevails throughout the year with distinct rainfall and dry period. Out of the country's estimated total land area, about 5,284 square miles (9.6%) are state forest lands under the control of the Forest Department. Only 60% of these lands support any tree or bamboo cover and the rest is either encroached or barren (GOB, 1990). In addition to state forest lands, there are some 742,000 acres (1,159 sq. miles) of homestead forest groves on privately-owned lands covered with tree and/or bamboo crops of varying quality and density. Although these privately owned homesteads constitute only 12% of the forest land, they supply almost 80% of the total fuel wood, timber and bamboos consumed in the country. About 75% of the total energy consumed in Bangladesh still comes from the traditional biomass fuels (i.e. straw, fuel wood and cow dung) (Magno, 1986). There has been, as the Task Force noted, "an increasing consensus that forestry sector policy was ineffective in maintaining the sector's contribution to the national economy" (Task Force, 1987). Various departmental manuals of the Forest Department offered little room for public involvement in forestry. One evaluation study on Bangladesh forestry also reached the conclusion that; there has been "a clear indication of the very poor condition of the forests under State control" (Khan, 1998).

The growing stock in all major forests of the country is also drastically declining. The growing stock of Sundarban (the country's largest mangrove forest tract) has depleted from 717 million m cft in 1960 to 542 m cft in 1985; which implies a decline of 35% over 25 years (Khan, 1998). Similarly, there has been an estimated 17% decline in the resource base in the forests of Chittagong Hill Tracts over last 21 years (Khan, 1998). Government has been facing various problems because of this scarcity and declining of forest resources for more than two decades. Moreover government was not able to check the process of deforestation. It was difficult to save the forest resources from the local people. The forest department with their paramilitary orientation had been trying to police "their" territories from local people with an uncompromising zeal. In the process, there has been a prodigious growth of conflict between the government and local communities. The Bangladesh government has consistently blamed population increase and local people for the destruction of forests (Khan, 1998). Many analysts argue that there is "very limited scope to increase and develop the forests under traditional forest management" by the government (Task Force, 1987).

One widely promoted solution to these trends in deforestation and alienation has been Social Forestry. It was assumed that if the local people acted as the saver through some benefit sharing agreement then the level of deforestation was diminished in a remarkable scale. A project was designed in which local people were involved in planning and managing of the forest resource (Belcher, 2005).

Bangladesh emerged as a sovereign state in 1971 after a War of independence. After that the development resources for forestry were targeted at meeting long-term future industrial demands. But the potential of rural and homestead forestry for local community rehabilitation and development was almost totally ignored (Davidson, 2003). A "Forestry Policy" was announced in 1979. It concentrated on "horizontal expansion of the forest area" under the government that was to be "carefully preserved and scientifically managed" by a centralized cadre of forest officers" setting up new forest-based industries (Scherr *et al.*, 2004).

Deforestation is not new in Bangladesh. It is a global problem especially in the developing tropical countries. Over a long period much of the Government forest-land have been deforested and encroached. It was not practicable and socially acceptable to evict the forest-land encroachers. Therefore, instead of evicting the encroachers, they were involved in tree plantation activities. The encroachers or unauthorized occupants have been transformed from encroachers to usufruct right holders in designed forest areas (GOB, 1993).

SF at first was introduced in Bangladesh in 1967. Primarily the main objectives of this project were to establish two nurseries in Dhaka and Rajshahi and to distribute seedlings from those nurseries. The Community Forestry project, the first of its kind in the country has been launched in 1979 to cover the seven greater northwestern districts of Dinajpur, Rangpur, Bogra, Pabna, Rajshahi, Kushtia and Jessore. The project has a six-year time frame and is funded by the Asian Development Bank (ADB) with a technical assistance from the UNDP and the Food and Agriculture Organization of the United Nations (FAO) as an associated agency. The executing agency for the project is the Forest Department under the Ministry of Agriculture and Forestry (MAF) (Magno, 1986). From 1979 various SF programmes started in this country in ensuring the socio-economic improvement of the rural poor, employment opportunity in rural area etc (Dey, 1996). Such as:

1. Community Forestry Development Project
2. Betagi-Pomora Community Forestry Project

3. Thana Afforestation and Nursery development Project
4. Expanded Social Forestry Project
5. Forestry Sector Project
6. Coastal Greenbelt Project
7. Coastal Bank Rehabilitation Project
8. Rehabilitated Zumia Family Development and Security Camp Project

An area of 31304.0 hectors encroached and treeless forest land has been brought under plantations. About 31000 families, mostly poor have been integrated in the plantations as beneficiaries or participants. One hector forest-land was allotted to each family under written agreement giving usufruct rights only. In 35060.0 km strip plantations, almost 300,000 landless and poor families have been involved as participants also under written agreements (GOB, 1990).

SF is viewed within the broader framework of rural development in Bangladesh and it has become one of the most dominant strategies for both rural development and forest management (Rahman, 1991). One of the major issues in people's participation in this kind of forestry is to ensure that drawing the participants from the same socio-economic and cultural background does group formation. Components of the programme should be discussed with the people and should be remodeled on the basis of their opinion. This will make participation self sustained and eliminate errors in the process of implementation. Conscious, organized and well-informed participation increase the project's efficiency and contribute to its success (Huq and Alim, 1995).

In the past, in conventional forestry, trees were at the center of attention and production, especially of timber was the major objective. This implied that activities were decided according to technical considerations rather than socio-economic needs. In SF, by contrast, people are at the center of attention, and enabling them to manage the biomass resource wisely and sustainably, largely on their own, is a major objective (David *et al*, 1989).

2.1.9 PEOPLE'S ATTITUDE TOWARDS SOCIAL FORESTRY

Attitude is one of the important factors that direct persons to take part in any activity. Characteristics of a respondent play an important role for changing his/her attitude towards any innovation. Individual's attitude may also influence to other members of the social system. A study was conducted by Alam *et al.*, (2012) in Rajshahi to know people's attitude towards social forestry. The following results are given below

- By improving local microclimate, social forestry can contribute significantly for the maintenance of ecological balance.
- The growing demand of food, fodder, fuel etc of the local community can be met by social forestry plantations
- Recruitment of Plants in the area would be act as habitat and shelter for wildlife.
- Promotion of Social forestry can bring improvement in aesthetic view of the area.
- Promotion of SF cannot enrich bio-diversity.
- Social forestry will provide harbor to insects, pests and diseases which is detrimental for human health and agricultural production
- Role of Social forestry is not significant in poverty alleviation and livelihood upliftment.
- Soil fertility and land productivity has been improved by adoption of social forestry.
- Social forestry plantation should be done for commercial purposes.
- Local community involvement in decision making is not significant.
- Traditional FM system has fallen short in enabling of the public into forestry mgt practices and this lead to the rise of conflicts between SFO and Forest villagers
- Long term return of forests is more than agriculture.
- Promotion of SF can create employment opportunities for the rural youths and women.
- Participant's selection procedure is not fair and easy.
- An important way to create capital.
- Shade, rain drops and roots of trees decrease road stability.
- Proper training in Nursery and plantation rising for SF plantations can be helpful in adoption of this progamme.
- By reducing the vision, social forestry increases the risk of accident.
- Technology used in social forest development is not modern, sustainable and appropriate.
- Local leader's involvement is very poor.

- Existing laws and policies are not adequate to support social forestry.
- Affluent people should not be allowed to participate in social forestry programme.
- Social forestry ensures maximum utilization of marginal land.
- By obstructing use rights, it creates conflicts among adjacent land owners, beneficiaries and administrations.
- In general, the timber traders and sawmill owners are threat to the forests.
- Use rights of communal marginal land are hampered.
- Marginal land should be used for agriculture and other productive purposes. Forestry extension staffs are not adequately skilled to provide training.

2.2 CONCEPT OF POVERTY

The World Bank's widely accepted poverty benchmark of US$1 per capita per day forces us to acknowledge that in 2001 there were 1.1 billion people in the world living in "extreme economic poverty". If US$2 is used as the threshold, almost half of humankind (2.7 billion people) was living on less than US$2 a day in 20012. These are shocking statistics for the start of the 21st century (World Bank, 2001).

Measuring the number of people living in poverty gives an indication of scale, but tells us nothing about what it is like to be poor. Since the introduction of the Millennium Development Goals in 2000, national governments and international development agencies have tried to better understand the nature of poverty: why it is so pernicious and how best to mitigate or reduce it. The widely accepted World Bank definition below helps us to realize that to be poor is not just to lack material possessions, but to feel perpetually insecure and vulnerable to the slightest misfortune (Ban, 2002).

Conventional definitions of poverty are based upon either per capita incomes or consumption. A poverty line is defined, based upon a minimum level of consumption, typically defined as the cost of a bundle of goods (both food and non-food) deemed to assure that basic consumption needs are met and below which survival is threatened (Ravallion, 1992).

"Poverty is defined here as a pronounced deprivation of well-being related to lack of material income or consumption, low levels of education and health, vulnerability and exposure to risk, lack of opportunity to be heard and powerlessness (World Bank, 2002)."

How do the rural poor cope with poverty? Our understanding of, and respect for, the way in which the rural poor respond to the situation they find themselves has deepened in recent years. Poor households are inventive and resourceful: they constantly strive to combine whatever assets they can access in order to create a set of diverse livelihoods. Current development practice considers that livelihoods are made up of five types of assets: human (e.g. education), social and political (e.g. family and government connections), financial (e.g. access to credit), natural (e.g. forests) and physical (e.g. equipment, buildings, roads). The degree to which communities, families and individuals can access these five assets and put them to productive use determines their ability to build sustainable livelihoods (Carney, 1999).

What is the relationship between forests (and trees) and rural poverty? It is certainly well established that forests in rural areas of developing countries are culturally significant, are used for subsistence and commercial needs and provide important inputs to agriculture (Arnold, 2001). However our understanding of the role of forests in the lives of poor rural communities has moved on from a simple view, based on the supply of goods and services, to recognizing the strategic role that forests play in helping the poor cope with poverty. In addition to helping the poor meet household subsistence needs, they also fulfill important "safety net" functions in times of difficulty, enabling families to avoid destitution (Sunderlin *et al.*, 2005). For example, berries that normally would not be collected can be important sources of nutrition in lean seasons. Non-timber forest products (NTFPs) sold in small quantities for low prices are generally regarded as an "employment of last resort," but can be a critical source of cash for school fees or agricultural inputs in the absence of savings or credit. Unfortunately, the factors that make NTFPs valuable "safety nets" limit their scope to lift people out of poverty.

Poverty elimination refers to the use of forest resources to help lift a household out of poverty by acting as a source of savings, investment, capital accumulation, asset building and lasting improvements in income and well being (Sunderlin *et al.*, 2005). In practice, the poor are often restricted to using forest and tree resources only to help mitigate poverty while the local elites and outsiders are able to harness the same resources, either legitimately or illegally, in order to accumulate wealth. While elites in a society can often dictate or influence the way natural resources are managed, the poor are often left only to respond to situations devised by

and for others. This lack of control and attendant insecurity can make it almost impossible for the poor to plan, invest or improve their situation through forestry.

These and other factors help explain why the general contribution of forestry to poverty reduction has been so limited to date. Beck and Nesmith (2001) call for "an alternative paradigm and re-conceptualization of poverty-environment relations, wherein the emphasis moves away from matters of resource supply to the questions of access, control and management". Once we take this on board, we soon see that there are a myriad of governance-related factors that skew the sector away from the interests of the poor. We use the term governance broadly here to refer to the processes, institutions or rules and norms, and practices through which we make decisions about resource management. This includes institutions and laws, participation rights and representation, what levels of authority are held at different scales, accountability and transparency, property rights and tenure, markets and financial flows, and how the system addresses risk and changing knowledge (UNDP, 2003).

A recent CIFOR study undertaken in Kalimantan concluded, "a good forest endowment allows people to live well at or near the subsistence level. But opportunities to lift people out of poverty have been limited. But the future need not mirror the past." (Dewi *et al.*, 2005). How then do we begin to increase the contribution of forestry to poverty alleviation? In the recent publication, "Managing Ecosystems to Fight Poverty", four main strategies are identified to improve the poverty reduction potential of local ecosystems. These include:

1. Strengthening resource management to ensure higher productivity and greater returns;
2. Improving governance so that the poor are empowered to "profit from nature";
3. Commercializing goods and services through marketing and enterprise development;
4. Developing mechanisms for payments for environmental services (WRI., 2005).

Pursuing any one of these strategies will involve removing institutional constraints, addressing the causes of poverty at different levels (local and beyond) and working at an appropriate scale in an integrated way, for example, by balancing and responding to the range of humanitarian and development assistance needs of the poorest (Fisher *et al.*, 2005 and Bass *et al.*, 2005).

2.2.1 MEASUREMENTS OF POVERTY LINES

The Cost of Basic Needs Method (CBN) is adopted for constructing poverty lines in Bangladesh. CBN defines values of consumption needed to satisfy minimum subsistence needs (food as well as non-food consumption). Taking into account of the regional diversity in consumer prices, food poverty lines, lower and upper poverty lines are estimated for 16 strata reflecting different goods and services prices respectively. Those who spend less than estimated upper and lower poverty lines are regarded as "poor" and "extremely poor". The poverty rates (Head Count Ratio) estimated by CBN have declined from 1995/96 to 2005, except for the increase in poverty rates of urban areas from 1995/96 to 2000, which decreased again in 2005. During the period from 2000 to 2005, the poverty rates have improved due to the high economic growth. The incidence of poverty from the viewpoint of calorie intake per capita and per day estimated by DCI (Direct Calorie Intake) method has shown the same trend as those estimated by CBN (Adhikari and Lovett, 2004).

2.2.2 POVERTY SITUATION IN BANGLADESH

Bangladesh, home to a huge population of 14.23 crore (BBS, 2010), cannot escape the fact of severity of poverty. The incessant battle against poverty and famine is long observed in our country. People like day laborer, rickshaw puller, weavers, fisherman, small businessman, shop owners, smith, and landless people, farmer and marginal farmer live in abject poverty. According to World Bank, poverty rate in Bangladesh is around 36%-40% with 40% ultra poor living in the rural area and 15% in the urban area. Poverty at the rural area is considered one of our most important and increasing tribulations. Eradication of poverty in Bangladesh is an enormous and multi-dimensional challenge. Almost 42.5% of the people living in villages are poor while 18.7% are termed ultra-poor. In the last three decades the government has undertaken extensive activities. The main objective of first five-year plan (1973-1978) was poverty eradication. This trend is still continued in all subsequent five-year plans. But to handle multifaceted and inter-related problems like rural poverty, the government also has limitations if the matter is to be managed single handedly due to inadequate assets, capability and sometimes lack of willingness. In this case overall cooperation between government and different development agencies can play significant role in poverty eradication (Bangladesh Arthonoitik Samikha, 2002).

The developing agencies in Bangladesh can engage themselves in developing activities and at the same time can bring in a positive change in the life of the poor through social changes and development. The NGOs of Bangladesh think that development is a process through which the members of a society build their organizations as well as themselves in such a way, which increases their capability to manage required assets to match expectations with a well distributed, stable corresponding living standard (David and Carten, 1989). The ideologies of NGOs to eradicate rural poverty are the empowerment of poor, developing their institution and creating ability through appropriate distribution of assets and capacity. NGOs give importance on the causes of poverty to eradicate poverty instead of changing the attributes of poverty.

2.2.3 POVERTY PROFILES IN NON-ECONOMIC DIMENSIONS

This section attempts to understand poverty from non-economic aspects, including living conditions and social services.

- **Rural Poverty**

Improvements in mobility, skills, and productivity have helped substantial numbers of households escape poverty. However, those who live in remote areas and unfavorable agricultural environments, those who have limited access to transport, power and other infrastructure, female-headed households, illiterate people and agricultural wage laborer remain impoverished. Rural poor tend to depend on volatile daily wage incomes, to hold liquid financial and livestock assets, as they cannot easily access to land.

- **Urban Poverty**

Livelihoods of urban poor in slums are more disadvantaged than those of the rural poor because of the limited urban employment opportunities, degraded environmental health conditions and worse housing and sanitation. Compared with the rural poor, the urban poor tend to be far more heterogeneous in terms of gender, occupation, caste, age and other social characteristics. Many of the jobs the urban poor are engaged in are labor intensive, negatively affecting health conditions, and not more than earning daily wages and having less growth potentials. Therefore, the urban poor are still in a difficult situation to escape poverty.

2.2.4 CAUSES OF POVERTY

- **Educational Status**

The poverty rates of people whose household heads are illiterate are higher than those whose household heads are literate both in rural and urban areas. In particular, strong negative

correlation between literacy rates and poor or extremely poor is observed in urban areas. On the contrary, the higher the literacy rates of household heads, the lower the poverty or extremely poverty rates in urban areas.

❖ **Land Ownership**

Traditionally, agriculture was the most important industry in Bangladesh and poverty rates became lower as sizes of owned land became bigger. However, as the economic structure diversifies, the relative importance of agriculture decreased and the positive correlation between the size of owned land and poverty improvement rates is not necessarily observed in recent years. According to HIES 2005, while the poverty rates of landless people is 46.3 per cent, those of owners of land which is less than 0.05 acre is 56.4 per cent, which is higher than landless people. Regarding the rates of extremely poor, landless people records 25.2 per cent, but owners of land, which is less than 0.05acre, is 39.2 per cent, which is higher than those holding 0.05 to 0.49 acres of land (Diop and Frasera, 2009).

❖ **Main Occupations of Household Head**

According to HIES2005, estimates of incidence of poverty show high rates in agriculture, forestry and fisheries, clerical, related works and government executive, production, transportation and related workers and services workers. In terms of religious background, Muslim families show higher incidence of poverty rates in 2000; however, non-Muslim families show higher rates nationally and in rural areas in 2005.

❖ **Gender**

Women are more vulnerable to poverty in Bangladesh. Historically, socially prescribed roles have limited women's access to economic resources, political participation and decision-making process. Women's wages are about half of those of men and wage levels *per se* are low. Women's employment is often temporary. Literacy rates of women are about 30 per cent in 2006, which is lower than men's 50 per cent. Women and children are still trafficked. The government has taken various measures to close the gender gap. As a result, there are improvements in some indicators such as women's average life expectancy rate, which becomes longer than that of men, and girls' primary enrollment rates, which exceed those of boys (Agarwal, 1997).

❖ **Household Characteristics**

There is a tendency that women headed households show lower poverty rates compared with men headed households. The poverty rates of widow and divorced households are high.

❖ **Health and Medical Conditions**

It is highly likely that worse health indicators such as high infant and children under five mortality rates, short height for age, and underweight for age are observed in low-income households. On the other hand, the higher the income levels of households, the higher the rates of vaccination, rates of pregnant and nursing mothers who consult their doctors and rates of deliveries attended by trained personnel. Furthermore, the birth control rates and proportion of population who know about HIV/AIDs prevention are higher in high-income households.

❖ **Living Conditions**

The rate of households with access to electricity has increased. While households having radios have increased, those having televisions are mainly limited to high-income households. In terms of sources of drinking water, majority of population use tube well water. Regarding types of toilet facilities, the rate of population who use open space has decreased nationally, except for poor segment of them whose share of using open space as toilet is still high. Looking at main dwelling structure by materials of wall and residence, high-income households use cement for wall and floor, while the rest use mud and bamboo for floor and hey/straw/bamboo/leaves for wall (Kanal and Dahal, 2008).

❖ **Natural Condition**

Bangladesh is vulnerable to natural disasters, particularly floods, due to her nature of its terrain, the physical geographic features including an extensive network of rivers, the long coastline and the tropical climate. Bangladesh has adjusted itself to a wet season when every year about 20 to 25 per cent of its land area remains under water. The climate change causes floods, which threaten food security as well as lives of people. Floods and cyclone not only kill many people, but also make households economically poor when main income earners die. They also affect agricultural production, which resulted in food shortage. Floods and cyclone destroy various infrastructures such as residential places, road networks, educational facilities, markets and administrative offices as well. Natural disasters affect lives of people either directly or indirectly, which become causes of poverty in the short and long run: outbreaks of cholera and other waterborne and diarrheal diseases such as dengue, and malaria affect physically; and withdrawal of people from disaster stricken area and destruction of ecology. In recent years, people started to recognize the seriousness of Monga (seasonal vulnerability caused by floods) domestically and internationally (Geller and Mcconnell, 2006). Other causes are

- Rapid growth of population.
- Inequitable distribution of land, income and productive assets.
- Death of chief wage-earner.
- Incapability of chief wage-earner through accident, illness, and old age.
- Chronic irregularity of work.
- Largeness of family.
- Low wage.
- Habits drinking, betting, and gambling.
- Careless housekeeping for improvident expenditure.
- Chronic shortage of cash.
- Absence of food reserves.
- Natural calamities (river erosion, cyclone, tidal surge, excessive rain).
- Under developed communications system.
- Lack of education and skilled labor.
- Lack of administrative fairness and accountability.
- Limited access to public services.
- Lack of mass people's participation in local government etc (Luintel *et al.*, 2009).

2.2.5 FUTURE VIEWS ON POVERTY REDUCTION

Based on the HIES (Household Income and Expenditure Survey) results, it is pointed out by ADB that the sharp decline in poverty during 2000–2005 is attributed to consumption growth and the higher annual GDP growth of 5.5 per cent during 2000–2005 compared with 5.0 per cent during the 1990s. It also states that the steady increase in access of the poor to microcredit, workers' remittances, and social services also contributed to the steep decline in poverty and that poverty rates will decline to 22 per cent by 2015 if the current trends continue. The increasing employment opportunities in non-agricultural production in rural areas, which emerged during the diversification process of livelihoods in rural areas in addition to traditional agriculture, enables the poor escape from poverty. Basic human skills such as educational levels, literacy rates and health conditions, access to electricity, infrastructure including roads, financial systems including microfinance, and remittance from abroad play an important role for the poor to work in non agricultural production. Since the agriculture has been the main industry, type of land ownership has been one of the important factors of poverty (World Bank, 2004).

2.2.6 POVERTY REDUCTION STRATEGY

In order to fulfill the vision of poverty reduction, PRSP (Poverty Reduction Strategy Programme) identifies four strategic blocks and four supporting strategies.

These four blocks are:

(1) Enhancing pro-poor growth;

(2) Boosting critical sectors for pro-poor economic growth;

(3) Devising effective safety nets and targeted programs and

(4) Ensuring human development.

Four supporting strategies are:

(1) Ensuring participation, social inclusion and empowerment of all sections, groups and classes of people;

(2) Promoting good governance by ensuring transparency, accountability and rule of law;

(3) Providing service delivery efficiently and effectively, particularly to the poor and

(4) Caring for the environment and sustainable development on a long-term basis (Arnold, 2002).

2.3 MADHUPUR SAL FOREST

Madhupur Sal forest is situated in the Madhupur upazila (Subdistrict) of Tangail district. The tract lies between 23°50' to 24°50' North latitude and 89°54' to 90°50' East longitude (Nishat *et al.*, 2002). Madhupur Sal forest covers an area of 17 932.15 ha, comprising four ranges namely Madhupur, Aronkhola, Dokhola and Madhupur National Park (MNP) (Khan, 2009). The Madhupur tract consists of pleistocene terraces and recent alluvial floodplain. It occupies the central part of the Ganges-Brahmaputra-Meghna Delta. The soil is compact and hard when dry, but melts with the rainfall and becomes soft and tenacious. The soil all over the Sal forest looks reddish brown in color (Banglapedia, 2010). The annual average rainfall of this area is 2474 mm and heavy rains last for three to four months (April-July). The mean annual temperature is 26.3 ^{0}C and the average maximum and minimum temperatures are 27.5 ^{0}C and 18.5 ^{0}C respectively. The Sal Forest in the central parts of Bangladesh is one of the three major forest resources of Bangladesh (other types are tropical evergreen, tropical semi-evergreen, mangrove or tidal forests) (Kaul *et al*, 1963). This moist deciduous forest in the central region is thought to occupy 120,255 hectares (Bangladesh Forestry Department, 2001) of land where sal (*Shorea robusta)* is the predominant species. Madhupur sal forest revealed a total of 174 plant species was recorded under 131 genera and 54 families of which about

102, 17, 34 and 21 species were classified as under tree, shrub, herb and climber, respectively according to their growth habits. More importantly from the result it was evident that almost all the families at the forests were represented by single genera and the maximum number of genera by single species each indicating the poor diversity at family and genus levels (Bhatnagar, 1957). The Sal Forests comprise of areas containing pure sal crop, mostly of coppice origin. The natural associates of sal in this forest sub-type are bahera (*Terminalia belerica*), sil koroi (*Albizia procera*), ajuli (*Dillenia pentagyana*), haldu (*Adina cordifolia*), kumbhi (*Careya arborea*), jam (*Syzugium cumini*), haritaki (*Terminalia chebula*) and arjun (*T. arjuna*) (Malaker *et al.*, 2010).

2.3.1 FLORISTIC COMPOSITION OF MADHUPUR SAL FOREST

Madhupur sal forest revealed a total of 174 plant species was recorded under 131 genera and 54 families of which about 102, 17, 34 and 21 species were classified as under tree, shrub, herb and climber, respectively according to their growth habits. More importantly from the result it was evident that almost all the families at the forests were represented by single genera and the maximum number of genera by single species each indicating the poor diversity at family and genus levels. This situation demands urgent attention to enrich the plant diversity at genera and species levels to avoid the risk of extinction of single species or genera with single species. Malaker *et al.*, (2002) identified some threatened species of *Bridelia retusa, Zanthoxylum rhetsa, Alstonia scholaris, Phyllanthus emblica, Cassia fistula, Orexylum indicum Semocarpus anacardium, Garuga pinnata etc.* in Jaus bits and Beribaid bits of Madhupur sal forest.

2.3.2 ECOLOGY AND PRODUCTIVITY OF SAL FOREST

- **Stand structure**

Sal is gregarious and dominant in its stand (Champion and Osmaston, 1962). It is considered to be deciduous as it changes leaves every year, and evergreen as the tree is hardly leafl ess. Sal forest's top canopy reaches a height of 30 – 35 m and trees have a girth of 4 m in favourable localities, and the forest consists of many other layers of trees and shrubs. The other species reveal the various types of sal forests, i.e. dry, moist or wet, and are found in varying densities depending on the edaphic and biotic conditions, and constitute a stratified height structure. Webb and Sah (2003) classified the canopy of natural and successional sal forests ('successional ' refers to the forest regenerated naturally after clear cutting) into tree,

sapling and ground flora, and recorded average densities of, respectively, 607, 1763 and 193 555 ha-^{1} for natural forests.

❖ Edaphic factors

Sal grows on a wide range of soil types, except in the very sandy, gravely soils immediately adjoining rivers and in waterlogged areas (Jackson, 1994). It can grow on alluvial to lateritic soils (Tewari, 1995), and prefers slightly acidic to neutral sandy loam (pH = 5.1 – 6.8) with organic carbon content between 0.11 and 1.8 per cent (Rana *et al.*, 1988). Sal forests extend into the tropical and subtropical regions, and to the zones where ranges from 1000 to 2000 mm and above, precipitation and the dry period does not exceed 4 months (Tewari, 1995). Sal tolerates some frost, but annual heavy frosts occurring in frost hollows are detrimental to seedlings (Parik *et al*, 1999). The maximum temperature recorded in sal forest is 49°C (Singh and Chaturvedi, 1983).

❖ Phenology

Depending on edaphic factors and microclimate, a sal forest's phenology ranges from deciduous to evergreen and extends from tropical to subtropical. Leaf fall usually starts in late winter (February) and is completed by the end of April (Misra, 1969). As the sal forest consists of many other species in different layers. Maximum leaf fall is from mid-February to mid-May (Pokhriyal *et al.*, 1987). Sal trees produce seeds every year; a good seed year is normally every third year. Seed production in sal varies (up to 500 kg ha-^{1} was recorded during the early 1980s) from year to year and from tree to tree (Tewari, 1995). Seeding is normally from mid-May to mid-June.

❖ Regeneration

Sal forest is relatively rich in ground flora diversity. Besides tree and shrub, ground flora of sal forest included fern, herb, grass and liana. The number of species in ground flora ranged from 108 to 132 in 1.2-ha plots depending on the successional stage of the forest in central Nepal (Webb and Sah, 2003), and 94 and 120 species were recorded in 0.12-ha plots in two forests in western Nepal (Gautam, 2001). Other species constituted up to 29 per cent in regeneration inventories conducted between 1 and 3 years after felling (White, 1988). However, regeneration studies in sal forests are mostly focused on sal species. Sal regenerates from seed origin or by coppicing; sprouting from root suckers is also very

common. Trees of both coppice and seed origin produce fertile seeds, and there is no difference in the vigor of the seedlings from coppice or seed origin (Troup, 1986). Yadav *et al.*, (1986) noted middle-girth class (81 to 90 cm girth at breast height) as the best size for good-quality seed, but the size of the tree has no apparent effect on the viability of the seed (Troup, 1986).

❖ Growth characteristics

Growth of sal is relatively faster in the earlystages; growth of 14-year-old natural regrowth mixed sal forest. Rautiainen (1995) recorded current annual increment of stem volume from 17 to 18 m 3 ha-^{1} in 6 and 9-year old uniform-seedling coppice sal stands. Protection of degraded sal forest produced a biomass of 53.56 t ha − 1 in 4 years (Tamrakar, 1994). Rautiainen (1999) collected growth characteristics from 28 permanent sample plots located in healthy almost-pure sal forests ranging in age from 5 to 120 years; the characteristics varied with locations within a forest (Rautiainen *et al.*, 2000). Carbon fixation in the above-ground parts of these forests was found to be 9.3 (for old-growth) and 10.1 (for new-growth) t ha^{-1} year^{-1}, indicating greater carbon accumulation efficiency in young forest than in old forest (Rana *et al.*, 1988) healthy almost pure sal forests ranging in age from 5 to 120 years; the characteristics varied with locations within a forest.

❖ Productivity indices

Rahman (1991) studied the productivity of sal plantations ranging from 8 to 26 years old, and noted the same trend between basal area and net primary productivity (based on annual litter fall and current annual increment in tree biomass). The study showed 14.62 t ha^{-1} year^{-1} (corresponding to basal area of 29 m 2 ha^{-1}) as the highest productivity indices attained at the age of 18 years. However, the productivity based on nongreen: green ratio was reported greatest between 30 and 50 years of ages. Kaul *et al.*, (1979) used the increment in stem timber volume as a productivity index for sal forest mixed with *Mallotus philippinensis*.

Fig. 2.1: Survey with the respondents

attributes: annual rainfall from 2030-2290 mm, annual temperature from 10-34°C, humidity between 60 and 86%, duration of sunshine from 5-9 hours, and average maximum wind speed at 16 KM/hour. The forests are fragmented by an intricate network of depressions in a honeycomb pattern layout. The depressions are generally cultivated with paddy. Homesteads, cultivable land, and forests are mixed, which makes forest boundary demarcation and maintenance extremely difficult. Garo, an ethnic community (also called Mandis), have been living in these forests for centuries and are considered a forest people (Gain, 1998). More than 66% of the Sal forests are cleared or under the possession of 88000 encroachers.

3.2 UNIT OF ANALYSIS

The unit of analysis for this research was individual people of the settlers.

3.3 SELECTION OF RESPONDENT

Hundred respondents including married, unmarried, divorced, widowed, landless and destitute women were selected for the survey. Among them 50 were social forestry participant and 50 were non-participant.

3.4 DATA COLLECTION

To obtain data for this study I traveled to Madhupur Sal forest in Tangail and I carried out field study to collect primary data. This was done in June 2014.

3.4.1 Primary sources

Primary information regarding poverty alleviation through social forestry was collected through face to face semi-structure questionnaire survey. Data was collected from only women. The following information such as household condition, no. of family members, no. of literate members, no. of earning members, sanitation, sources of drinking water, medicare, lighting facilities, primary and secondary occupation, income, expenditure, women participation in household decision making, attitude of family members towards their job, types of problem faced during their job etc were collected.

3.4.2 Secondary sources

To collect the secondary data like edaphic and climatic condition, area, population etc I followed several following sources:

- Seminar Library, Forestry and Wood Technology Discipline, Khulna University
- Published and unpublished thesis papers
- Internet browsing

3.5 DATA ANALYSIS

The collected data and information are carefully reviewed and sorted according to the sequence. The unnecessary part of the collected information and data are discarded from the final paper to avoid the bulky size of the paper. The collected data are analyzed by SPSS software and Microsoft Office Excel.

CHAPTER FOUR: RESULT AND DISCUSSION

4.1 PROFILE OF THE RESPONDENTS:

Socio-economic and demographic conditions determine the dependency on social forestry. Family is the one and only source of labor supply because of being the primary productive unit. All the family members contribute to subsistence and commercial side but the age of the respondents is sorted out in four age groups in the study area because age of the respondents covered a wide range. The most important economically active population in social forestry participant is 41 to 50 years and non-participant is 31 to 40 years. Despite of having the supportive role of the members with age below 30 and above 55 years in the economic activities of the family, they are not considered as economically active members. Average earning members of the participant is 2.46 and non-participant is 2.42. Most of the respondent's family has 1-3 earning members (Table 4.1).

Overall, average no. of family members of social forestry participant is 4.58 and non-participant is 4.26. Most of the respondents are muslim. As a human capital and the most important factor for socio-cultural and economic change, education plays an important role in shaping household status in the society. Advancement means development and development is not possible without education. People' attitude and knowledge cannot be developed without education and so with the society. Their education level is class (6-10) and average literate members 1.36 in participant and 1.34 in non-participant. Livelihood condition of the respondent indicates the economic status of that respondent which reveals how much they benefitted from social forestry and how much they depend upon it. The study shows that most of the households made earthen material that means Kacha Bari (Table 4.1).

But most of the participant use sanitary latrine and non-participant use handmade latrine. Land ownership within the agrarian economy of the study area provides a major source of income. Sixty eight participants and seventy eight non-participants have no extra land without house. Water is called life. In the study area 76 participants have own tubewell and 84 non-participants use own tubewell. Fifty participants and fifty two non-participants deposit their money in the bank and others deposit in the somite. Sixty two participants and fifty eight non-participants go to registered doctor for health care and others go to homeopathy and quack doctor. Most of the respondents have electricity and others use local lamp. Fifty participants have motorcycle/bicycle/van and sixty two non-participants have

domestic animals. Data reveals that ninety participant's household and seventy eight non-participants household gets enough food all the year round. Yearly income of the participant is 121168 tk and expenditure is 111128 tk. Yearly income of the non-participant is 101180 tk and expenditure is 95940 tk (Table 4.1).

Table 4.1: Demographic and socio-economic profile of the respondents

		Participant			Non-participant		
Serial no.	**Variables**	**Mean**	**S.D**	**%**	**Mean**	**S.D**	**%**
1	**Age class (Years)**	44.5	8.933427251		39.86	7.647888864	
	21-30			4			12
	31-40			32			50
	41-50			44			32
	51-60			20			6
2	**No of family members**	4.58	1.322875656		4.26	1.35239772	
	1-3			18			36
	4-6			68			54
	>6			14			10
3	**Religion**						
	Islam			64			54
	Sanatan			22			32
	Christian			14			14
4	**Education**						
	Illiterate			14			12
	Can sign			24			24
	Class(1-5)			28			28
	Class(6-10)			30			32
	Class(11-12)			4			4
5	**Housing condition**						
	Kacha			68			72
	Semi-kacha			32			28
6	**Earning members**	2.46	0.61583415		2.42	0.991597351	
	1-3			96			92
	4-6			4			6
	6<			0			2
7	**Literate members**	1.36	0.66		1.34	0.9	
	0-2			94			96
	3-5			6			4
8	**Land owner ship**						
	Only house			68			78
	House, Land			32			22
9	**Fuel wood**						
	Forest			26			62
	Market			16			38
	Pruning			58			0
10	**Source of drinking water**						

	Own Tebewell			76			84
	Other Tebewell			24			16
11	**Money Deposition**						
	Bank			50			52
	Self			22			22
	Someti			28			13
12	**Medicare**						
	Quack doctor			14			12
	Homeopathy doctor			24			30
	Registered doctor			62			58
13	**Lighting facilities**						
	Electricity			56			46
	Local lamp			44			54
14	**Sanitation**						
	Sanitry latrine			62			46
	Hand made			38			54
15	**Asset**						
	Motorcycle/Bicycle/Van			14			6
	TV/Mobile			50			32
	Domestic animal			36			62
16	**Food consumption**						
	2 meals			6			8
	3 meals			90			78
	3 meals but small amount			4			14
17	**Yearly income**	121168			101180		
18	**Yearly expenditure**	111128			95940		

Source: Field Survey (2014)

4.2 Demographic condition

4.2.1 Age class distribution

The respondents are categorized into four groups according to age class. Fig. 4.1 shows among social forestry participant 4% respondent is aged in 21-30 years, 32 % in 31-40 years, 44% in 41-50 years and 20% in 51-60 years. On the other hand, among non- participant 12% respondent is aged in 21-30 years, 50% in 31-40 years, 32% in 41-50 years and 6% in 51-60 years.

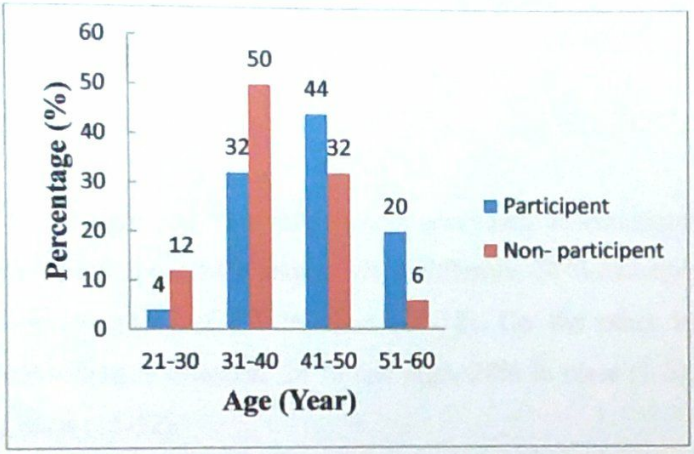

Fig. 4.1: Age class of the respondents

4.2.2 Religion

The respondents are categorized into three groups according religion. Fig. 4.2 shows among social forestry participant 64% respondent is muslim, 22 % is hindu and rest14% is Christian. On the other hand, among non-participant 54% respondent is muslim, 32 % is hindu and rest14% is Christian.

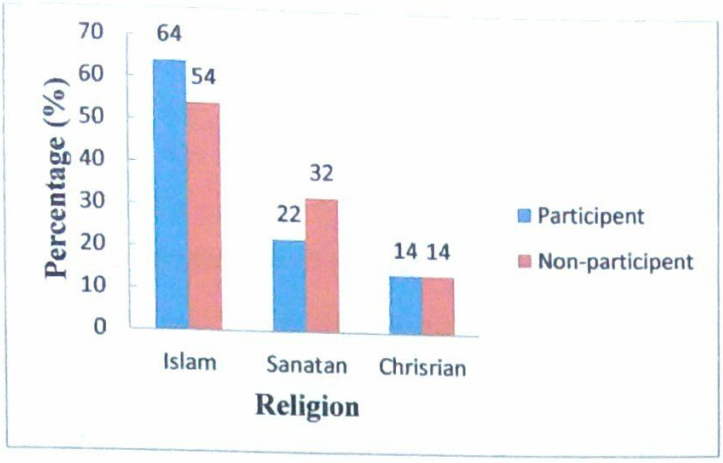

Fig. 4.2: Religion of the respondents

4.2.3 Education

The respondents are categorized into five groups according to education. Fig. 4.3 shows among social forestry participant 14% respondent is illiterate, 24 % can sign, 28% in class (1-5), 30% in class (6-10) and rest 4% in class (11-12). On the other hand, among non-participant 12% respondent is illiterate, 24 % can sign, 28% in class (1-5), 32% in class (6-10) and rest 4% in class (11-12).

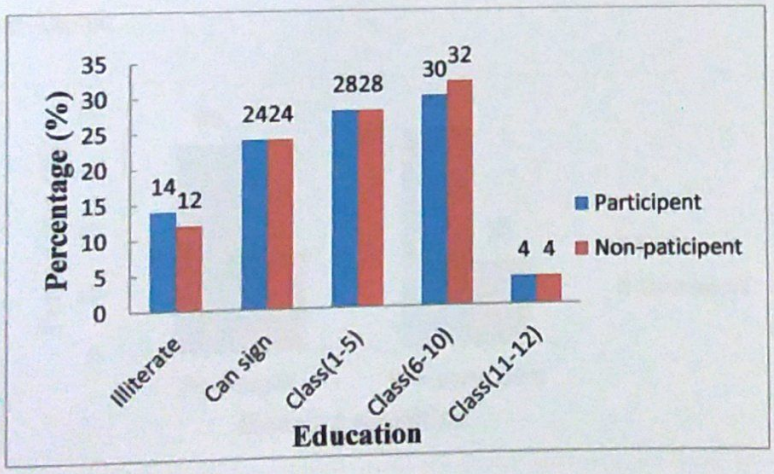

Fig. 4.3: Education of the respondents

4.2.4 Family members

The respondents are categorized into three groups according to the no. of family members. Fig. 4.4 shows among social forestry participant 18% respondent have 1-3 family members, 68% have 4-6 and 14% have more than 6. On the other hand, among non-participant 36% respondent have 1-3 family members, 54% have 4-6 and 10% have more than 6 membes.

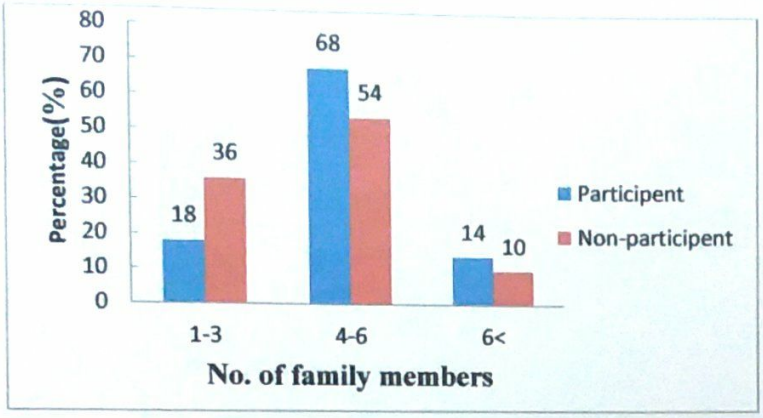

Fig. 4.4: Family members of the respondents

4.2.5 Housing condition

The respondent houses are categorized into two groups according to housing condition. Fig. 4.5 shows among social forestry participant 68% respondents house is kacha and rest 32% is semi-kacha. On the other hand, among non- participant 72% respondent's house is kacha and rest 28% is semi-kacha.

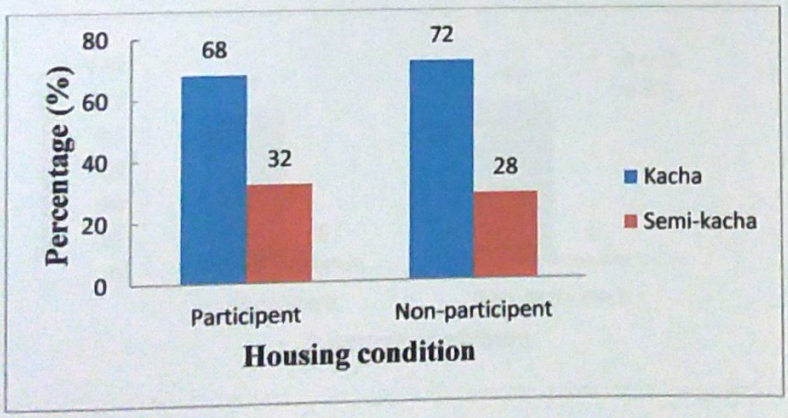

Fig. 4.5: Housing condition of the respondents

4.2.6 Earning members

The respondents are categorized into three groups according to the no. of earning members in their family. Fig. 4.6 shows among social forestry participant 96% respondent have 1-3 earning members, 4% have 4- 6. On the other hand, among non-participant 92% respondent have 1-3 earning members, 54% have 4-6 and 2% have more than 6 members.

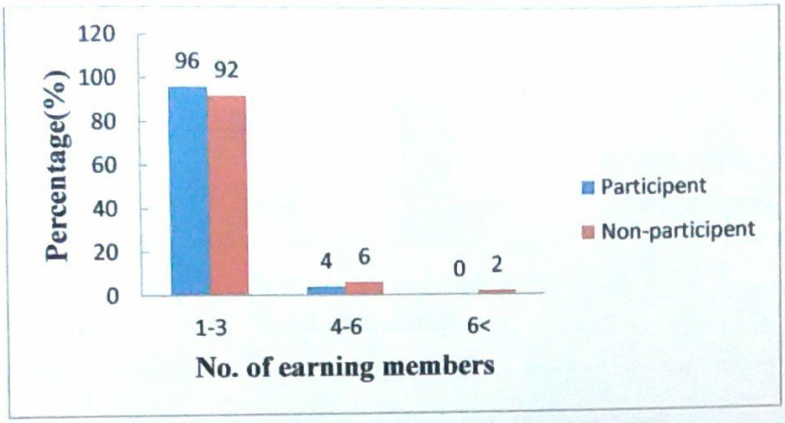

Fig. 4.6: Earning members of the respondents family

4.2.7 Literate members

The respondents are categorized into three groups according to the no. of literate members of their family. Fig. 4.7 shows among social forestry participant 94% respondent have 0-2 literate members, 6% have 3- 5 members. On the other hand, among non-participant 96% respondent have 0-2 literate members and 4% have 3-5 members.

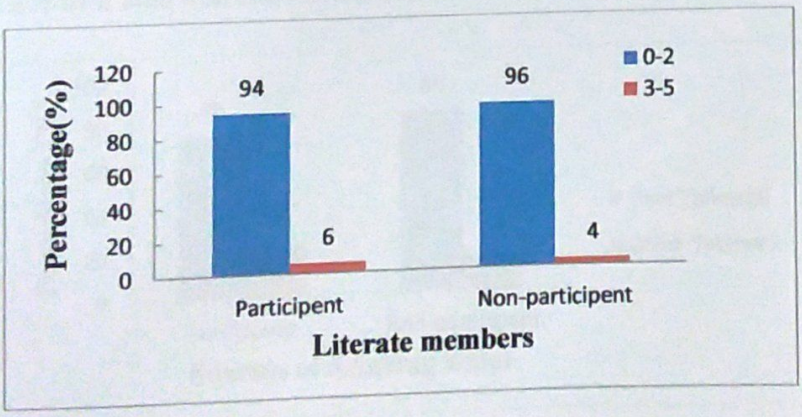

Fig. 4.7: Literate members of the respondents family

4.2.8 Land ownership

The respondent lands are categorized into two groups according to ownership. Fig. 4.8 shows among social forestry participant 68% respondents have only house and rest 32% have house and land both. On the other hand, among non- participant 78% respondents have only house and rest 22% have house and land both.

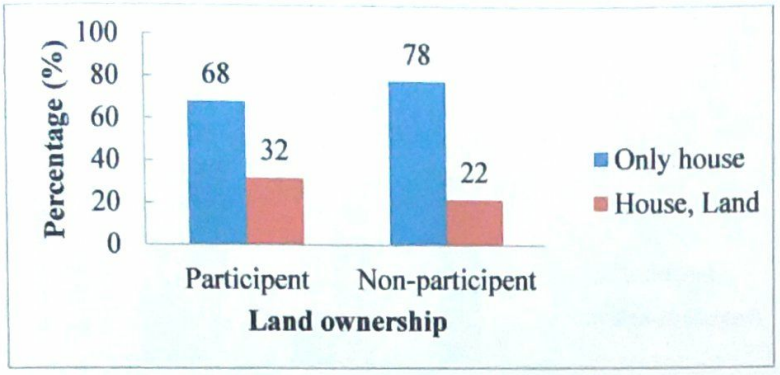

Fig. 4.8: Land ownership of the respondents

4.3 Socio-economic condition

4.3.1 Sources of drinking water

The respondents drinking water are categorized into two groups according to source. Fig. 4.9 shows among social forestry participant 76% respondents have own tube-well and rest 24% have no tube-well, they use others tube well. On the other hand, among non- participant 84% respondents have own tube well and rest 16% have no tube-well.

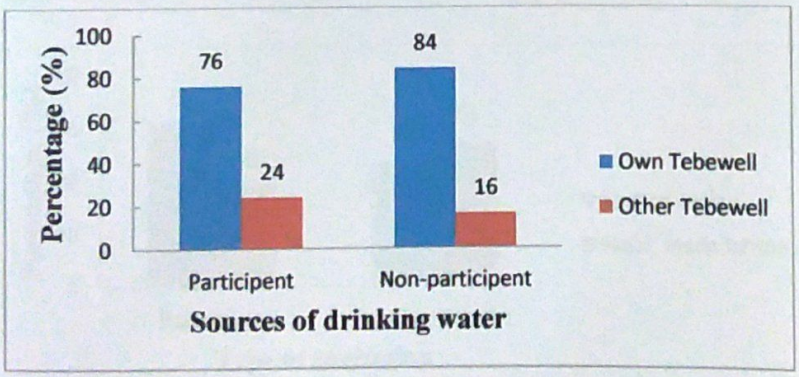

Fig. 4.9: Sources of drinking of the respondents

4.3.2. Sources of fuel wood

The fuel wood of the respondent is categorized into three groups according to source. Fig. 4.10 shows among social forestry participant 26% respondents use forest to meet their fuel wood consumption, 16% respondents buy from market and rest 58% use their pruning substance (leaf, branch, and bark). On the other hand, among non- participant 62% respondents use forest to meet their fuel wood consumption and rest 38% respondents buy from market.

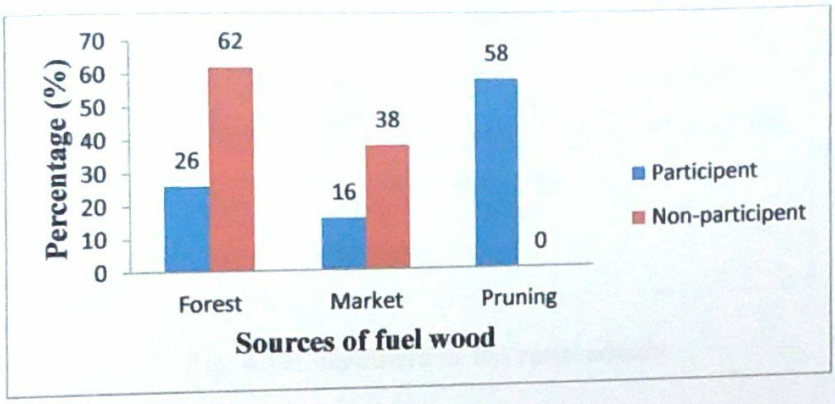

Fig. 4.10: Sources of fuel wood of the respondents

4.3.3 Sanitation

The respondents' sanitation system is categorized into two groups according to building material. Fig. 4.11 shows among social forestry participant 62% respondents have sanitary latrine and rest 38% have handmade latrine. On the other hand, among non-participant 46% respondents have sanitary latrine and rest 54% have handmade latrine.

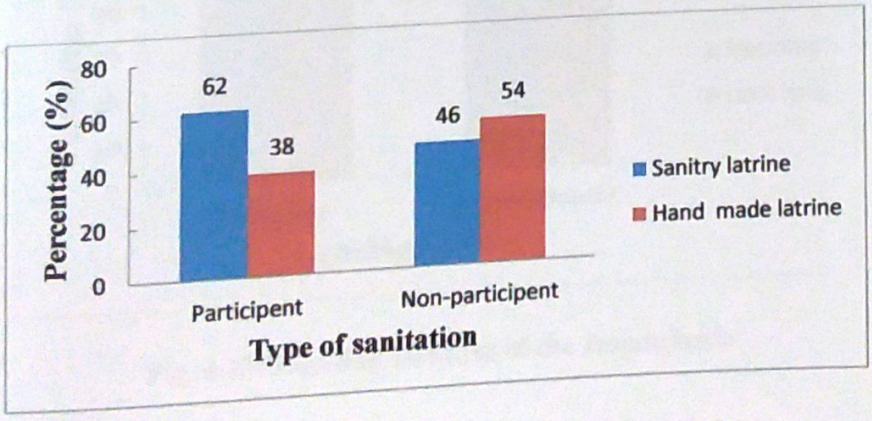

Fig. 4.11: Type of sanitation of the respondents

4.3.4 Medicare

Fig. 4.12 shows among social forestry participant 14% respondents go to quack doctor for medicare, 24% go to homeopathy doctor and rest 62% go to registered doctor. On the other hand, among non- participant 12% respondents go to quack doctor for medicare, 30% go to homeopathy doctor and rest 58% go to registered doctor.

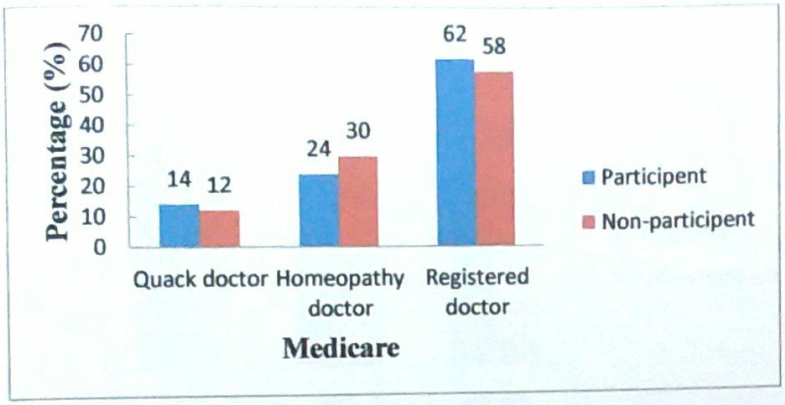

Fig. 4.12: Medicare of the respondents

4.3.5 Lighting facilities

Fig. 4.13 shows among social forestry participant 56% respondents use electricity and rest 44% use local lamp. On the other hand, among non- participant 46% respondents use electricity and rest 54% use local lamp.

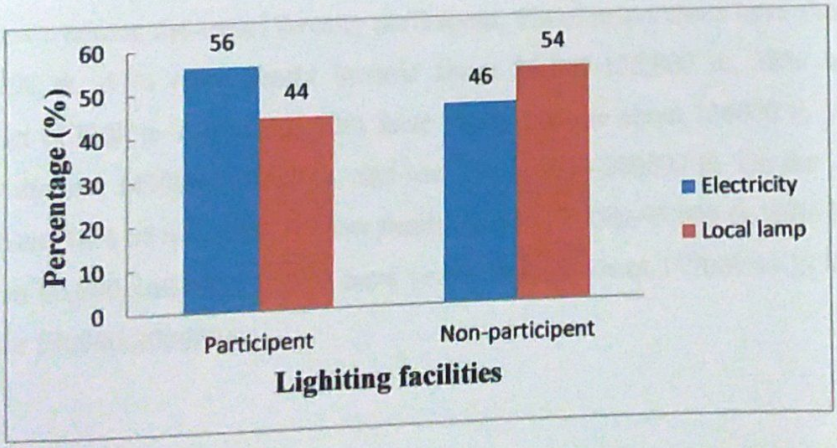

Fig. 4.13: Lighting facilities of the respondents

4.3.6 Place of money deposition

Fig. 4.14 shows among social forestry participant 50% respondents deposite money in bank, 22% keep self and 28% deposite in someti. On the other hand, among non- participant 52% respondents deposite money in bank, 22% keep self and 13% respondents deposite in someti.

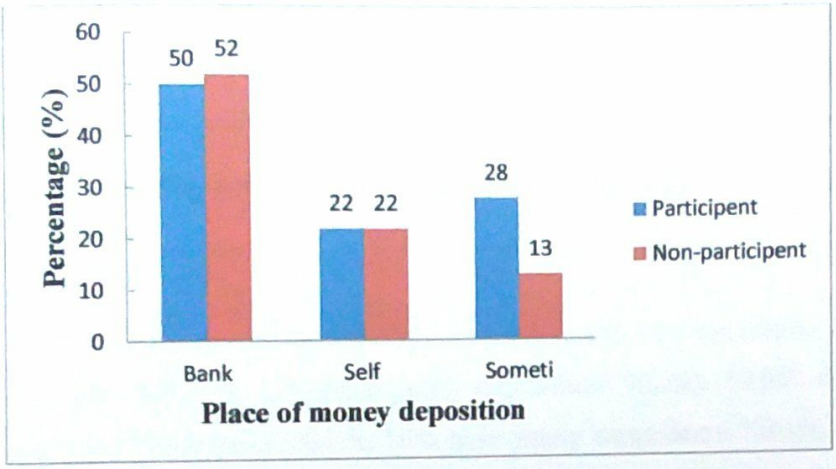

Fig. 4.14: Place of money deposition of the respondents

4.3.7 Income

Fig. 4.15 shows among the social forestry participant, 6% of respondents have yearly income 75,000-95,000 tk, 42% have yearly income about 96,000-160,000 tk, 38% have yearly income about 117000 to 137000 tk, 10% have yearly income about 138000 to 148000, 2% have yearly income 149000-179000 tk, and rest 2% 180000-200000 tk. On the other hand non participant, 38% of respondents have yearly income 75,000-95,000 tk, 48% have yearly income about 96,000-160,000 tk, 12% have yearly income about 117000 to 137000 tk, and rest 2% have 180000-200000 tk.

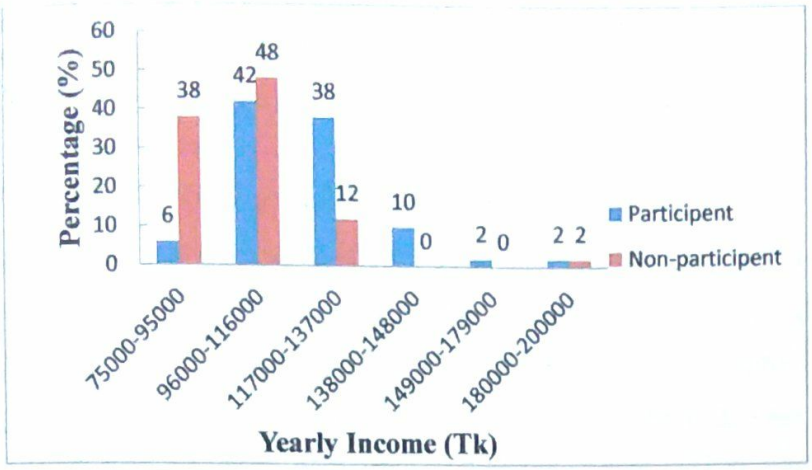

Fig. 4.15: Yearly income of the respondents

4.3.8 Expenditure

Fig. 4.16 shows among the social forestry participant, 6% of respondents have yearly expenditure 75,000-95,000 tk, 42% have yearly expenditure 96,000-160,000 tk, 38% have yearly expenditure 117000 to 137000 tk, 10% have yearly expenditure 138000-148000, 2% have yearly expenditure 149000-179000 tk, and rest 2% have yearly expenditure 180000-200000 tk.

On the other hand among non participant, 46% of respondents have yearly expenditure 75,000-95,000 tk, 52% have yearly expenditure 96,000-160,000 tk, and rest 2% have yearly expenditure 149000-179000 tk.

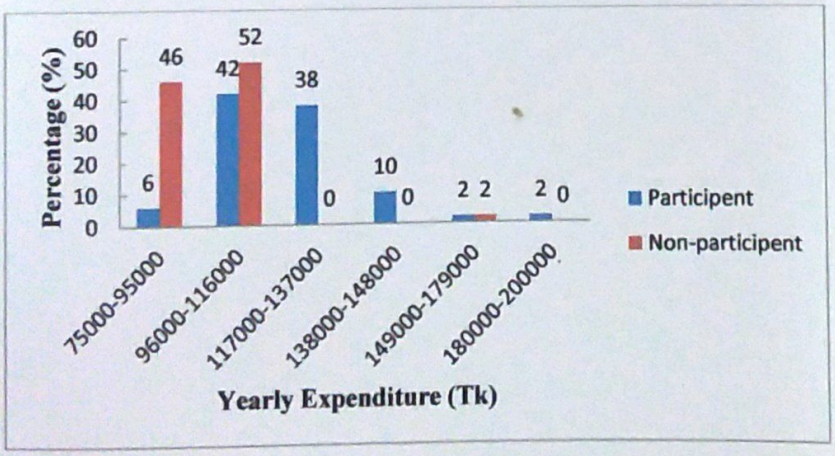

Fig. 4.16: Yearly expenditure of the respondents

4.4 Discussion

It is observed that most of the social forestry participant is middle aged and non-participant are too. Family members of the participant are more than non-participant. The rate of educated members is more than non-participant but education level of the non-participant is more than participant. The housing condition of the participant is improved than the non-participant. The no. of house and land ownership between participant and non-participant is more in participant. Most of the participant use fuel from pruning so the expenditure for fuel is saved. Most of the non-participant uses their own tube well for drinking water but most of the participant depends on others tube well. The yearly income and expenditure of the participant is more than the non-participant. Most of the participant goes to registered doctor during illness. Most of the participant uses electricity and sanitary latrine. Most of the participant gets 3 meals in a day but non-participant gets 2 meals.

CHAPTER FIVE: CONCLUSION

From the study it was observed that housing condition, no. of literate members, land ownership, medicare, sanitation, lighting facilities & income of the participants are improved than non-participant. It is clear that the socio-economic condition of the participant is better than the non-participant. So it can be said that social forestry has a role in poverty alleviation & promote livelihood that ultimately reduce poverty of rural women. Finally we can say that the resource of the women who is social forestry participant is improved than non-participant.

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Appendix

A Questionnaire

On

A comparative study on resources of the social forestry participant and non-participant of rural women: A case study in Madhupur Sal (Shoren robasta) Forest.

(The information collected through this study will be used solely for study purpose)

Location of the study area:

Village	Union	Upzilla	District

A. Demographic Characteristics of the Respondent's Family:

A.1.Age: .....

A.2.Sex: .....

A.3. Religion: .....

A.4. Household Size (number): Total No..... ☐ Male..... ☐ Female.....

A.5. Family Structure (put tick): ☐ Joint ☐ Nuclear

A.6. Education:

Illiterate	
Can sign only	
i-v	
i-x	

A7. No. of literate members: ☐ Male..... ☐ Female.....

A.8. No. of school attendance by children: ☐ Boy..... ☐ Girls.....

A.9.Present occupation:

Agricultural labourer	
Agricultural Professions	

Non agriculture	
Service	
Small trading	
Other trading	

A.10.Secondary business: .....

A.11. Land holding Pattern: □ Own land □Landless

A.12. Sex of the household head: □ Male □ Female

A.13 No. of literate members: □ Male..... □ Female.....

A.14. No. of earning members: □ Male..... □ Female.....

B. Information on Social forestry:

B.1 what type of Social forestry activities do you practice?

Strip plantation	
Agroforestry plantation	
Woodlot plantation	
Nursary raising	
Institutional plantation	

B.1.2. Year of involving social forestry program: .....

B.2. Property statement:

B.2.1. Land:

Types	Participants of the social forestry	Non-participants
House		
Agriculture		
Nursery		
Others		

B.2.2. Type of Household

Types	Participants of the social forestry	Non-participants
Kacha		
Semi pacca		
Pacca		

B.2.3. Household assets

List of asset	Participants of the social forestry	Non-participants
Bicycle/Motor cycle/Van		
T.V/Radio/		
Cow/Goat		
Others		

B.3. Family income

	Participants of the social forestry	Non-participants
Family income (per year)		

B.4. Yearly expenditure

	Food	Cloth	Education	Medical	Others
Before involving social forestry					
After involving social forestry					

B.5. Place of deposition

	Participants of the social forestry	Non-participants
Self		
Neighbour		
Post office		
Bank		

B.6. Source of Drinking water

	Own tub well	Other tube well	Govt. tube well
Before involving social forestry			
After involving social forestry			

B.7. Quality of drinking water

	Participants of the social forestry	Non-participants
Good		
Not good		
Salty		

B.8. Medicare

	Participants of the social forestry	Non-participants
Quack		
Homeopath		
Registered doctor		
Herbal		

B.9. Food sufficiency

Meal/day	Participants of the social forestry	Non-participants
3 meals		
3 meals but reduced amount		
2 meals		

B.10. Type of latrine

	Sanitary	Ring slab	Home made	open place
Before involving social forestry				
After involving social forestry				

B.11. Lighting facilities:

	Participants of the social forestry	Non-participants
Local lamp		
Electricity		

B.12. Types and amount of fuel consumption (per month consumed in Kilo)

	Participants of the social forestry	Non-participants
Wood		
Charcoal		
Kerosene		
Electricity		
Leaves and grasses		
Others		

B.7. Quality of drinking water

	Participants of the social forestry	Non-participants
Good		
Not good		
Salty		

B.8. Medicare

	Participants of the social forestry	Non-participants
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Before involving social forestry				
After involving social forestry				

B.11. Lighting facilities:

	Participants of the social forestry	Non-participants
Local lamp		
Electricity		

B.12. Types and amount of fuel consumption (per month consumed in Kilo)

	Participants of the social forestry	Non-participants
Wood		
Charcoal		
Kerosene		
Electricity		
Leaves and grasses		
Others		

B.12. Are you engaged with any N.G.O? ☐ Yes…….. ☐ No…….

B.13. If yes, what is the name of N.G.O? ……..

B.14. If yes, what type of assistance you got from N.G.O:

Micro credit	
Health assistance	
Education	
Sanitation	
Housing	

B.15. No and types of tree species

	In homestead	In farmland
Am		
Kanthal		
Mehogoni		
Koroi		
Akasmoni		
Payara		
Batabelebu		
Narkel		
Others		

B.16. Benefit derived from tree:

Timber	
Fuel	
Fruit	
Fodder	
Money from sale	
Shade	
Environmental protection	
Protection from storm & wind	
Ignorant	

B. 17. Evaluation of social forestry program:

Is it beneficial? ☐ Yes…….. ☐ No…….

If yes, factors are .....

If no, factors are .....

B.18. Training

How many training? .....

What type of training? .....

What have you learn? .....

B.19. What type of problem you face at present time?

Local elite	
Rich people	
Robber	
political influence	
Others	

Signature of the surveyor

Signature of respondent