

**WOMEN'S EMPOWERMENT THROUGH THEIR PARTICIPATION IN
SMALL SCALE WATER RESOURCES DEVELOPMENT PROJECTS**

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Certification

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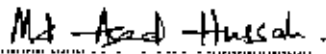
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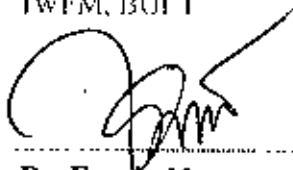
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DEDICATION

This research is dedicated to the poor and marginalized women of Bangladesh with the courage and conviction that they will certainly "overcome someday"

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LIST OF ABBREVIATIONS

AAB	ActionAid Bangladesh
ADB	Asian Development Bank
BARD	Bangladesh Academy for Rural Development
BBS	Bangladesh Bureau of Statistics
BIDS	Bangladesh Institute of Development Studies
BUET	Bangladesh University of Engineering and Technology
BWDB	Bangladesh Water Development Board
CDSP	Char Development and Settlement Project
CPP	Compartmentalization Pilot Project
DPHE	Department of Public Health and Engineering
FMC	First Management Committee
GAD	Gender and Development
GAE	Gender and Empowerment
GoN	Government of the Netherlands
GPWM	Guidelines of Participatory Water Management
GWA	Global Water Alliance
HH	Household
IFAD	International Fund for Agricultural Development
IGA	Income Generating Activities
IWRM	Integrated Water Resources Management
LCS	Labor Contracting Society
LGED	Local Government Engineering Department
MC	Managing Committee
MDG	Millennium Development Goal
MIS	Management Information Center
MoWR	Ministry of Water Resources
NGO	Non-Government Organization
NWDP	National Women Development Policy
NWMP	National Water Management Policy
NWP	National Water Policy

O&M	Operation and Maintenance
PDO	Project Development Office
RDA	Rural Development Academy
SSWRDSP	Small Scale Water Resources Development Sector Project
UNDP	United Nations Development Programme
WID	Women in Development
WM	Water Management
WMA	Water Management Association
WMCA	Water Management Cooperative Association
WSS	Water Supply and Sanitation

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ABSTRACT

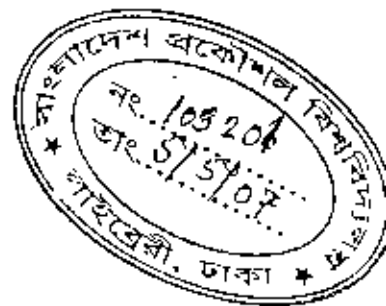
Government of Bangladesh has taken concrete steps to ensure women's participation in development process. National Water Policy was declared and women's participation was highlighted in this. Water resources projects' implementing organization and institutions has taken it as their mandate to ensure women's participation in water management (WM) for gender equality. Small Scale Water Resources Development Sector Projects (SSWRDSP) under its first phase has made an attempt to involve women in water management through formation of water management co-operative association (WMCA). This project aimed at production increase for poverty eradication through proper water management involving the local community

This study was aimed at exploring the women's status in the project area of SSWRDSP first phase with special emphasis on women's empowerment through their participation in WMCA. In this study, women's empowerment due to the project has been measured by some indices. In order to measure empowerment few issues like mobility, decision making power, autonomy, economic empowerment, exposure to information, institutional involvement, etc, have been used. Using those issues, empowerment index of an issue (EI) and composite empowerment index (CEI) for a woman has been calculated.

The study has been conducted in Rajbari district. Three subprojects of SSWRDSP first phase i.e. *Brajamul-Bhitikhal* Flood Control and Drainage (FCD) subproject of *Saorail* union of *Pangsa* thana, *Beel Salua* Drainage and Water Conservation (DR & WCS) subproject of *Baharpur* union of *Baliakandi* thana and *Bara Nurpur* Water conservation (WCS) subproject of *Shahid Wahabpur* union of *sadar* thana of Rajbari district have been selected for the study. For comparison a control site has been considered, where no water management project was present.

Three major areas have been focused in the study. women's empowerment due to participation in WM, scoping some newer areas of involvement for women in WM and factors that are hindering women's participation and efficient working in WM. It was observed that women who are participating in WM are more empowered in comparison to the control site. CEI is the highest in the subproject having the highest level of women's (Baranurpur and Brajamul-Bhitikhal) participation in WMCA. Among the subprojects, Beel Salua has the lowest level of average CEI. Average index for empowerment issues was observed to be higher where women are more involved in WM activities. They have more access and control over decision-making both in household and WMCA than the women in the control site. Average index for economic empowerment issue was also highest in the project area, (80, 74 and 63 for Brajamul-Bhitikhal, Baranurpur and Beel Salua respectively), whereas it is 46 for the control site. Approximately 50% of the present women involvement in WM is not so satisfactory in terms of return. Women in the project area thought that they could contribute more in WM. Women were facing different barriers for participating in WM. It was observed that though they are involved in WMCA they could not work efficiently in WMCA due to some gender-based gaps in the society. They also pointed out some social, financial, cultural and religious factors that hindered their participation in WM.

The study will help in understanding women's status in WM. The study has pointed out some recommendations, on the basis of which further study can be carried out



Chapter One

INTRODUCTION

1.1 Preamble

Bangladesh has a current population of 140 million. Rural areas appear to have become more densely populated (1,161 persons per km² as of 1999) while the number of people living in urban areas has risen to 19% of the total. Almost half of the population is women. Women also constitute a substantial proportion of the rural poor population. The percentage of poor households is higher in the rural area than in the urban area

In Bangladesh, women are more vulnerable than men to chronic poverty due to gender inequalities in various social, economic and political institutions. Such inequalities can be found in the andocentric distribution of income, control over property or income and access to productive inputs (such as credits), decision-making processes, rights and entitlements. Women also have limited access to and control over water resources like all other resources

Water is a social and economic good. It acts as an entry point for sustainable development and poverty reduction. Inequality in access to water resources, water related diseases and disaster proliferates cycles of poverty.

Women are the users and carriers of water, family health educators, motivators and agents of change. Women have considerable knowledge about water resources, including quality and reliability, restrictions and acceptable storage methods. They are key persons to the success of water resources development. Women and children provide nearly all the water for the household in rural areas. Domestic water is used for drinking, cooking, bathing and washing, for irrigating home gardens and watering livestock. Women know the location, availability, quality and reliability of local water resources. Poor water access and low quality water not only affect the women's crops and livestock production and the amount of labor they must expend to collect, store, protect and distribute water, but also affect their family members

So women's access to water of sufficient quality and quantity will reduce the incidence of water-washed and water borne diseases, improve health and productivity for women. Consultation with women before water related projects helps them to balance their productive and reproductive roles also. Women's access to sufficient water uses indicates improved livelihoods and food security.

In Bangladesh most of the water supply and sanitation projects considered women's participation for their reproductive role. Reproductive roles in these cases brought some sorts of sense of social rather than biological reproduction. In all projects, women's roles were depicted so as to ensure the healthy maintenance of their families including cooking, cleaning and child care. Besides this, rural women have to be more careful and even sometimes it is their sole responsibility to maintain the livestock. Livestock are the vital consumer of water. So women have to spend a huge amount of time regarding water management for livestock. Like African countries or other developing countries women are less involved in irrigation water management. Due to power distribution in intra household this discrepancy has increased. This situation is mostly conspicuous in Bangladesh, because of women's limited access to land resources, religious and socio-cultural barriers for women to come for irrigation. Though in recent days development work have involved women in irrigation water projects considering the sustainability of the projects, in terms of operation and maintenances. In African countries, women have access to land and most of the female-headed households are directly involved with cultivation and also with direct water management. Women in these areas are also involved with water dependent sectors other than agriculture. Though women are playing a vital role in water management, interestingly gender inequalities are found in most water projects both in Asian or African countries (Kamal and Jairath, 2002 ; Rathgeber, 1995).

1.2 Background of the Study

Government of Bangladesh declared National Women Development Policy in 1997 (MoWCA, 1997), which is a step towards women's participation in development. National Water Policy (MoWR, 1999) was declared in 1999 highlighting women's participation in water sectors. As a part of this vision, Local Government Engineering

Department (LGED) has given greater importance on gender and development, and has been working to promote gender equity through Small Scale Water Resources Development Sector Projects (SSWRDSP) (LGED, 2003). The project has opened opportunities for women to increase their income and to participate in economic activities, but it cannot be assessed to what extent the subprojects contribute to create a situation of more equal opportunities for poor men and women (BUET, BIDS and WL, 2003). Therefore, in the present study, women's status in project areas of the first phase of SSWRDSP will be analyzed with special emphasis on women's empowerment through their participation in water resources management.

1.3 Objective of the Study

The aim of the study is to assess women's empowerment from household to society through their participation in SSWRDSP with the following objectives:

- to find out the gender status in the first phase of SSWRDSP with special emphasis on women's empowerment;
- to understand newer areas of involvement for women in participatory water management; and
- to identify factors affecting women involvement in water resources development.

1.4 Scope of the Study

The study is based in three villages of three types of subprojects (Flood Control & Drainage, Water Conservation and Drainage and Water Conservation Subprojects) of SSWRDSP-I in Rajbari and one village as the control site in the same district. The scope of the study is limited to women's participation in water resources management. Since small scale water management is confined to flood control and drainage, water conservation etc. so irrigation water management is minimally addressed; which is a major area of concern for women's participation in water management as it is more related to domestic water supply for women.

1.5 Limitations of the Study

The limitations of the study are as follows:

- 1) This study has been conducted in only a few villages of three subprojects under Rajbari district which is inadequate to portray the overall scenario of women's empowerment
- 2) In some cases the study has suffered from lack of adequate information from the people, due to ignorance of the people.
- 3) Women's involvement in water sector is very recent, so the impact will be visible after a while.
- 4) In the first phase of SSWRDSP gender is seen as a cross-cutting issue only in WM.
- 5) There are numerous variables for determining women's empowerment; these methodological differences may affect measurement of women's empowerment.
- 6) Empowerment itself is a process and it has no demarcation. So it is difficult to conclude that empowerment has already been achieved due to development projects/initiative.
- 7) Limited number of experts in the field of gender and water resources limits the expert opinion survey

Chapter Two

LITERATURE REVIEW

The main focus of this chapter is to look back and synthesize the work in the field of gender equality and water resources management, and also to congregated the women's empowerment concept through review of different research work. This chapter has been presented in three thematic areas to understand the whole matter in a sequential manner. The first part belongs to gender and development concept: thereafter evolution of gender concept in development is illustrated briefly. In the second part, gender consideration in water management; women's participation in water management in Bangladesh is thoroughly discussed. A brief description of SSWRDSP has been also portrayed to understand the present state of the need for the study. The last part is about women's empowerment in Bangladesh perspective both as a concept and process.

2.1 Gender and Development

2.1.1 Concept of Gender

Since the 1950s, the term *gender* has been increasingly used to distinguish a social role (gender role) and/or personal identity (gender identity) distinct from biological sex. Until the 1980s, "gender" was a word used primarily in the realm of linguistics. The women's movement changed that, as it changed so much else. Advocates of women's rights in the present looked at what they had been taught about the past and realized that it described only the male experience, though often portraying this as universal. This realization, combined with increasing numbers of women going into the field of history, led to investigation of the lives of women in the past.

Gender often refers to the distinctions between males and females in common usage. Currently, anthropologists, sociologists, psychologists, and gender theorists like Judith Butler and Kate Bornstein say that gender is a social construction, that it is "performative," and that one is always in the process of becoming a gender rather than actually being a gender.

Additionally, the social "rules" governing gender are always shifting with the culture, making one's "masculinity" or "femininity" a (tacit) agreement among members of a culture, rather than being derived from an innate set of predetermined characteristics. In this study, gender refers to the different roles, rights and responsibilities of men and women and the relationship between them. Gender does not simply refer to women or men, but to the way their qualities, behaviors, and identities are determined through the process of socialization. Gender is generally associated with unequal power and access to choices and resources (GWA, 2005).

2.1.2 Defenition of Development

Development is, by defenition, an historical process. The concept of development must be understood from a clear perspective. Sometimes it is seen as economic growth; some times as growth and strudctural transformation, still some others may distinguish development from these views and see it as a multi-faceted process with economic, political and sociocultural dimensions. All these perspectives may be good and relevant for some ssituations. For this study development has been seen as essentially focusing on people and society in its totalilty. According to Young (1987) "Development is . . .a complex process involving the social, economic and cultural betterment of individuals and of society itself. Betterment in this sense means the ability of the society to meet the physical, emotional and creative needs of the population at an historical acceptable level....and to free human labour time from an increasssing standards of living but not conspicuous consumption, and it implies a form of society which allows for equal distribution of social wealth

2.1.3 Historical perspective of Feminism and Development

This section explores the evolution of theorizing on gender and development. It introduces a number of feminist and development theories and explains: different approaches of feminist and development women in development (WID), women and development (WAD), and gender and development (GAD).

The 1930s, an historical approach to development is important to understanding the evolution of development thinking and policies. Early development initiatives, which

had begun to preoccupy economists and colonial officials in the 1930s, largely ignored women. These approaches identified development with modernization and assumed the wholesale adoption of western technology, institutions, and beliefs.

During the 1940s and 1950s, development planners designed projects aimed to modernize colonies all over the globe. Many of these projects failed, but this did little to undermine most development experts' faith in modernization. When colonial rule was swept away, beginning with India in the late 1940s, the newly independent governments hired many of these former colonial development experts to help them fulfill electoral promises, particularly the promise that independence would bring economic development and prosperity for all.

Since the 1950s diverse approaches have been made. During the 1950s and 60s modernization and industrialization had little focus on women (Duza and Begum, 1993). During this period huge relief work identifies women as only main beneficiaries. After World War II the approach is termed as *Welfare Approach*. In this approach policies addressed the needs of the poor women entirely in the context of their role as wives and mothers. This approach focused mainly on mother, child health, childcare and nutrition. Women were thought as passive recipient of benefit.

Women in Development (WID) Approach In the 1970s according to Ester Boserup's Revolutionary book "*Women's Role in Economic Development*" investigated the impact of development projects on Third World women. It was discovered that most of these projects ignored women and that many technologically sophisticated projects undermined women's economic opportunities and autonomy. Training in new technologies was usually offered to men, which meant that most "modern" projects improved male opportunities and technological knowledge but reduced women's access to both technology and employment

The WID approach, with its determination to integrate women into development, slowly became a concern of many governments and donor agencies. The United Nations Decade for Women was launched in 1975 with the Mexico City conference

on the theme “Equality, Development and Peace.” The World Plan of Action that emerged from the conference and set the agenda for the Decade for Women established the goal of integrating women into the development process (Parpart, et. al., 2000).

During the 1970s, this approach influenced the thinking and practice of some academics and activists (primarily in NGOs), who called for women’s projects that were completely separate from men’s. They argued for a development approach to women that recognized the dangers of integrating women into a patriarchal world, and they sought instead to create “women-only” projects, carefully constructed to protect women’s interests from patriarchal domination. This approach has sometimes been referred to as women and development (WAD) (Parpart 1989; Rathgeber 1990).

Women and Development (WAD): The WAD paradigm stresses the distinctiveness of women’s knowledge, women’s work, and women’s goals and responsibilities. It argues for recognition of this distinctiveness and for acknowledgment of the special roles that women have always played in the development process. For example, the WAD perspective gave rise to a persistent call to recognize that women are the mainstay of agricultural production in many areas of Africa, although their contribution has been systematically overlooked and marginalized in national and donor development plans (Parpart, et. al., 2000).

Actually during 1970s few approaches emerged namely, *Equity, Anti-poverty, and Efficiency* and *Empowerment* approach. New approach identifies poverty as the main cause for the women. *Anti-poverty approach* recognized the lack of access to resources like education and income and sexual discrimination in labor market. After that women’s access to resources, income and employment increase their reproductive workload. They became subordinate by the men in the society. WID thinker found that women’s subordination as the main center for *equity approach*. The *efficiency approach* started from a different outlook. Development has been given more emphasized rather than women’s participation, which allows women to be able met only the practical needs. *Empowerment approach* attempts to address social

construction and maintenance of gender relation. It believes that gaining insight in to the complex nature of gender relations and ideology, and avoiding direct confrontation with other forces would help people to create gender relations that are empowering rather oppressive (Duza and Begum, 1993) The term emphasizes the changing of power relation through individual challenge to patriarchal relations or group resistance to oppressive practice (Batliwala, 1995). This approach illustrates self acceptance and self-respect. And also address both practical and strategic gender needs

Gender and Development (GAD) Approach: Some feminists and development theorists have remained unconvinced by both the WID and the WAD approaches, arguing that neither addresses the fundamental factors that structure and maintain gender inequalities. Thus the GAD perspective, which emerged in the 1980s as an alternative to WID and WAD. This framework is also referred to as the “empowerment approach” or “gender-aware planning.”

This approach emerged from the grass-roots organizational experiences and writings of Third World feminists and has been most clearly articulated by a group called Development Alternatives with Women for a New Era (DAWN). The process of developing this new paradigm began in the early 1980s. DAWN was launched publicly at the 1985 Nairobi international NGO forum (an event attended by 15000 women activists and held parallel to the official World Conference on Women). DAWN called for an approach to women’s development that recognizes the importance of global and gender inequities (Sen and Grown 1987).

Changing perspectives on women, gender and development at a glance are as follows:

	Women in Development (WID)	Women and Development (WAD)	Gender and Development (GAD)
Origin	Early 1970s after the publication of Ester Boserup's book <i>Women's Role in Economic Development</i> . Term WID articulated by American liberal feminist	Emerged from a critique of the modernization theory and WID approach in the second half of 1970s	As an alternative to the WID focus this approach developed in 1980s
Theoretical base	Linked with the modernization theory of the 1950s to 1970s. by the 1970s it was realized that benefits of modernization had somehow not reached women, and in some sectors undermined their existing position.	Draws from the dependency theory	Influenced by socialist feminist thinking.
Focus	Need to integrate women in economic system, through necessary legal administrative changes. Women's productive role emphasized. Strategies to be developed to minimize disadvantages of women in the productive sector.	Women have always been as a part of development process-therefore integrating women in development is a myth. Focus on relationship between women and development processes.	Offers a holistic perspective looking at all aspects of women's lives. It questions the basis of assigning specific gender role to different sexes.

Source: (Visvanathan, et.al., 1997)

Gender and Development (GAD) approach was developed with the objective of removing disparity in social, economic and political balances between women and men as precondition for achieving people centered development.

2.2 Gender Approach in Water Management of Bangladesh:

In Bangladesh women comprise about half of the total country population. Their contribution from household to society is substantial. Women are severely

overburdened by the double responsibilities of household work and economic effort. They are working both in formal and informal sectors of our economy. As compared to a man their contribution has little exposure and as well as it is poorly portrayed to economic contribution. Considering this, Bangladesh has given importance to women in development, like other countries in the world. Government of Bangladesh has declared National Women Development Policy in 1997, which is a step towards women in development. Government of Bangladesh is keen to increase women's participation in various socioeconomic activities (BBS and MoWCA, 1999). In order to realize the broader objectives of development and empowerment of women, necessary steps have been taken to strengthen the institutional capacity of various national machineries. Gender discrimination is now very emerging issue for Bangladesh. Women's less or lack of access to resources and services have aggravated the situation mostly. Very recently, different govt and non-government organizations are working for increasing their access. Many failure of the past have pushed for a shift in donor approach that demands gender consideration in development initiatives. Mainstreaming gender issues to various development projects has been made mandatory and taken as prior condition of project implementation. Like other sectors of development. GAD approach is being followed in water resources management. There are many perspectives in this approach and there is no one blue print enabling equality and equity in water resources management. In recent years, a Gender and Empowerment Approach has attempted to transform existing gender relations by stressing women's self empowerment.

In water resources management, an uncoordinated and sectoral approach has resulted in environmental degradation from over exploitation of water resources, inappropriate allocations among competing uses, inequitable distribution of benefits and burdens, and inadequate operations and maintenance of infrastructures. Inadequate involvement of both men and women has hindered program and projects aimed at addressing sustainability in water resources management. Community participation and management approaches have failed to address these issues, largely because communities are often seen as collection of people with common purpose (GWA, 2005). Community usually comprises of individuals and groups who command

different levels of power, wealth, influence and ability to express their needs, concerns and rights. Community contains competing interest groups. Scarce resources made this competition extreme. Unequal power relation in the community has placed women in disadvantageous position. So gender perspective in water resources management is a key to ensure sustainable water management, as people centered approaches do not always ensure gender sensitivity in resources management.

Integrated water resources development which is a cross sectoral holistic approach to water management for sustainable development illustrates in principle "women should be recognized as central to the provision, management and safeguarding of water". Philosophy, policy and implementation guideline of IWRM also addressed "gender and social disparities in terms of equitable access to and control over resources, benefits, cost and decision-making between women and men".

Realizing the fact Govt. of Bangladesh has declared National Water Policy in 1999. Two major objectives of National Water Policy are as follows:

- "To bring institutional changes that will help decentralize the management of water resources and enhance the role of women in water management"
- "To develop a state of knowledge and capability that will enable the country to design future water resources management plans by itself with economic efficiency, gender equity, social justice and environmental awareness to facilitate achievement of the water management objectives through broad participation".

National Water Policy is a great leap forward to establish discipline and direction to the water management of the country. The policy looks at water resources and its multiple uses in a comprehensive manner and also clearly spells out the rights and responsibilities of various stakeholders.

Guideline for Participatory Water Resources Management has approved in 2000 and also National Water Management Plan, 2004 have emphasized on women's participation in water resources management. As a reflection of all these policy and

guidelines, Bangladesh Water Development Board and Local Government Engineering Department have been incorporating women in water resources development projects.

In Bangladesh, concept of gender in water management is not alien; several attempts in this field have been made by the main implementing agencies like, Bangladesh Water Development Board (BWDB), Department of Public health Engineering (DPHE) and Local Government Engineering Department (LGED). Water resources projects are of two types: first one is water supply, sanitation and hygiene promotion to provide adequate supply of pure drinking water and other one is water resources management that works for improvement of agricultural production.

Hoque, et al (1994) stated that women's direct involvement in water supply and sanitation (WSS) project and their participation in all stages of the project brought a significant success and the study findings had significant policy implications for effective involvement of rural women towards the development of sustainable WSS programs

Nahar (2002) stated that in terms of water supply and sanitation projects women are the main users of water as they are mainly responsible for water use at household level. Women are involved in care taking of hand tube well, sanitary latrine, family health, vegetables production and all sorts of water uses at household work. Lack of adequate water supply and toilet facilities affects them differently. This paper also stated some key areas of National Water Policy (NWP) in which emphasizes on needs of women and poor in the sector and encourages active participation of women.

Ahmed and Jahan (2000) accredited women's participation in water supply and sanitation. The authors thereafter tried to establish some concern and way forward for women in WSS. The author depicted the state of gender equality in water supply and sanitation system and also opined for a gender sensitive approach in WSS.

Moinuddin (2004) emphasized mostly on proper WSS for betterment of women which constitute the half of the country population. Lack of safe drinking water is a major concern for Bangladesh people. Despite the abundance of surface water, there has always been the question of quality. Surface water pollution pushed up ground water dependency in Bangladesh. Access to safe drinking water is one of the most important determinants of health and socio-economic development. Proper WSS can unload women's work pressure and considerable health benefit, that can contribute to a greater work capacity and thus towards increased production and over all economic development.

There are a good number of successful water supply projects, where women's participation acts as a key tool to undertake the activity. *Dushto Sastha Kendra* (DSK) an NGO has revealed the success of women in WSS. Women were involved and entitled to do the entire activity through a cooperative community. Where the poor slum dwellers have a 100% repayment and no late payment, they successfully run the project. Women understood the economics and also appreciate the opportunity cost of having walked to collect water. Women can really value the water (ADB 2006).

A study on *Analysis of Gender-Water Nexus in Rural Bangladesh* portrayed some key areas where women can contribute a lot like, household water management, health and wellbeing, irrigation water management (Kabir and Faisal, 2005).

A study on "*Gender social institutions and the management of underground irrigation water resources in a Bangladeshi village*" showed that irrespective of gender norms women are constrained from joining field-based agriculture and irrigation activities, few poor women were able to transgress such traditional gender norms. Women are involved directly in few projects in Bangladesh like Compartmentalization Pilot Project (CPP), Char Development and Settlements Projects (CDSP), Integrated Planning for Sustainable Water Management (ongoing) implemented by BWDB and Small Scale Water Resources Sector Projects (SSWRDSP) implemented by Local Government Engineering Department (LGED) which have linked women in water resources management as active participant in

different ways. LGED is implementing SSWRDSP targeting the above mentioned aspects of NWP. Along with the major objective of the project, gender has been considered as a cross cutting issues in water resources management. At beginning of the project, WID approach has been followed. After a shifting to GAD approach, the project's thinking towards women has also changed.

2.3 Small Scale Water Resources Development Sector Project and Women Participation:

Small Scale Water Resources Development Sector Project (SSWRDSP) is one of the biggest projects working in the water sector in Bangladesh. This is called small scale because each project (subproject) covers not more than 1000 hectare of agriculture land. A total of 280 subprojects under SSWRDSP-I has been already implemented by 30 June 2002 and SSWRDSP-II has started from 1 July 2002. SSWRDSP is implemented by LGED of Bangladesh with the financial assistance from Asian Development Bank (ADB) and Government of Netherlands (GoN), International Fund for Agricultural Development (IFAD) and Govt of Bangladesh including beneficiary contribution

The primary objective of the project was to facilitate a sustainable increase in agricultural production and incomes for small-holder farmers in the subproject area (about 400 locations) in western Bangladesh, where more than half of the population falls below the poverty line. The increase in crop production and other on-farm activities was to be achieved by removing constraints associated with inadequate flood protection, drainage congestion and limited irrigation. The sustainability was to be ensured by establishing stakeholder driven operation and maintenance system. A secondary objective was to increase LGED's capacity to implement surface water management projects of this type

The project consisted of the following three components

Part A: Beneficiary participation and Water Management Association development has consisted of mobilizing beneficiaries to participate in the selection, design, implementation and O & M of subprojects through local government and non-

government organization. This included training and fielding of facilitators, mobilizing LGED community organizers providing training to upazila and district engineers, organizing and training labor contracting society (LCS).

Part B: Construction of small-scale water management systems was intended to comprise as many as 400 individual subprojects for flood management, drainage improvement, water conservation and command area development. This included appropriate agricultural extension activities in all subprojects and flood plain fisheries mitigation and environmental monitoring activities in environmentally sensitive subprojects

Part C: Institutional support for small-scale water resources development focused on supporting LGED's project management capabilities through the provision of consulting services.

The project design also included a number of special features to facilitate a direct focus on mitigating environmental impacts, reducing poverty and involving women. To increase the role (visibility) of women in the project, several initiatives were put in place. Few areas are as follows:

- First initiative was to promote the participation of disadvantaged women in LCSs with the intention that long-term support would be provided.
- Second initiative was to provide women with opportunities to participate in income generating activities such as planting and caring of trees on newly constructed or rehabilitated embankment, pond aquaculture
- Third initiative was to encourage the water management cooperative association to employ women for maintenance activities on subproject infrastructures.

To institutionalize these initiatives women were to comprise at least 30 percent of the first management committee of each water management cooperative association. All these initiatives are taken as initial intent of the project with regard to women in development approach 'to benefit women, particularly landless and destitute women

through provision of employment opportunities during construction and subsequent O & M work and income generating activities such as tree cultivation, fish fingerling production". It was also assumed that destitute women will get employment with increased agricultural production. It was also thought that improved income will help a lot to the family nutrition. Women's participation as part of beneficiary will be helpful for promoting women's decision making power in the community as well.

Achievements of SSWRDSP-I regarding gender are as follows (PCR, LGED, 2002).

These may consider as an attempt to reach women- ensured easy access to the institutional process by the women from farming, fishing and landless family and extended opportunity for women to be the member of the Water Management Cooperative Association (WMCA). *Allocation of a quota to ensure women participation*, a minimum of 30% membership in a WMCA and 30% membership of First Management Committee (FMC) were reserved for female. *Capacity building and awareness raising* training for staff and beneficiaries to build awareness of men and women on importance of women's participation in the project interventions was an important event and that was ensured through adding the gender session in the different modules of training for staff and beneficiaries as well. The project arranged some special training to train WMCA women members for their skill development on various income generating activities (IGA) related to project interventions- training on cooperative management, exposure visit to Bangladesh Academy for Rural Development (BARD) and Rural development Academy (RDA) groups, participation in the weekly meeting, participation in the folk drama and songs with project concept, participation in the managing committee (MC)/O&M Committee meeting, agriculture/environment training for the women members of WMCA. There were creations of employment for destitute women by the project through LCS, Tree Plantation Caretaker, etc., access to micro credit for increasing income through IGA. Attempt has been taken to involve women in livelihood activities, for example; seasonal vegetable production & seed processing, pond fish culture and fingerling production. Other local partners were also trained, for example; training workshop on Water Resources Management for Union Parishad representative

Lessons Learned from SSWRDSP-I

Some learning form SSWRDSP is stated below (BUJET, BIDS & WL, 2003 and LGED, 2003):

- Women were more active in WMCAs of some districts than others, possibly reflecting cultural difference among regions. Highest level of active women's participation was found in the *Tista, Atrai* and *Karatoya* floodplains of north/northwest of Bangladesh, and also in char areas. Lowest level of participation has found in piedmont plain area and in lower Ganges Floodplain.
- Men's attitude towards women involvement in project was a concern for the project.
- Women's involvement seems to be most relevant and crucial during subproject conceptualization, planning and design.
- During operation and maintenance the direct involvement and therefore the interest of women seems considerably less than that of men. But women are taking active role in collecting O & M funds in cash or kind. Women's field level interest in monitoring and O & M seems to be increasing
- Along with WMCAs, roles and responsibilities of the women members were identified and specified to promote their active role.
- Different types of training like skill development, human rights, legal rights IGA activities, leadership development etc are provided to potential women.
- WMCAs are found to be more attractive to poor women than middle-income or rich people as they found it as a source of income and savings.
- Initial Project documents emphasized the needs of the poorest women; afterwards, the projects experience demonstrated the possibilities and advantages of including women of all socioeconomic background in the WMCA and subproject social development.

Experience of the project showed mixed results and some shortcomings were observed because the project was seen purely from women in development viewpoint. In fact SSWRDSP-I is in leadership position After the completion of first phase of

SSWRDSP “*LGED Gender Equity Strategy*” and “*Gender Action Plan for Rural, urban and Water Sector of LGED*” have been formulated.

Gender mainstreaming is a process that takes place gradually in local level institutional arrangements. Through policy support of Government and on-government organization collaboration, this can be only seen as a process. To create systematic institutional arrangement, operational guidelines and strategies, women must participate at all levels of designing and implementation of development programs but this continues to be difficult (PDO-ICZM, 2004)

Women’s active participation in institutional process, decision making in design and management, operation & maintenance of project, involvement in livelihood activities, different employment opportunities and also in various capacity building activity has made a position for the women to be more capable to take part in development process. This ultimately facilitates women to be more empowered.

2.4 Women’s Participation and Empowerment:

A classical definition of “beneficiary participation” would imply the involvement of a significant number of persons in situation or actions which enhances their well-being i.e. their income, security or self esteem (Chowdhury, 1990). Women’s participation in various development projects as beneficiary is obvious, but if it could be thought that empowerment, is an indicator of participation then the point becomes clearer.

Ward (1992) stated four types of indicators in general to understand participation like: economic indicator, empowerment indicators, indicators on continuity and participation and autonomy indicators. All the indicators are quantitative and can be measured. It implies that participation and empowerment is very interlinked and outcome oriented phenomenon. Above study indicated the overall empowerment rather than women’s empowerment and with changes in development concept, the concept of empowerment has been also changed.

Chowdhury (2005) opined that participation is one of the tool for empowerment. The extent to which the popular participation can truly be a tool for empowerment rests on the understanding of the multiple dimensions that such participation involves (social, cultural and economic dimensions) and the development of strategies based on this understanding

Concept of women's empowerment is more dynamic and comprehensive than the status of women. It's a process and attribute for both the individual and groups. Women's status means their position in family and society relative to men and women of other classes. But empowerment means "women should be given freedom of choice for self-fulfillment and self development as well as equal access to domestic and community resources, opportunity and power (UNDP, 1994)". Women's empowerment includes access to and control over resources, mobilization, conscientisation and welfare of individual and group. Evolution in development approach impacted on empowerment concept as well as the process.

Hashemi et al (1996) pointed that women's participation in economic activity not only increase their income but also generates some secondary influences in their life and attitude of women. It facilitates women's empowerment process.

Goswami (1998) explained women's empowerment in Bangladesh in terms of some demographic characters and it was mostly based on various statistics (mostly facts and figures) on women status published in different surveys. This is due to lack of comprehensive study on women's empowerment in Bangladesh.

A project for creating and sustaining livelihoods of coastal community in Cox's Bazar has concentrated in seven thematic areas to assess community empowerment like social mobilization, health, education, disaster preparedness, alternative income generation, legal aid and fishery co-management (Brandi, 2005). The community of coast is more vulnerable to water related disaster and their insecure access to water resources. The study has assessed communities' empowerment in some qualitative methods and did not treat women separately.

Biswas (2004) has come up with a quantitative analysis for women's empowerment. The author has developed a statistical method for measuring women's empowerment. Eleven indicators (Mobility, Decision-making power, Autonomy, Ownership of household assets, Freedom from domination by the family, Political and legal awareness, Participation in social development, Contribution to family income, Reproductive right, Exposure to information, Participation in development) and few issues under each of the indicator were developed to measure empowerment. He discussed and interpreted women's empowerment in light of socioeconomic and demographic background

Chapter Three

METHODOLOGY

3.1 Selection of the Study Area

For the study, three subprojects from the first phase of SSWRDSP *Brajamul-Bhitikhal* Flood Control and Drainage (FCD) subproject of *Saorail* union of *Pangsa* thana, *Beel Salua* Drainage & Water Conservation (DR & WCS) subproject of *Baharpur* union of *Baliakandi* thana and *Bara Nurpur* Water conservation (WCS) subproject of *Shahid Wahabpur* union of *sadar* thana of Rajbari district has been selected purposively.

According to the study objectives, different types of subprojects have been selected to cover the entire area of water management. Additionally women's participation was a major factor. All the subprojects have satisfactory level of women's participation. For comparison of women's empowerment through participation in water management, a control village *Char Tetulia* (without project) with similar geographical and demographical characteristics has been selected.

It has been tried to keep all the subprojects in same geographical area to understand the project impact separately and also to avoid selection bias. Another reason for selection of the project area was easy accessibility of the area by road from Dhaka, the capital city.

3.2 Methods of Measuring Women's Empowerment.

In this study measurement of women's empowerment has been based on author's perception and Empowerment Index (Biswas, 1999 & 2004). In the reference study, empowerment was mostly based on social and demographic dimensions and the issues are stated as indicators. In this study, some issues rather than indicators are considered. Under each of the issue such as decision-making power, mobility, economic security, participation in different development organization and water management both as water manager and water user, few indicators have been

selected. Selection basis for indicators were: literature review, general involvement of women in water related activities, present involvement of women in WMCA and consultation with the experts in this field. As empowerment is measured through women's participation in water resources management so few water related indicators under each issue have been used, such as decision-making in water management (O & M), control over savings from IGA, etc. Apart from this, due to immense dimension of empowerment, other indicators (stated as issues in reference study) remain the same. It is to be noted that in few cases, to make all the issues more comprehensive, same indicator but in different dimension have been considered under different issues. Six issues of women's empowerment, with different indicators under each issue, were developed for questionnaire survey. Details of the issues are as follows

Mobility Issue

The mobility of women has been assessed by asking whether the following activities were permitted to perform alone or jointly or not at all

- i. Visiting places outside villages
- ii. Visiting health care center
- iii. Visiting market for selling or shopping
- iv. Visiting cooperative society
- v. Attending women's meeting
- vi. Joining non govt offices
- vii. Going outside the house to bring water
- viii. Going to work with LCS/ embankment repairing
- ix. Going to take any IGA training
- x. Going to work in field

For each of the response, score 2 has been assigned if a woman performed alone, score 1 if she performed jointly and 0 if she could not perform at all. In reality, all aspects are not equally important so need of weight is obvious in that case

Decision Making Issue

Decision making power within household has been measured by the extent of her role in making decision in the following case:

- i. Spending her own money

- ii. Spending her husband's money
- iii. Decision regarding children well being (health care, education, etc)
- iv. Involvement with any cooperative society or NGO
- v. Visit to father or other house
- vi. Purchase of households or other items like cloths, ornaments, utensils
- vii. Purchase or sale of land
- viii. Taking part in project implementation
- ix. Take any decision related to water use
- x. Take part in decision regarding income generation from alternative occupation
- xi. Take part in conflict resolution (household and community)
- xii. Take decision in O&M committee
- xiii. Take part in conflict resolution (in water use)
- xiv. Take part in irrigation decision (when & how)

In each case, the woman was asked whether she could make these decisions alone or jointly with her husband/other family members or not at all. The responses were assigned score 2 for each of the above cases if she could decide alone, score 1 if she could decide jointly and score 0 if she could not decide at all. As above mentioned cases are not equally important, so weighting method has also been applied for this issue.

Autonomy Issue

The autonomy of a woman was measured by the extent of her role in the following cases:

- i. Talk with unknown person
- ii. Cast vote in election
- iii. Provide support (economic and social) to others
- iv. Exercise control on family income
- v. Share opinion about having children
- vi. Buy household assets
- vii. Initiate income generating activities
- viii. Work outside home

ix. Share in agriculture due to subproject

x. Share in aquaculture due to subproject

Score 2 for each of the above cases has been assigned, if she could actively perform the activity alone, score 1 if she could perform jointly and score 0 if she could not perform at all. As above mentioned cases are not equally important, so weighting method has also been applied for this issue.

Economic Status

On the basis of a woman's access to resources and household income, her economic empowerment issue has been developed

i. Right to own land

ii. Access to own cash and savings

iii. Access to household cash and savings

iv. Make investment choice independently

v. Access to household assets

vi. Any contribution to family income

vii. Make use of own income due to water project

Score 1 has been assigned for each of the above cases if she had access to resources and income and 0 for no access. As above mentioned cases are not equally important, so weighting method has also been applied for this issue.

Exposure to information

Exposure of a woman to information media was assessed by asking whether she had regular access to the following media

i. Listening to radios

ii. Watching TV

iii. Reading newspaper

iv. Participating in public meeting/ workshop/ seminar.

If a woman has access to the above one, score 1 has been assigned and in case of no access score 0 has been assigned.

Institutional Involvement

Participation of woman in development was assessed by knowing whether one is involved with following institution/ development activity.

- i Involvement in local govt. institution
- ii. Involvement in school committee
- iii Involvement in NGO activities
- iv. Involvement in cooperative society

If a woman participated in the above mentioned activity she has been assigned score 1 and 0 if not. Different weights for individual aspect have been assigned according to their importance.

The empowerment index has been measured in two stages At the first stage, empowerment index of a woman for a single issue consisting of different indicators is developed and secondly, a composite empowerment index for a woman consisting of different issues is developed both for equal and unequal weights

Empowerment Index of a Woman for Single Issues of Different Indicators with Equal

Weights: First Stage: Empowerment index of a woman for single issue with different indicators The Empowerment index of a woman for single issue can be calculated by the following formula

$$EI_{ij} = \frac{X_1 + X_2 + \dots + X_n}{M} \times 100$$

$$= \frac{\sum_{j=1}^n X_j}{M} \times 100$$

Where;

EI_{ij} = Empowerment index of i th woman for j th issue;

X_j = Value of individual indicators of j th issue;

M = Maximum possible score or outcome

= Number of individual indicator of an issue multiplied by the maximum score assigned for individual indicator of that issue.

n = Number of individual indicators of an issue.

Maximum value of empowerment index will be 100 according to the above formula

Second Stage: The composite empowerment index of a woman.

The composite empowerment index consisting of different issues with equal weight can be expressed as follows:

$$EI_i = \frac{EI_{i1} + EI_{i2} + \dots + EI_{in}}{N}$$

$$= \frac{\sum_{j=1}^N EI_{ij}}{N}$$

Where,

EI_i = Composite empowerment index of a woman

N = Number of issues considered in the composite index.

According to the above stated formula the highest possible value of composite empowerment index will be 100.

Empowerment Index of a Woman for Single Issue of Different Indicators with Unequal Weights: In fact, the different indicators considered under each issue are not equally important in relation to women's empowerment. Consideration of equal weight for all the individual indicators of an issue leads to adding some error in composite index. Therefore in order to increase the accuracy of the estimate a weighting system has been followed

Opinion Survey Method: Under this method, all the indicators of different issues were discussed with experts on empowerment issues and who are professionally involved in this area. Then they were asked to assign a score for each of the indicator within 1 to 5 on the basis of the degree of relationship of the issues with the empowerment level. The higher the degree of relationship of an indicator with the empowerment issue, the higher the score was assigned. Then the average weights for the indicators were calculated with in 100 by the following equation

$$W_i = \frac{X_1 f_1 + X_2 f_2 + \dots + X_n f_n}{M} \times 100$$

$$= \frac{\sum_{i=1}^n X_i f_i}{6 \sum_{j=1}^6 f_j} \times 100$$

Where

W_i = Weight of individual indicator of an issue;

X_i = Individual score assigned by the respondents within the range of 1 to 5;

f_i = Frequency of responses of individual score.

In this regard a checklist consisting of different empowerment indicators under each of the issue with score between 1 to 5 was designed and 6 experts women and men representing government organization, international organization and NGOs were asked to assign score for each of the individual issues. Among the six experts, two from Local Govt Engineering Department and one each from ActionAid Bangladesh (NGO), Bangladesh Water Development Board, UNICEF, Bangladesh Water Partnership. The researcher collected this information through direct discussion with the respondents. On the basis of the responses of the respondents, the weighting system has been developed.

First Stage: Weighted Empowerment Index of a Woman for an Issue

The weighted empowerment index of a woman for an issue consisting of different indicator can be written as follows:

$$EI_w = \frac{W_1 X_1 + W_2 X_2 + \dots + W_n X_n}{MS(W_1 + W_2 + \dots + W_n)} \times 100$$

$$= \frac{\sum_{i=1}^n W_i X_i}{MS\left(\sum_{i=1}^n W_i\right)} \times 100$$

Where,

EI_{ij} = Weighted empowerment index of it woman for jth issue

W_i = Weight of individual indicator of an issue derived from expert opinion survey method.

X_i = Value of response of ith indicator of an issue

MS= Maximum score assigned for a response of ith indicator of an issue.

Second Stage: Composite Empowerment Index

The composite empowerment index consisting of different issues can be expressed as follows.

$$EI_i = \frac{w_1 EI_{i1} + w_2 EI_{i2} + \dots + w_N EI_{iN}}{w_1 + w_2 + \dots + w_N}$$

$$= \frac{\sum_{j=1}^N w_j EI_{ij}}{\sum_{j=1}^N w_j}$$

Where;

EI_i = Composite empowerment index of ith woman

EI_{ij} = Empowerment index of ith woman for jth issue

w_j = Weight of jth issue derived by taking weighted average of weights of individual indicator

N = Number of issues considered under the composite empowerment index.

Maximum EI_i will be 100 according to the above formula.

3.3 Data Collection

A combination of methods has been used for data and information collection. The principal methods used were questionnaire survey, focus group discussion (FGD), participant's observation, key informants etc. Mainly qualitative information were collected through FGDs and both quantitative and qualitative information were collected through questionnaire survey. Prior to data collection, reconnaissance survey has been conducted in different regions of the study area. This survey has helped to observe women's status and to realize the existing condition in the study region. The study extensively used both primary and secondary data

3.3.1 Primary Data

For primary data collection, questionnaire and checklist have been developed. Before final data collection the questionnaire and checklist have been tested in field for validity. Then necessary corrections have been made. Woman as an individual has been considered as unit of analysis. For primary data collection random sampling has been made among the WMCA participants. Systematic random sampling has been followed. To avoid biasness the first respondent was selected randomly from list (beneficiaries) then adding 10 (as to take the 10 %) every 10th sample has been taken. In case of control site no list of beneficiaries was present so voter list was followed. Total population was around 1600, of which 40 women from the study area were selected for questionnaire survey and around 120 men and women were selected as FGD participants.

Primary data were collected from field in two phases: First, a structured questionnaire survey (guided) was conducted in the study area to obtain individual woman's response for different issues regarding their empowerment. Women of the study area were targeted for this purpose. Weight has been assigned against each response to calculate the qualitative data quantitatively. Some parts of the questionnaire were kept open ended to serve the pertinent functioning of the study. Second: FGDs were conducted to receive qualitative information as to understand the factors affecting women's participation in water resources management and also to identify newer area of activity that the community thinks women can contribute. The focus group comprises of WMCA members both men and women, chairman of WMCA, farmers, fisherman, fish cultivators, local UP member and chairman. Two types of FGD, women group and mixed group (both women and men) have been conducted to understand the situation. In each subproject area two FGDs were conducted with the above mentioned participants.

3.3.2 Secondary Data

Secondary data regarding location and area of the study area of the project, hydrology, land types, agricultural and fisheries practices of the project area were collected from the appraisal reports of SSWRDP-I. Total number of people who are

considered as beneficiaries of the project was collected from project MIS on general subproject information. Other important information were also collected from different published and unpublished reports/research reports/journals of Bangladesh Bureau of Statistics, Local Government Engineering Department (Dhaka), PDO-Integrated Coastal Zone Management office, Asian Development Bank, ActionAid Bangladesh, Global Water Alliance, Bangladesh Global Water Partnership, Bangladesh Academy for Rural Development (BARU), Bangladesh University of Engineering and Technology, relevant websites and other government and non-government organizations

Chapter Four

OVERVIEW OF THE STUDY AREA

4.1 Background

SSWRDSP-I with ultimate purpose of flood control, drainage improvement and irrigation (FCDI), water conservation, agriculture, environmental mitigation and fisheries development has been started in 1995 and ended in 2002. It has been implemented in 37 districts of the western part of Bangladesh (Fig 4.1) for the development of water resources in an area of 190,000 hectares under 400 subprojects. The study has been conducted in three subprojects of SSWRDSP in Rajbari district. Three different types of subproject under three thana of Rajbari district has been taken as the representative subprojects of SSWRDSP purposively (Fig 4.2). The study areas at a glance are as follows:

Subproject Name	Subproject no.	Type of Subproject	Thana	Union	Total village no.	Total Project participant population (HH)
Barnjamul-Bhitikhal	SP-13068	FCD	Pangsha	Shaornil	07	772
Barn Nurpur	SP-13066	WCS	Rajbari Sadar	Shaid Wnhabpur and Mulghar	06	238
Beel Salua WCS	SP-14114	DR and WCS	Baliakandi		04	65
Control Site (Char Tetulia)			Baliakandi	Baharpur	01	453

Brief descriptions of the study area are discussed in the following section.

4.2 Description of the Study Area

4.2.1 Location

Brajamul-Bithikhal Flood Control and Drainage Sub-project

Brajamul-Bithikhal subproject is located in the greater Rajbari district from north $23^{\circ}39'N$ to $23^{\circ}42'N$ and $89^{\circ}25'E$ to $89^{\circ}28'E$ in Pangsha thana. Total area of the project is 560 ha. The project locality is situated in a flat delta bounded by the river Chatra in the northeast and by Gorai in the southwest. The project area is criss-crossed by several fresh water khals and sub-khals linked with the river. It is comprised of seven villages within its locality under Shorail union, Paturia, Char Paturia, Bhati, Laribari, Ghotora, Barajamul-Banagram and Paban Panchbaria (Anwar, 2004) (Fig 4.3).

Baranurpur Drainage and Water Conservation Sub-project:

Baranurpur subproject is situated in sadar thana of Rajbari district. The sub-project is bounded to the north by an unmettaled road, to the north-east by the railway line and the Rajbari-Faridpur Highway, and to the east, south and west by rural roads. Few khals in the study area act as water reservoir. Besides, there are numbers of ponds in the project area. Gross area of the project is 684 hectares and the subproject is comprised of six villages of two unions (Shahid Wahabpur and Mulghar), Baranurpur, Maharajpur, Joypur, Gauripur, Bhabanipur and Udaypur. Mainly excavation of the khals, ponds and embankment reconstruction are the main activities have been taken in the study area (LGED, 1998) (Fig 4.4)

Beel Salua Water Conservation Subproject

Beel Salua WCS subproject is situated in Baharpur union of Baliakandi thana. This subproject covers four villages named Bharpur, Pakalia, Bonkur and Char Pakalia. The sub-project is bounded to the north, east, south and west by the village roads. The outfall of Beel Salua Khal is at Horai river which off takes from Ganges and falls in Kumar. Water from the above villages is drained through this khal during monsoon. There is no flood in the project area but during dry season lack of water creates problem for Rabi crop. The gross area of the subproject is 220 hectares. Water retention structure has been installed in the project area for proper cultivation in dry -

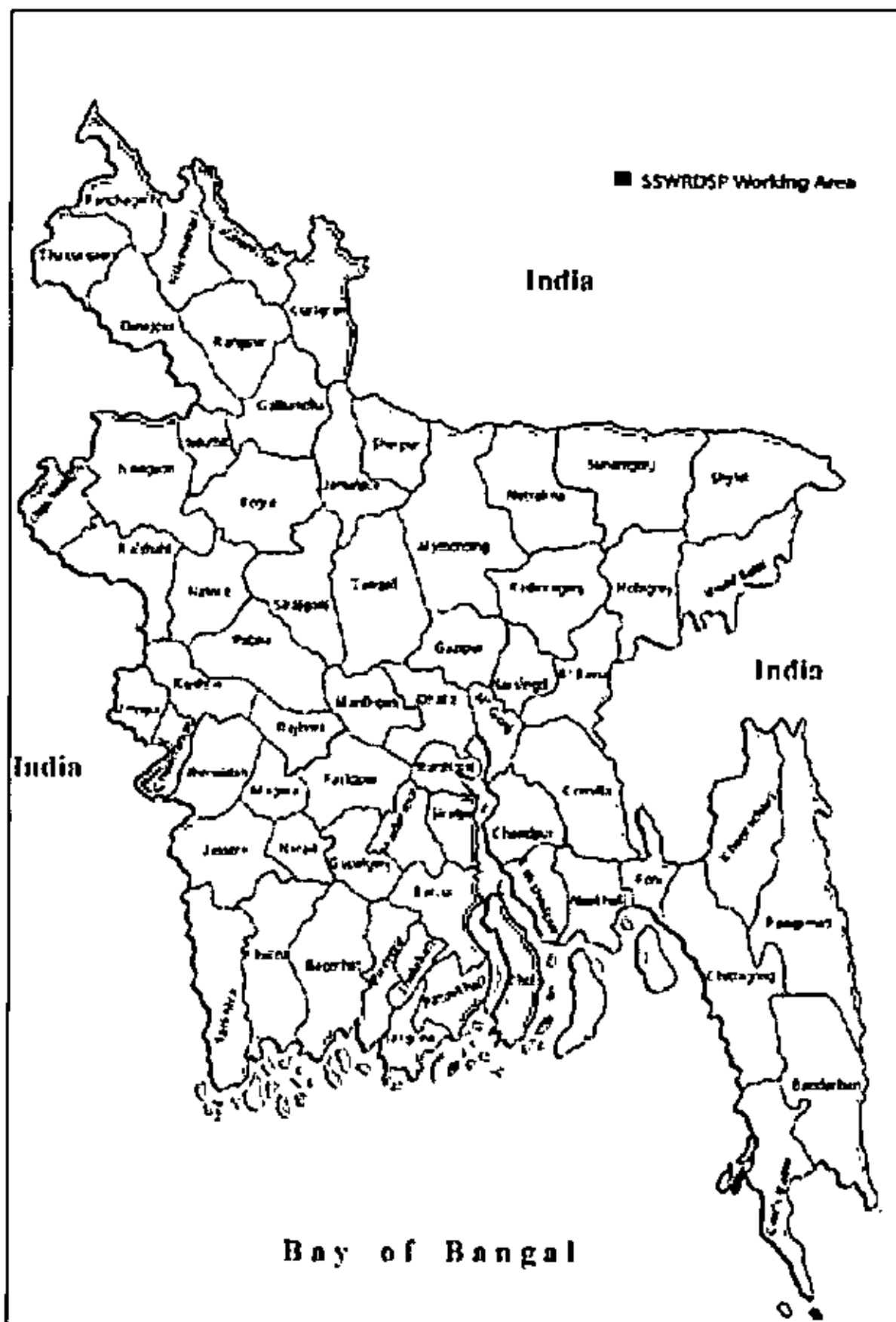


Figure 4.1: Location map of the SSWRDSP working area

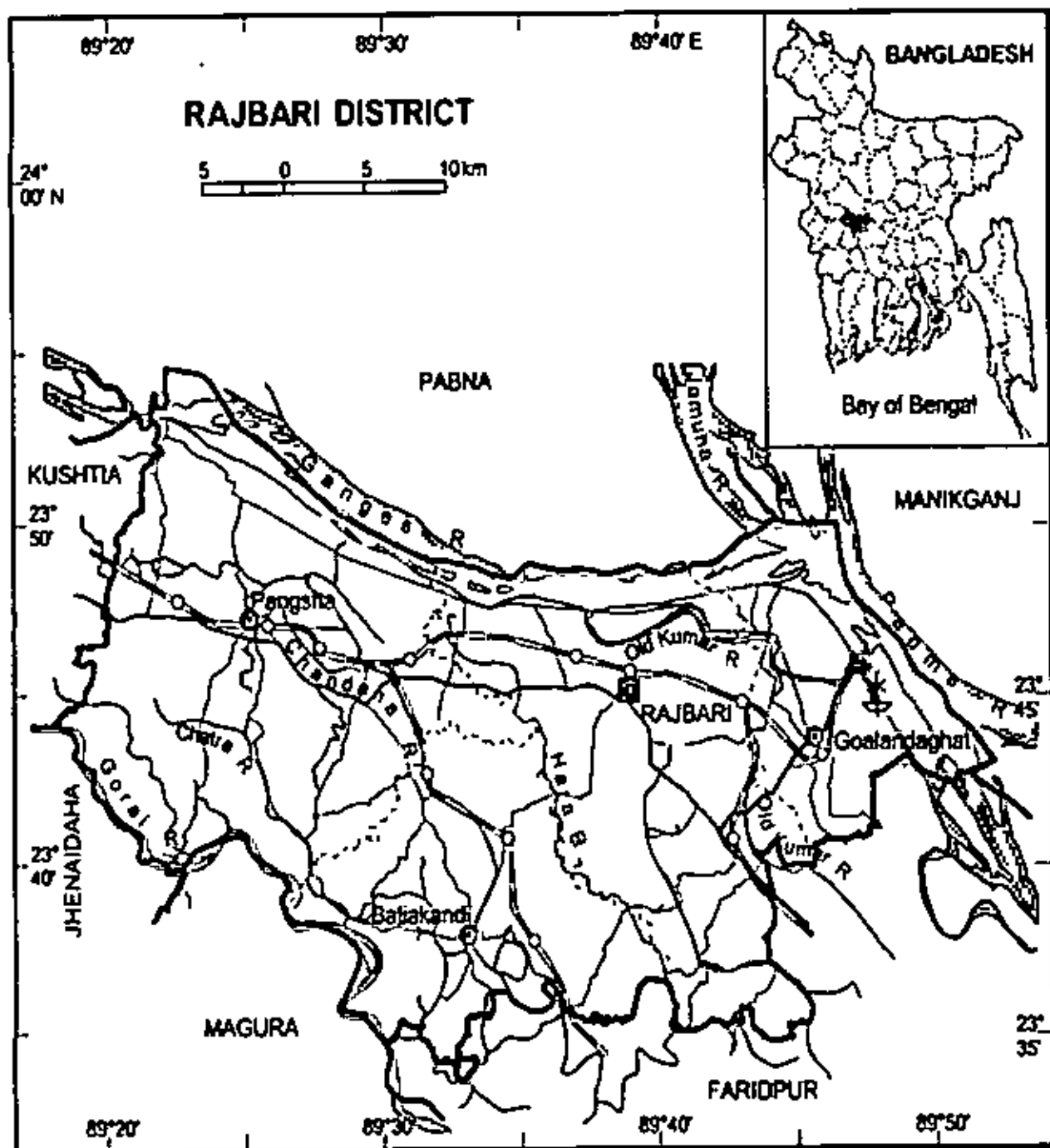


Figure 4.2: Location map of the study area (Rajbari District)

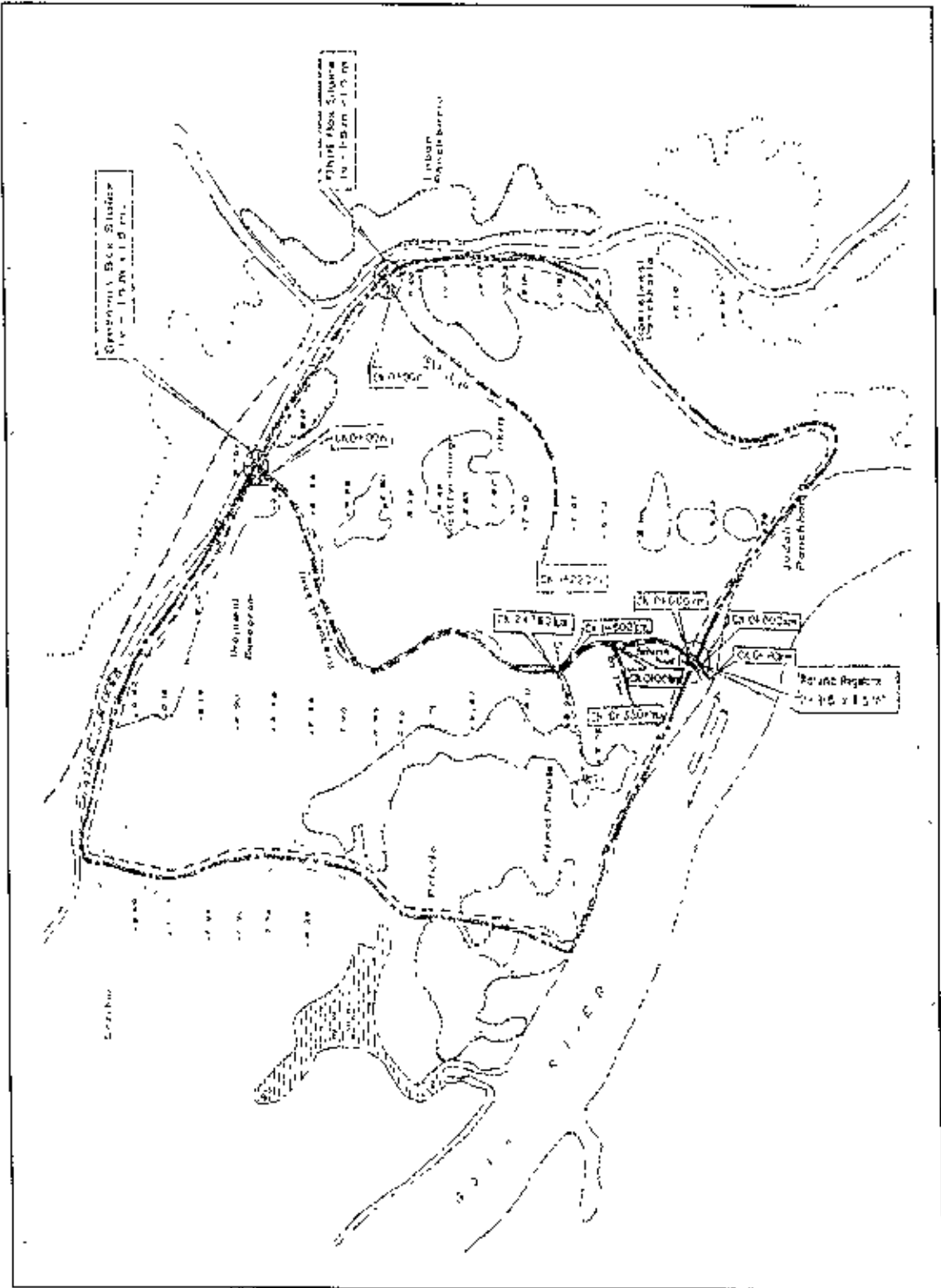


Figure 4.3 Location map for Brajamul-Bhitkhal FCD subproject.

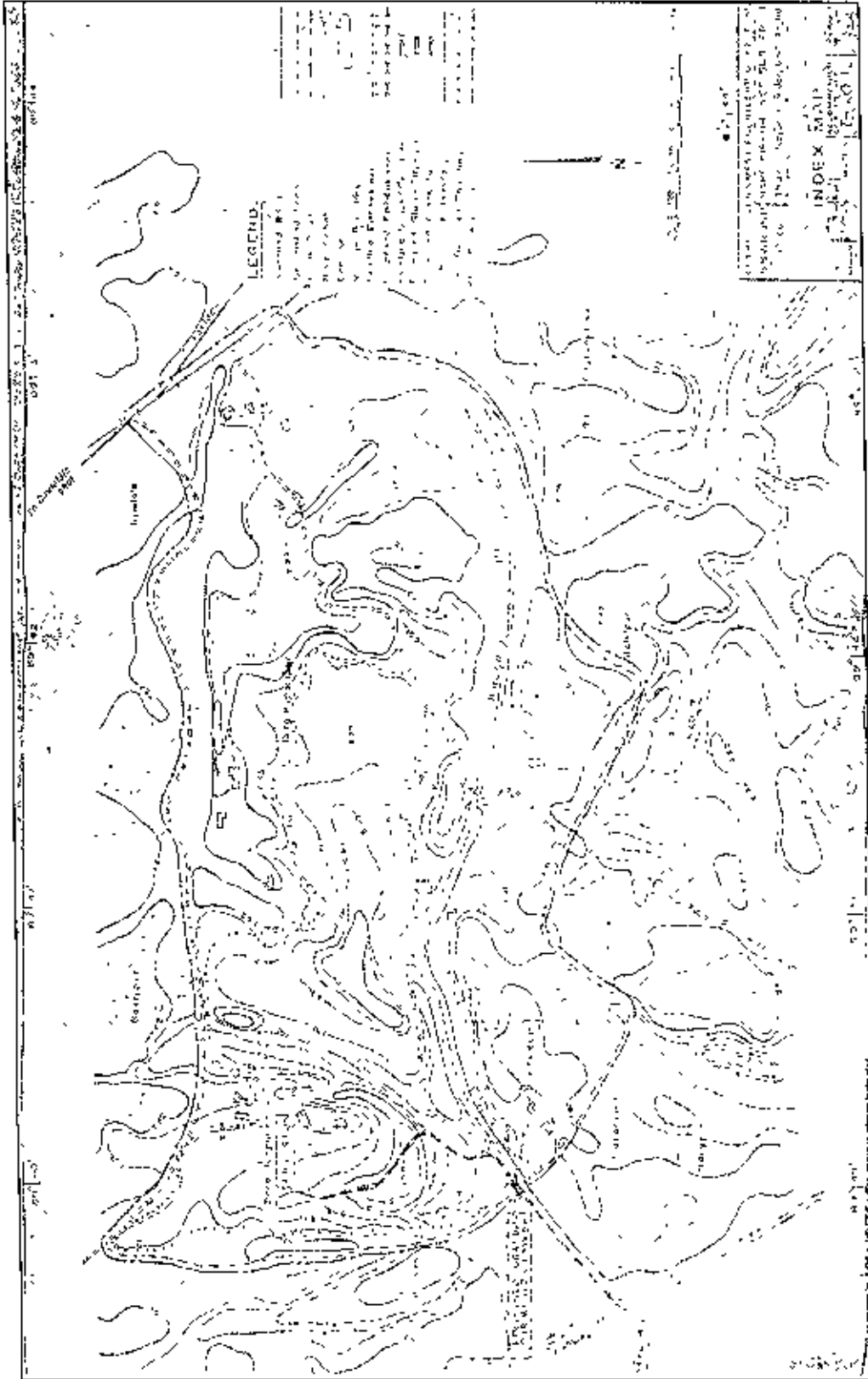


Figure 4.4. Location map for Baranurpur drainage and water conservation subproject

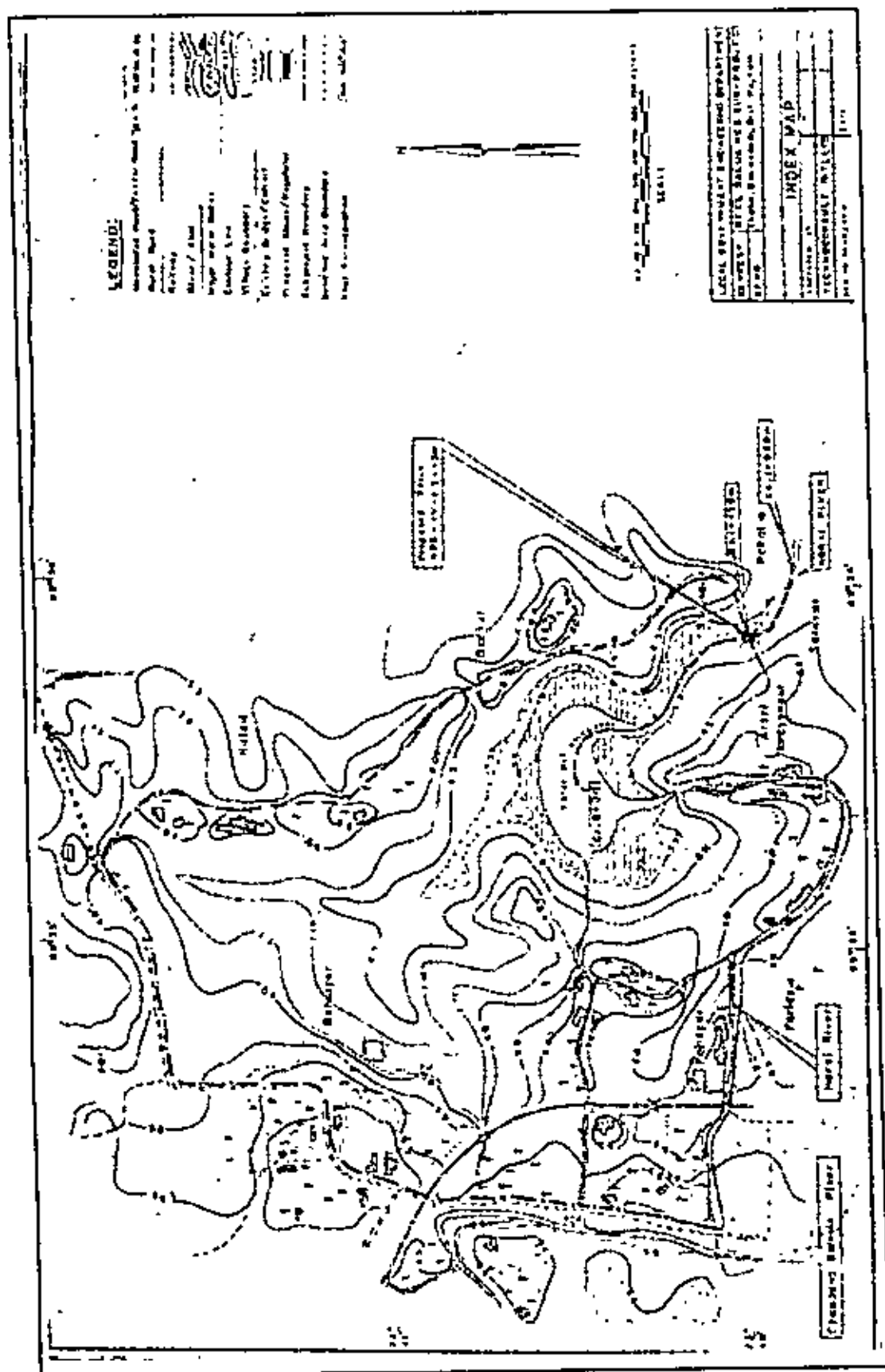


Figure 4.5: Location Map for Beel Salua watershed conservation Subproject

season and also excavation of Horai river has been done under this subproject (LGED, 1998) (Fig 4.5).

Control Site:

An area with no intervention has been selected for comparative analysis. In this regard Char Tetulia village of Bhaharpur union of Baliakandi thana has been selected. Similar socio-economic and demographic characteristics have been considered in selection of the control site.

4.2.2 Demography & Gender Composition

The surveyed unions are located in Rajbari district. The district has a population of 9'40'360, male being 51.02% and female being 48.98%. Average literacy 26.4%; for male 32.7% and for female 19.7%. Population density for the district is 3'955 per sq km. Muslim (86.73%), Hindu 13.12%, the Christian and tribal (0.15%) communities constitute the population in the study area. The cultivatable land is around 112,714 hectare for the entire district.

4.2.3 Livelihoods

The livelihood of the study population is predominantly agriculture-based. Majority of the farmers produce different types of cereals, vegetables and oil seeds as the main agricultural crops. Among cereals, Baus, HYV aman, Wheat are major crops and Jute, Pulses, Oilseed, Sugarcane, Vegetables and spices (Onion and Garlic) are common. Due to project, the agricultural production has increased immensely in the study area. Especially onion and garlic production has opened a new arena for the women as it has created employment opportunities for the women.

Scope for open water fishery is not so satisfactory in the project area except in rainy season. Culture fisheries prospect in the study area is a potential matter for the people in project area. About 140 fisheries and 29 hatcheries are situated in the area. Re-excavated khals and ponds as well as beels can act as fish habitat for the culture fisheries. Livestock rearing is common in the study areas and women are significantly

involved in this activity. Poultry rearing is very common and most of the housewives main income source is household poultry.

Role of women in this agro-based society is very significant as they are engaged in agriculture, aquaculture, homesteads gardening, livestock rearing and poultry farming, etc. From morning till night, women in these areas along with the male counterpart are involved in those household activities. In some small farmer households, women are directly working in field in addition post harvesting activities.

4.2.4 Water Management Activity

Before the subprojects, the study areas suffered from various water related crisis. During rainy season, water stayed for long time and drought period started very early. Again elevation in land type causes a major problem for the farmers. The near by khals failed to retain sufficient water so the women has to take bath or bring water far away from household. After constructions of the subprojects namely, different sluice gates, khal excavation and embankment construction, the community people are more secured.

Each of the subprojects is maintained and operated by a water management cooperative association (WMCA). Each of the WMCA comprises of female and male member both as beneficiaries and participants of the project. Around 33% seat of each WMCA is reserved for the women participant. WMCA has micro-credit component in which especially women participants get benefits by taking loan.

Study area population is now capable of getting three crops in a year. Besides fish cultivation in excavated khals and ponds is creating new opportunities for income generating activities.

Most women in the study area are growing vegetables in their yards. Easy access to water resources enables them to undertake their household activity easily. Along with the male counterpart, women are taking part in various water management related

activities; like they are taking part in embankment maintenance, khal re-excavation, operation and maintenance of the sluice and O& M fund collection etc.

Chapter Five

RESULTS AND DISCUSSION

5.1 Introduction

Empowerment is a process and self reinforcing cycle, which is the essence of empowerment, more important than the material gains which is resulted from the process (Longwe, 2001) Therefore measuring women's empowerment is essentially concerned with both the quality of process and measurement of outcomes which results from the process. As mentioned earlier empowerment is a qualitative measure and measurement of such term is somewhat challenging.

Women's participation in water management has emerged as the latest development paradigm. This study tried to reveal existing state of the success and future concerns for policy planner regarding participation in water management.

This chapter belongs to three major aspect of the research: the first one is women's empowerment level through their participation in water management. scoping for newer area of involvement of women in water management and delineating the factors that are affecting women's participation in water management.

5.2 Women's Empowerment through Participation in SSWRDSP

In this study women's empowerment has been seen as a power, which they have gained through participation in SSWRDSP: skilled training, increased capacity, access and control over resources, welfare. etc. All these are some elements which can be used to measure level of gender equality. With the presence of all the elements gender equality increased, which ultimately increased the empowerment level of women.

In this section, level of women's empowerment has been measured through a Women's Empowerment Index (WEI) considering some issues. Apart from the index

regression analysis has been undertaken in this section to understand the factors influencing the index.

Level of women's empowerment is measured in four areas: Barajamul-Bhitikhal subproject area, where women participation in Water Management Cooperative Association (WMCA) is 30%, in Baranurpur subproject area 45%, Beel Salua Subproject area 27% (MIS, LGED) and a control site with no water project

Empowerment index in all the areas are measured on the basis of some common issues: mobility, decision making power, autonomy, economic empowerment, exposure to information and institutional involvement.

5.2.1 Women's Empowerment Index (WEI)

WEI has been developed at two stages, firstly Empowerment Index (EI) for respective issues then Composite Empowerment Index (CEI) for a woman has been developed. CEI is measured in two different ways, first equal weight for each of the issue and another considering unequal weight to the respective issue.

In order to compare the two methods of measuring the level of women's empowerment some descriptive statistics on CEI has been calculated and presented in Table 5.1.

Table 5.1: Descriptive statistics on level of women's empowerment obtained from two different methods

Descriptive statistics	Composite Empowerment Index with Equal Weight	Composite Empowerment Index with Unequal Weight based on Expert Opinion Survey
Mean	57	57
Median	57	58
Mode	59	47
Coefficient of Variance	3.33	3.14
Skewness	-0.05	-0.11
Standard Error of Mean	3.00	2.99
Number of Observation	40	40

The table shows that the mean, median and mode of CEI obtained from two methods are very close to each other. In order to understand which methods give closest estimation of mean, median, mode and coefficient of variance is calculated, it is observed that coefficient of variance of unequal weights based on expert opinion survey method provides closest estimation.

However, standard error of mean and skewness of the second method is slightly lower than first method. Therefore, unequal weight based on expert opinion may be preferred for measuring WEI. Weight of the individual issue calculated from expert opinion survey is considered for measuring CEI in second case (See appendix-A).

The study reveals that women in subproject areas are more empowered than the no project area for both methods. Difference in EI is also observed among the subproject area.

Table 5.2: Average Composite Empowerment Index (CEI)

Composite Empowerment Index (CEI)	Brajamul-Bhitikhal (FCD Subproject)	Beel Salua (DR & WCS Subproject)	Baranurpur (WCS Subproject)	Control Site (No project)
Equal weight CEI	68	46	67	34
Unequal Weight CEI	68	47	68	34

Table 5.2 shows that CEI is the highest in the subproject having the highest level of women's (Baranurpur and Brajamul-Bhitikhal) participation in WMCA. Among the subprojects Beel Salua has the lowest level of average CEI in both methods.

Table 5.3: Area wise percentage of the respondent under different category of weighted CEI

Project area	Percentage of respondent's empowerment range				
	≤30	31-50	51-70	71-90	≥90
Brajamul-Bhitikhal (FCD Subproject, n=13)	0	0	18	15	0
Beel Salua (DR & WCS Subproject, n=4)	0	10	0	0	0
Baranurpur (WCS Subproject, n=13)	0	5	15	7	5

Project area	Percentage of respondent's empowerment range				
	≤30	31-50	51-70	71-90	≥90
Control Site (No project n=10)	10	15	0	0	0
Total (N=40)	10	30	30	25	5

Table 5.3 shows that among the four study area the highest (30%) number of women belong to two empowerment levels 31-50 and 51-70 followed by 25% in 71-90 category. In the category of 31-50 the average CEI of control site was around 34 which make this category significant. In case of the category 51-70 Barajamul-Bhitikhal and Baranurpur subprojects has the highest percentage of women under this category, which is 18 and 15, respectively. In Baranurpur subproject women under 71-90 and >90 is 7% and 5%, respectively. The study reveals that percentage of women having higher level of empowerment is more in areas having higher level of women's participation in water management compared to less and no participation areas.

5.2.2 Empowerment Index of Different Issues

Mobility: Assessment of mobility issue has been done by asking whether they can go alone to some places like: outside villages, health care centers, market, attending women's meeting, non govt. office, work for LCS, out side for IGA training, out side to bring water etc. In most of the cases, women's mobility alone is limited within the villages. But they are moving freely to health care centers, NGO offices and out sides for bringing water. In Brajamul-Bhitikhal and Baranurpur subproject area 100% of the women are involved with WMCA micro credit program, they also have engagement with other bank/insurance/development organization. Women of this area have also been receiving IGA training from LGED. Women in these areas are regularly participating in various types of WMCA meeting, which enables them to come out. Thus they are now frequently traveling although jointly to other villages. Women in this area are also working with their husband in field. But this case is limited to the small farmer households. With the increase of crop production, decrease in labor supply and high rate of labor price most of the women from marginal farmer

household are working in the field. LCS work by the distressed women in the subproject locality has acted as opening for the people to come out in that area. In Beel Salua subproject and control site, less mobility has been observed. Absence of micro credit program in Beel Salua WMCA is a key factor for the women not to come outside. As women mobility is less in this area so women members of different committee of the WMCA are reluctant to attend.

From MIS database of SSWRDSP it is observed that attendance of women in monthly meeting for the managing committee in 2003-2004 is 18.18%, 22.22% and 8.33% in Brajamul-Bhitikhal, Baranurpur and Beel Salua subproject area, respectively.

The study reveals that average index for women's mobility is the highest (80) in Brajamul-Bhitikhal subproject area, followed by Baranurpur (76), (Table 5.4). It is also noticed that women in Brajamul subproject are occupying some superior position in WMCA. It is also observed that there is little difference between the Beel Salua and Control site. Of which in Beel Salua it is the highest.

Decision Making Power: Decision making power is considered as one of the most influential issue for measuring women's empowerment. Women in our society enjoy this issue less likely than men.

Table 5.4: Project wise average empowerment index for individual issue

Issues	Brajamul-Bhitikhal (PGD Subproject)	Beel Salua (DR & WCS Subproject)	Baranurpur (WCS Subproject)	Control Site (No project)
Mobility	80	38	76	36
Decision Making Power	64	45	72	30
Autonomy	56	39	53	26
Economic Status	80	63	74	46
Exposure to information	71	54	77	46
Institutional involvement	59	40	55	21

In most cases women take decision jointly with their husbands/members of WMCA. In few cases like children's well being and visit to father's house, they can take decision independently. In subproject area, women have the decision making power to spend their own and household income. They are very independent in case of water use, involvement with different development organization or cooperative association. But they are taking joint decision in water management related indicators like project implementation, O & M committee, irrigation facilities etc. This is probably due to organogram of the WMCA. But few respondents alleged that their decision is suppressed by the male members, but this is very insignificant. In control area this picture is just opposite of the project areas. Women have very little control over decision making power, very common in our traditional society. Even they have to take decision jointly for going to father's house, spending own money. For both areas women are very insignificantly empowered for taking decision in buying and selling properties. The average decision making power in subproject areas is higher, which is 72, 64, 45 in Baranurpur, Brajamul-Bhitikhal and Beel Salua project area respectively. Whereas, it is 30 in control site (Table 5.4). Regardless of other facts, this explains very clearly the functional relationship between decision making power and women's participation in SSWRDSP.

Autonomy: Women's autonomy is determined by both social custom and tradition (as quoted in Biswas, 2004). In a patriarchal society like Bangladesh women are forced to be dependent on their counterpart. Autonomy is very much related to decision making power; the higher the decision making power, higher the autonomy (Biswas, 2004). This study also found that women having high level of decision making power are enjoying more autonomy. Project areas where women participation is high, they are enjoying more autonomy. Average index for autonomy issue is the highest in Brajamul-Bhitikhal (56) followed by Baranurpur (53), (Table 5.4). In the first case, it is higher due to few educated women being involved in profession, so they are very much independent to their family member/counterpart. They also play significant role in WMCA as well. In general, most of the women can enjoy the right to talk with unknown person and caste vote in election (for all areas). Specifically, women in subproject area enjoy more economic autonomy, few have access to share in fisheries

and agriculture also. Average autonomy index is lower than other issues, because of our traditional society. Even in project areas women have no or little autonomy for having children, providing economic support to relative and buying household assets. This issue is not directly related to water management, but it implies the changes in community perception and practices due to projects.

Economic status: Economic status issue has various dimensions. Only few have been considered in this study like right to land, access to and control over own income, household income and savings, income due to water projects, etc. One of the main aspects of economic status is the ownership of own land and access to own land. Lands are mostly owned by men and women are deprived of this right. Land provides social status, economic security and choice and voice for irrigation water use. Around 5% of the total surveyed sample has right to own land. Access to land also enables women to be more independent in using HH cash and savings. Due to water projects, women have received various types of income generating activities (IGA) training. Besides, 20% of the project earthwork (embankment construction and repair, khal excavation etc) are being carried out by the women of the project area (PCR LGED, 2002). Through this, income of the women in project areas has been increased significantly. Table 5.4 shows that average index for economic status issue is highest in the project area, which is 80, 74 and 63 for Barajamul-Bhitikhal, Baranurpur and Beel Salua, respectively, whereas it is 46 for control site. Among the project areas, change in percentage is probably due to level of women participation and education (two women in Barajamul-Bhitikhal project is highly educated and directly involved with other occupation rather than being homemaker). Compared to project site, women in control site have less opportunity to earn money, and mostly depend on husband income.

Exposure to Information. Exposure to information among the study areas varies significantly with respect to reading newspapers and participating in public meeting/workshop and seminar. Similarity in listening radio and watching TV is observed in all areas. Average index for exposure to information is highest in Baranurpur (77) followed by 71 in Barajamul-Bhitikhal project area. Literacy rate and presence of

WMCA make a significant difference in other two areas, where this index is 54 and 46 for Beel Salua and control site respectively.

Institutional Involvement. Institutional involvement varies significantly from place to place. It is observed highest in Brajamul-Bhitikhal area (59), then 55 in Baranurpur project area. It is 40 in Beel salua and only half of it is in control site. The study reveals that in no-project area women are less involved in different institution. So their institutional involvement is less than the other areas. This ultimately limits women's empowerment.

5.2.3 Socio-Economic Factors Affecting Women's CEI

Various factors may affect CEI, of which socio-economic factors have been discussed in this section. Understanding of this factor is very much important for formulating future development initiatives of women's empowerment. Factors like, husband's occupation, total land holding of household, study location, income (own and household), respondent's own occupation, land ownership (own and household), respondent's level of education, involvement with other NGO and WMCA membership have significant influence on women's CEI.

To understand the influencing factors multiple regression model has been used in this study (See Appendix-B). The multiple regression model has been estimated by using the method of Ordinary Least Square (OLS). At the initial stage, above mentioned eight socio-economic factors are considered. But when going to analyze the individual area then due to data limitation of the program few factors are not considered, for example, in case of control site data base on WMCA membership, respondent occupation, etc have not been considered. The OLS estimates of the parameters of the multiple regression model with their level of significance, adjusted coefficient of multiple determination (R^2) and F-value with their significance level are presented in the Table 5.5. The goodness of fit of the model is evident from the high value of F and also adjusted R^2 for all the models. The adjusted value of R^2 implies that the explanatory variables considered in the model explained about 62% of the variation in women's empowerment in case of combined areas.

Table 5.5: Multiple regressions co-efficient of contributing factors of women's empowerment in the combined areas

Independent Variable	Variable (CBI)	
	Model-I*	Model-II*
Constant	36.6804	36.2997
Study location	25.2627	26.0038
Husband income	-0.0002	-0.0001
Respondent own income	0.0006	0.0006
Total HH land	0.0108	-0.0062
Res. own occupation	18.5663	18.0359
Res. level of education	4.2288	4.4979
Involvement with NGO/WMCA Micro Credit Program	6.7074	6.4759
WMCA membership status	-1.5219	-1.2035
Adjusted R ²	0.6292	0.6298
F-value	8.3516	8.3734

Note: Model-I is for equal weight method. Model-II is for unequal weighted method.

* Indicates that the model has been run at 5% level of significance.

Table 5.5 shows that the estimated adjusted R² value and F-value of the model is high in case of model-II. Therefore model-II may be preferred in terms of applicability. In the case of model-I each of the indicators is not equally important for the respective issue. On the other hand, in expert opinion survey the experts were requested to assign a score for each of the indicator within 1 to 5 on the basis of the degree of relationship of the indicator with the empowerment level especially related to water management.

Study Location: Though the four locations are in same district, there are significant differences among the villages with respect to water projects, level of education and cultural practices that has influence on level of women's empowerment. It is observed that on an average, the empowerment level of women in project areas is more than 26% higher than that of no-project area.

Occupation & Income (Own and Household): Most of the women in our society are economically dependent on their male counterpart. This act as a limiting factor for their empowerment. Economic status can be seen when woman herself can earn money and also has access and control over that income. When a woman is going

outside or she is producing something other than her mobility, exposure to information automatically increased. Economic empowerment provides security to women. Economically secured women feel free to go outside also. Thus both woman's own and HH income has a significant influence on level of empowerment. It is observed from the Table 5.5 that respondent's own income has a positive impact on level of empowerment than HH income. Single unit increase in respondent's own income made .06% increase in CEI.

Respondent's own occupation has significant influence in woman's level of empowerment. It is observed that 18% of the change in CEI changes with change in occupation.

Total land holding of household: Women in our country seldom enjoy the right to own land. Though some women have their own land they have no access and control over this resources. Total household land has a significant influence on CEI. It is observed that with the decrease in amount of change in land increase empowerment. Another percentage analysis also shows that wives of the marginal and small farmer are more empowered than the medium farmer (See appendix-A). This is because women in these households are working outside with their husband and they are enjoying more autonomy and mobility. As they are working independently in fields they are also taking some decisions as well. Thus compare to a woman in larger farmer household level the woman in small household farmer is enjoying more empowerment, though the income of the first category of woman may high. This is case is mostly relates to our agro-based society.

Respondent's level of education: Level of education is a major factor for women's empowerment. Education enables women to learn what to do or what not to do. It also provides them opportunities; educated women can challenge the traditional role in a society. Education is very much related to income, occupation, exposure to information etc. The study reveals that women's level of education has a significant influence on their level of empowerment, 4% change in CEI is observed due to single unit change in level of education.

Involvement with credit program of NGO/WMCA: Women in Bangladesh are mostly involved with different NGOs for micro credit program. Micro credit program helped poor women to engage in productive activities, which results in increased income, thereby their decision making power in family increased proportionately. The multiple regression model reveals that the women who are participating in micro credit program are 6% more empowered than the women who are not in micro-credit program. This observation also relates to the earlier findings that women in Brajamul-Bhitkhal and Baranurpur subprojects are more empowered than the women in Beel Salua and Control site areas. In case of Beel Salua though they are participating in WMCA but there is no credit program. Women in control area have less or no involvement in micro credit program.

5. 3 Scope for Women Involvement in Water Management

Bangladesh economy is mostly based on agriculture. In field level, gender division of labor is less among the small farmer. In that case, women are working in field with their husbands. There are also good numbers of examples of women's participation in water supply and sanitation in Bangladesh. Women are less likely participating in domestic water supply projects. Thus women's access to resources is an emerging concern. Apart from surface water management, concept of water management has shifted to watershed management, e.g. water for all living being, environment, agriculture, domestic use etc. So, women should take part in WM from extended point of view where the roles and responsibilities of a woman should be reconsidered.

5.3.1 Concept of Women Participation in Water Management

Women are now being considered as important stakeholder for water management. Women have responsibilities as mother, homemaker and a leader in a society. When a woman is performing all the roles then her role in family to society is being perfectly undertaken for totality of development. Women leadership development in WM is of great importance, as women are the main users of water. Findings from FGD show that most respondents thought that women participation is needed for efficient water management. Summary of the opinions from FGD are represented below:

- Second highest number of the population should know about WM.

- Participation in water management helps women to start income generating activities, so they should take part in WM.
- In most of the cases, women always stay at home so they can easily take care and operate the sluice gate/ pump/ and near by irrigation canal rather than a man who is always busy with other business/ means.
- Women are more capable to mobilize mass people rather than men in a locality. So they can contribute differently and significantly in water management.
- Participation in water management can act as force for the women to come out from traditional living style.

During focus group discussion around 80% respondent (both male and female, where n=120) agreed that women should take part in WM. Rest argued that there are many things to do for the women rather than WM. It will add to their work load. Apart from FGD, individual woman was asked to deliver their feelings regarding women's participation in WM. Table 5.6 represents the responses of the women against the necessity of women's participation in WM. Women should know about the facilities and problems related to water use comes as highest percentage (25%). They opined that if water can be efficiently used their sufferings due too much and too less water can be solved

Second highest response is to create an income generating source. About 13% responses belong to this category. Most of the women thought that through participating in water management they will be able to receive various training, knowledge, information that will ultimately improve their living status.

Table 5.6: Percentage of responses against necessity of women's participation in WM

Response	Percentage
As a water user to know about the facilities and problems related to water use	25
To create an income generating source	13
To empower women as a decision maker in WM	10
To develop women's leadership and enhance their dignity in WM	7

Response	Percentage
For the development of this locality	3
To participate and know about the local development	5
To avail different kinds of training	2
For savings	12
For amusement	2
To enhance women's capability to work along with men	12
No comments	10
Total	100

Women in all subproject areas responded that savings should be a cause for women's participation in WMCA. Same percentage of responses (12%) belongs to increase women's capability to work along with men.

In the case of individual woman, savings comes as first (32%) then to know about WM (Table 5.7) Women should engage in water management to get water around the whole year (11%). It suggests that women in the subproject areas thought about WM concentrating on their own interest: like to be more secured, empowered from family to society

Table 5.7: Percentage of responses against cause for her participation in WM

Response	Percentage
To get water properly round the year	11
To be economically self-sufficient	4
To lead the women	6
To know more about water management	15
To work for the this locality	6
For savings	32
To establish women's rights	4
For recreation	4
To meet with mass people	4
To earn money	11
To avail training	2
Total	100

Thus women's existing level of participation and level of empowerment can be related through the following conceptual framework:

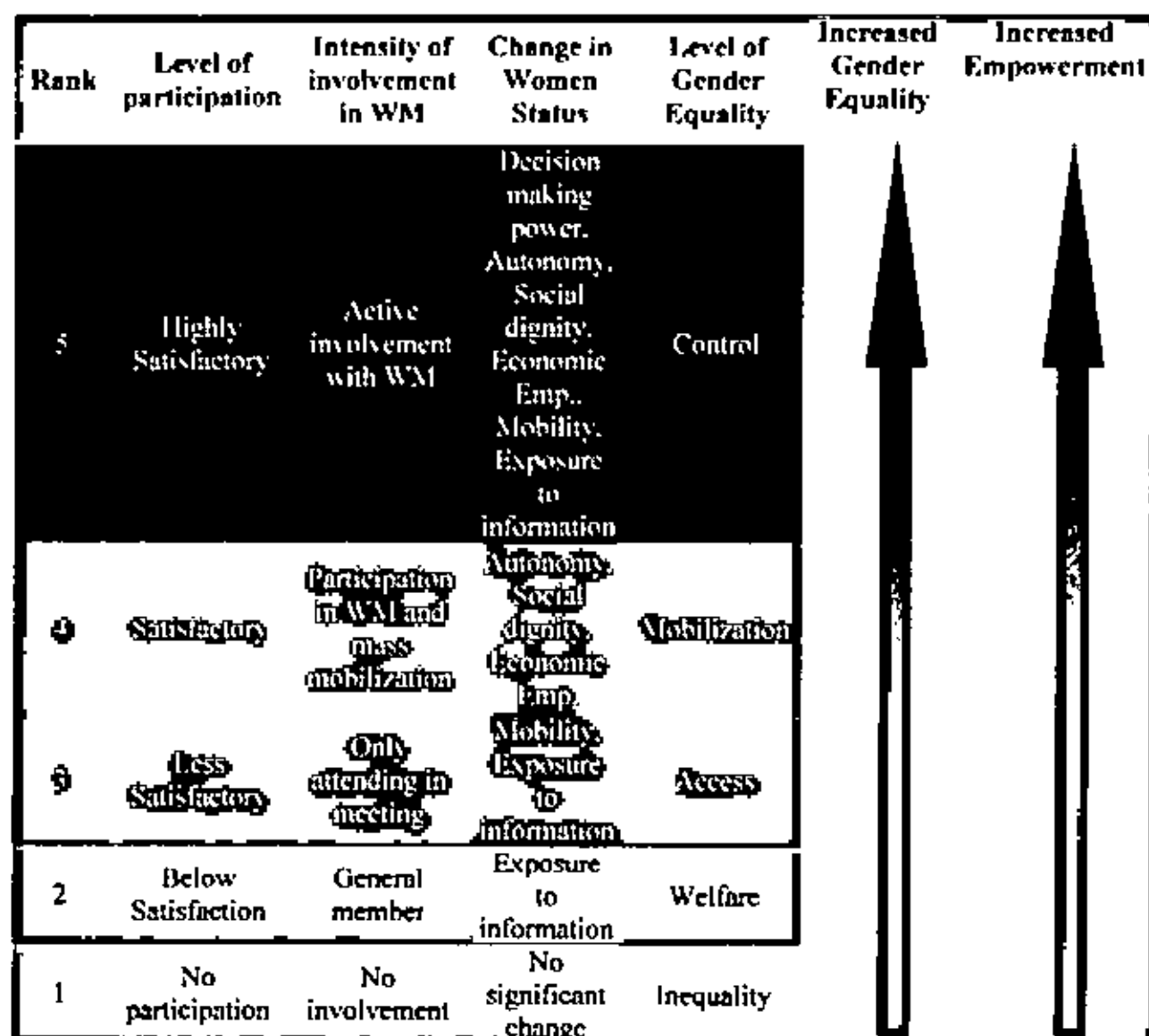


Fig 5.1: Conceptual framework for women's empowerment due to participation in WM

The framework illustrates that with the increase in level of participation involvement in WM increases. The higher the involvement in WM the higher the changes in women status and gender equality as well. Level of gender equality is stated in five level such as absence of equality (inequality), welfare, access, mobilization and

control (see appendix-C). Changes in women's status increased gender equality. Thus level of women's participation is related to women's empowerment.

Table 5.8: Percentage of response against women contribution in WM

Project area	Can women contribute in WM			Total
	Yes	No	No comments	
Brajamul-Bhiti Khal (n=13)	27	7	10	43
Beel Salua (n=4)	3	3	7	13
Baranurpur (n=13)	20	13	10	43
Total (N=30)	50	23	27	100

From the above discussion 50% of the total women thought that they could directly contribute to water management (Table 5.8), of which 27% is from Barajamul-Bhiti Khal and 20% from Baranurpur subproject area. Data shows that areas where women are more empowered due to the project also thought about their responsibilities regarding water management. It also suggests that empowerment and women's participation in water management has functional relationship.

5.3.2 Present Areas of Women's Involvement in Water Management

Women's involvement in water management has emerged in last few decades, but that was mostly limited to WATSAN. In recent days, women involvement in irrigation water management has added a new dimension in water management. Women in WMCA are performing various tasks. As a whole, women are now more mobile than before the project. They are taking part in water management directly and indirectly. Women are participating in WM by collecting O & M fund, taking decision regarding WM, taking different IGA training for efficient water use. Due to water projects, their income and savings also have increased. That may bring a positive change to the woman's status. Though around 23% women go and just attend the meeting, they have immense readiness to work in WM.

Table 5.9: Percentage of responses against the present activities (N=30)

Response	Percentage
Attending meeting	23
O&M fund collection	7
Formal discussion in meeting and signing	8
For savings and scheme	22
Decision making in different WM issues (O&M)	8
Attending different IGA training	7
Vegetable cultivation in homestead	7
Farmers motivation and awareness raising in different WM issues	3
Duck and poultry raising	5
Pond fish culture	3
Working in field (watering, seed bed preparation)	2
Maintenance of the sluice gate	1
No Comments	3
Total	100

Summary of the findings from FGD regarding women's present activities in WMCA is presented below:

- Whenever any meeting is called women member take part and express their opinion.
- Member of O & M committee take part in O & M fund collection and decision making regarding any O & M options
- Mostly general member of the association raise vegetable in embankment side or at their homesteads.
- Each and very member raises ducks. Available water round the year facilitates them to grow more protein for their family and they marketed it as IGA.
- Tree plantation and caretaking of the planted trees is a duty for the women.
- Increasing awareness among the mass people regarding WM and other development issue.
- Distressed women in the project area work for LCS (embankment construction and repairing, silt removing from khal etc.)

Figure 5.2 show that 67% women opined that their present activity in WM is not sufficient for women. They could do more rather participating in meeting. Most of the women from small farmer households thought that they could do something

different for WM. Insufficient technical knowledge and social constraint has narrowed down their scope of work in WMCA and efficiency as well.

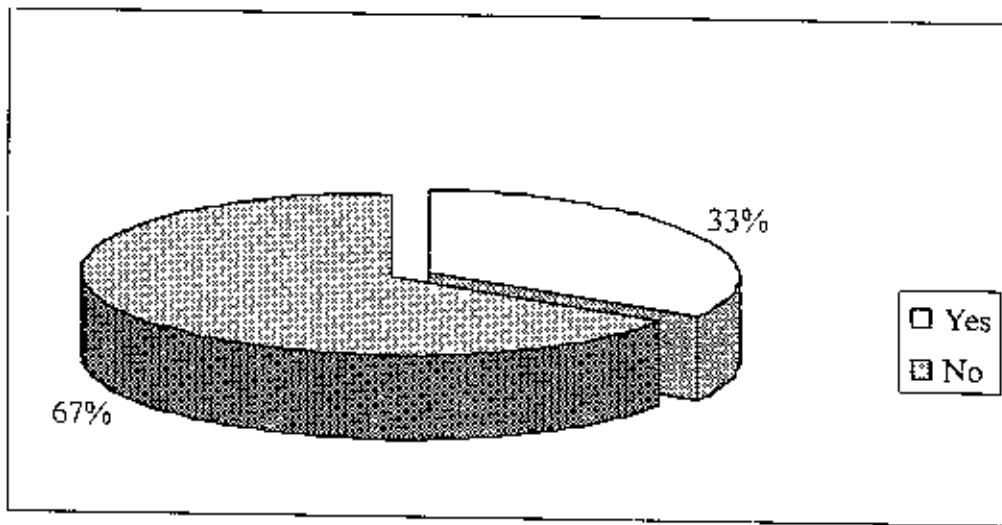


Fig 5.2 Chart showing percentage of opinion of the WMCA member regarding the sufficiency of their present activity in WM.

5.3.3 Benefits Obtaining from Water Management

Benefit for the women due to water projects has been portrayed in four levels. society, family, personal and others. Society level impact is extended beyond the individual woman. In this category, most of the responses belong to economical change in society due to projects. Around 45% responses belong to increased cropping intensity and huge crop production in the locality (Table 5.10). This increased production has a positive impact on the family income of the individual and the women as well. Due to increase in income the living status of the family changed which ultimately impacted women status as well. Due to agro-based economy, most of the women in rural areas measure their social status and happiness all the way through increased production. 19% response belongs to reduction of scarcity in the areas which is also due to increased production. The third most (13%) responses are that distressed women in the project area have been employed due to the projects. Besides, employment opportunity in general has been increased for the women, which makes them economically empowered in that locality. Family level benefits are very much related to individual women. Table 5 10 shows that 48% response belong to women's direct benefit. Due to water projects women can easily and efficiently use water for domestic use. Their work load for domestic water use has been decreased than before.

Most of the families' annual income and savings has also been increased due to water projects which has a positive impact on their livelihood. Thus the vulnerability of the women in family has been reduced. Participation in WM has brought massive changes among the women folk in the community. Due to participation in WMCA women have a chance to meet and share other's experience, knowledge, perceptions etc on different issues. Around 36% responses come as this opportunity for women in that area.

Women's technical knowledge on WM has increased. As in past, women did not know anything about but now they are becoming literate on WM issues. Not only in WM but also women leadership capacity has increased in that area due their participation in WMCA. Awareness regarding other development concepts like knowledge of women rights, violence has increased among the women. Now they are more dignified as they can deliberate their decision in family level and society as well. Women's participation in water management has made a significant change in water management concept. As a whole, awareness in the locality on WM has increased. As women are learning WM it could easily be transferable to the next generation. Next generation is learning from the mother.

Table 5.10: Benefits for the women due to the water projects.

Society Level	Percentage (%)
Scarcity has been lessened	19
Distressed women has been employed	13
Most of the member became self-sufficient through credit	10
Cropping intensity and production has been increased	45
More employment opportunity has been created in the locality	6
Women in the locality have been economically empowered.	6
Total	100
Family Level	%
Reproductive workload of women has decreased, i.e. women have been benefited much for domestic water use and workload regarding water use has been decreased	48
Family has been economically solvent	10
Family income has been increased	36

Savings has increased	5
Total	100
Personal Level	40%
Employment opportunity has increased	18
Participating in meeting woman can learn more from the participant	36
Technical knowledge of WM has increased	11
Leadership capacity has increased	14
Dignity has increased	11
Knowledge of Women rights has increased	11
Total	100
Others	40%
Awareness on WM has increased in this locality	63
Next generation is learning WM	13
Awareness on safety net has increased in locality	25
Total	100

Table 5.11 shows that 40% of respondents (20% of the total sample responded and rest have no comments on this issue) think that women in the project area are getting encouraged to see them in WMCA. Women in the society are more capable to make people understand about WM. Gender issues in WM are getting prioritized, women's need, choice, voice are being highlighted in designing water projects. Increased women access and control over water resources can be ensured through gender equality in water related projects from designing to implementation

Table 5.11: Women's contribution to society as being a participant in WMCA

Comments	Percentage
Capability to make understand people about WM has developed	10
Support in favor of distressed women has been possible	20
Other women are getting encourage and curious on WM	40
Gender issues are being prioritized in meeting	20
Violence against women has decreased (dowry, divorced, early marriage, etc)	10
Total	100

5.3.4 Newer area of involvement for Women in Water Management

If women are left from WM then around 50% of the total population will be left from water resources development. If only men participate in water management then man will excavate canal and women will just dispose waste and ultimately no work would be done. So women's participation is fundamental need for efficient WM. Present state of women's participation give us an idea about their need for participation but the areas of involvement is not so satisfactory That needs to be extended. Bearing that in mind, an attempt has been made to explore some ideas regarding newer area of involvement for women in WM. From the Table 5.12 it is evident that women are more interested for irrigation water management in future followed by farming in home and outside. Around 15% women responded for irrigation work Women in FCDI and WCS & DR project area mentioned that they can maintain/regulate the pump, irrigation channel etc. Land ownership acts as a major factor for direct involvement of women in irrigation water management. Most of the women have no land of her own which hindered their direct participation in WM. Small farmers always also do work other than agriculture and so that in small farmer level women are also working in field. In that case they have to water their crops as well Even though it has to be done by pump they can play a vital role for irrigation water management. In some areas this irrigation water acts as a source for domestic water during less water period. In that way women can get rid of their sufferings from water deficit.

Table 5 12: Percentage of responses against the newer area of involvement for women in WM

Response	Percentage
Awareness raising on safe /efficient water use by women	10
Mass mobilization	12
Irrigation work and domestic water supply	15
Community fishing in canal or beel	10
Large scale vegetable production at home and on embankment	13
Duck rearing	7
More concentrating in O&M work	9
No comments	22
Total	100

Women leader can play a vital role in mind management rather than men. Women can go for mass mobilization, farmer motivation on small scale cropping and seed preservation, etc, water pollution control, safe or efficient water use by the community people ,etc. Women in the project area have a great opportunity for aquaculture. Most women in WCS project area opined that they can go for community fish production with male counterpart. Women in FCDI project area replied that they can cultivate fish in canals or ponds. Women in project area can go for large scale duck production in project area

It also can be suggested that apart from water management women can take part intensively in operation and maintenance work for the water related infrastructure. Women can control the water level around the sluice gate and can clean the gate as well Women responsibilities for O & M fund collection can be extended, as they can collect the fund very efficiently from door to door.

Generally total household management depends on efficient water management, so women's direct and indirect participation in water management has a great importance in integrated water resources management (IWRM).

5.4 Factors Affecting Women's Participation in Water Management

Women's participation in water management may be limited by various factors. In this study, it is discussed in two stages; firstly, factors limiting their efficient working in WMCA Secondly factors hindering their participation in SSWRDSP

As the study has been conducted four years after the completed started so the communities are more or less motivated to participate in SSWRDSP, but the problem is women's efficient working capacity in WMCA Around 63% participants responded that they can not work efficiently in WMCA (Fig 5.3), while 33% responded that they have to face problem regarding participation in SSWRDSP (Fig 5 4)

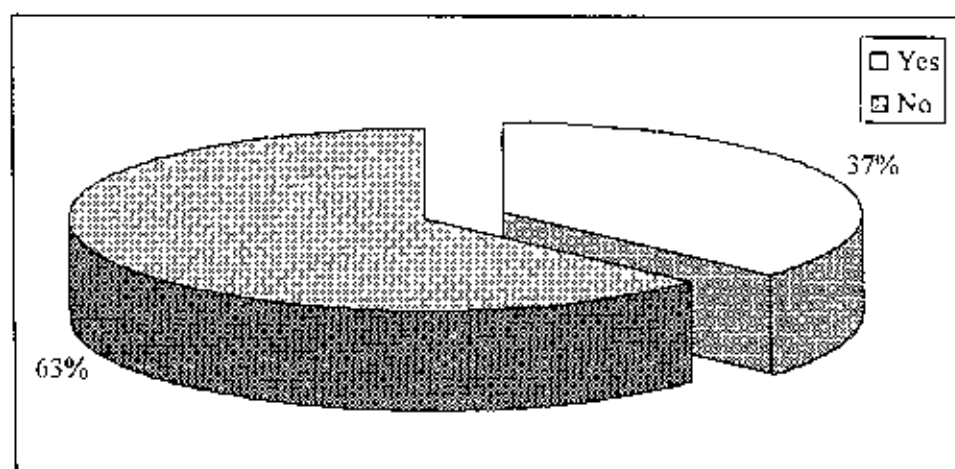


Figure 5.3: Perceptions on women efficiency in WMCA.

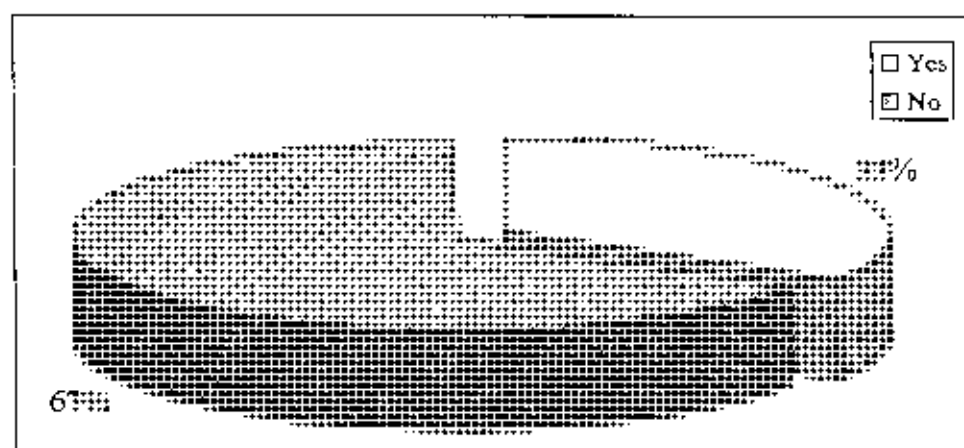


Figure 5.4: Perception on problems in participating in SSWRDSP

Table 5.13: Factors affecting their efficient working capacity in WMCA

Factors	Percentage
Women's ignorance about technical knowhow of WM	18
Lack of unity among women	3
Knowledge gap between men & women	15
Decision making power in WMCA is less	20
Communication gap between the members in WMCA	3
Difficulties to come out from home at any time	3
Low labor price	3
Long distance of meeting place	3
Having less courage to ride on bus	3
Financial inability	3
Non cooperative attitude of Men	8

Factors	Percentage
Irregularity of meeting	3
Less involvement of women in direct WM	3
Heavy family work load	10
Religious reason	5
Low influence on WM activities	3
Total	100

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Though women constitute half of the community, they are the minority in terms of power. Power lies in decision making. They are always thought to be as lagging behind in every sphere. So that there is a conspicuous gap between men and women in terms of knowledge, power, practice etc. It is evident from the Table 5.13 that low level of decision making power in WMCA is found as the main cause (20%) for women's inefficiency in WMCA. It suggests that women in WMCA can take meager decision; they are taking part simply by name. In our society existing level of women's technical knowledge on WM is very poor. That also hindered their active participation in WM. Male counterpart can meet number of people, he enjoys the right to information and also other facilities that makes a significant knowledge gap between men and women. Women are oppressed even in household level. They can little enjoy their right, so as in WMCA. Women work more in HH level. Most of the time women's works remain invisible, so it does not get recognition. And she has to be always busy with her work. More work pressure in household level than her male counterpart always makes her unable to go for other business. Absence of gender equity at HH level labor distribution makes women unable to work for development work. Besides men's non-cooperative attitude to women member acts as a factor for lack of performance of women in WMCA. Women in project areas identified some factors (Table 5.14) that are limiting their participation in SSWRDSP.

Table 5.14 Factors restricting their participation in SSWRDSP

Social Response	Percentage
Restriction from family	14
Some women are reluctant themselves to come out	3
Fear of social scandals	16

Lack of awareness in locality	19
Conflict among group	3
Security Response	Percentage
Security is a big problem to move outside	8
Financial Response	Percentage
Women have no money of their own	11
Cultural Response	19
Religious Response	5
Others	Percentage
Women have less technical knowledge on WM	3

Table 5.14 suggests that cultural problem and lack of awareness in the locality has made the community women not to come out for water management. Family restriction to going outside is a common problem for the women, especially large farmer HH heads are less interested for women participation in WM. Women's financial inability also made her reluctant to go outside.

Chapter Six

CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusion

In this study indices have been used to measure empowerment of women due to their participation in WM. The following conclusions are drawn from the study:

Women's Empowerment

- Women who are participating in water resources management are ahead in the process of empowerment than the women in control site
- CEI is the highest in subproject having the highest level of women's participation
- Average index for empowerment issues are the highest in subproject areas. One of the most important issues like decision making power in subproject areas is higher, which is 72, 64, and 45 in Baranurpur, Brajamul-Bhitikhal and Beel Salua project area. Where as it is 30 in the control site. Regardless of other facts, this explains very clearly the functional relationship between decision making power and women's participation in SSWRDSP
- Women in the subproject areas are comparatively more empowered than the control area. Women in these areas are directly involved in income generating activities rather than being homemaker. Higher level of education has perpetuated the situation in project areas

Factors Affecting Empowerment:

- Factors like, study location, income (own and household), respondent own occupation, respondent level of education and involvement with other NGO, WMCA membership has significant influence on woman's composite empowerment index
- Women having own income generating source are more empowered. Women's own income has positive income to EI rather than HH income.

- It is observed that land holding has inverse relationship with empowerment. Women in marginal and small farmer household level are more empowered than the medium household farmer
- Micro credit program makes women more empowered. Women participating in micro credit program are 6% more empowered than the women who are not in micro-credit program.

Women's Participation in WM

- Around 25% women thought that they could participate in WM And then, they would suffer less from too much and too less water.
- Women in all subproject areas responded savings as a major reason for their participation in WMCA. Again women's empowerment and their participation in WM have a functional relationship
- With the increase in level of participation involvement in WM increases. The higher the involvement in WM the higher the changes in women status and gender equality as well

Women in WM Activities

- Around 50% of the total women thought that they can directly contribute to water management, of which 27% from Barajamul-Bhitikhal and 20% from Baranurpur subproject area In areas where women are more empowered their sense of responsibilities to WM is stronger
- Women are participating in WM by collecting O & M fund, taking decision regarding WM, taking different IGA training for efficient water use.
- About 67% women opined that their present activity in WM is not sufficient for women. They can do more than participating in meeting. Most of the women from small farmer household thought that they could do something different for WM.

Areas of involvement in WM

- Present state of women's participation gives us an idea about their need for participation but, the areas of involvement are not so satisfactory. That needs to be extended. Around 15% women responded for irrigation work. Women in FCID and WCS & DR project area mentioned that they can maintain/regulate the pump, irrigation channel, etc.
- Women leader can play a vital role in mind management, community fish production, mass mobilization, farmer motivation on small scale cropping and seed preservation, water pollution control, intensive operation and maintenance work, safe or efficient water use by the community people, etc.

Limiting Factors for Women's Participation:

- Women's participation in water management has been limited by various factors. It has affected in two stages; firstly, factors limiting their efficient working in WMCA. Secondly factors hindering their participation in SSWRDSP.
- Around 63% participant responded that they can not work efficiently in WMCA, while 33% responded that they have to face problem regarding participation in SSWRDSP.

6.2 Recommendation

Recommendations from the study are as follows.

- Studied projects do not aim to ensure women empowerment through WM. So more emphasise on women's direct involvement in WM should be ensured through water projects.
- To ensure women's workability within WMCA, amendment should be made in WMCA operating manual.
- At the initial stage micro-credit program can act as an incentive for the rural women to come out and to be involved in WM.
- Minimum level of technical knowledge on WM should be provided to women for their active participation in WM.

- Extensive research on women contribution and why women should engage in water management is needed.
- Gender and WM is still an argument for Bangladesh context, such research can act as ground level research Exploratory research is much needed in this field of gender in WM
- Gender responsive budgeting and gender auditing in all water related projects and institutions is very essential in this regard.

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APPENDIX-A

Weight of Individual Issues Calculated from Expert Opinion Survey.

Issues	SI no	Indicators	Weight	Relative weight (%)
Mobility	1	Visiting places outside villages	56	10
	2	Visiting health care center	44	8
	3	Visiting market for selling or shopping	56	10
	4	Visiting cooperative society	48	8
	5	Attending women's meeting	72	13
	6	Joining non govt / govt. offices	40	7
	7	Going outside the house to bring water	56	10
	8	Going to work with LCS/ embankment repairing	72	13
	9	Going to take any IGA training	72	13
	10	Going to work in field	56	10
Decision Making Issue	1	Spending of her own money	56	7
	2	Spending of her husband money	64	8
	3	Decision to children well being (health care, education, etc)	52	6
	4	Involvement with any cooperative society or NGO	56	7
	5	Visit to father or other house	48	6
	6	Purchase of households or other like cloths, ornaments, utensils	52	6
	7	Purchase or sale of land	48	6
	8	Taking part in project implementation	64	8
	9	Take any decision in water use	84	10
	10	Take part in decision regarding income generation from alternative occupation	60	7
	11	Take part in conflict resolution (household, community)	52	6
	12	Take decision in O&M committee	64	8
	13	Take part in conflict resolution (in water use)	64	8
	14	Take part in irrigation decision (when & how)	44	5
Autonomy Issue	1	Talks with unknown person	32	6
	2	Cast vote in election	56	11
	3	Provide support (economic and Social) to others	56	11
	4	Exercise control on family income	68	13

Issues	Si no	Indicators	Weight	Relative weight (%)	
Economic Status	5	Share opinion about having children	68	13	
	6	Buy household assets independently	52	10	
	7	Initiate income generating activities	56	11	
	8	Work outside home	48	9	
	9	Share in agriculture due to subproject	40	8	
	10	Share in aquaculture due to subproject.	44	8	
	1	Right to own land	64	16	
	2	Access to own cash and savings	56	14	
	3	Access to household cash and savings	52	13	
	4	Make investment choice independently	56	14	
Exposure to information	5	Access to household assets	60	15	
	6	Any contribution to family income	60	15	
	7	Make use of own income due to water project	48	12	
	1	Listening to radios	52	21	
	2	Watching TV	64	25	
	3	Reading newspaper	56	22	
	4	Participating in public meeting/ workshop/ seminar.	80	32	
	Institutional Involvement	1	Involvement in local govt. institution	72	32
		2	Involvement in school committee	40	18
		3	Involvement in NGO activities	44	19
4		Involvement in cooperative society	72	32	

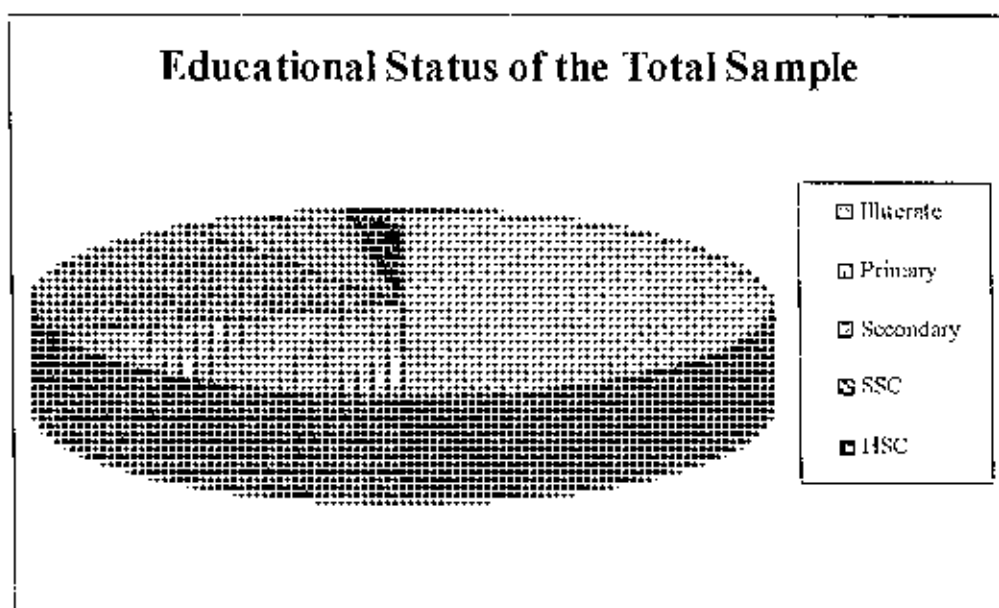
Land ownership vs CEI

Category(dec)	Brajanul	Beel Salua	Baranurpur	Control Site
Landless(0)	71	0	0	0
Marginal (<49)	65	50	62	33
Small (50 – 249)	66	40	82	47
Medium (250 – 749)	0	0	61	15
Large(750 +)	85	0	0	

Literacy vs. Average CEI

Educational category	Brajamul	Beel Salua	Baranurpur	Control Site	Total
Illiterate	68	40	59	32	53
Primary	62	53	66	29	57
Secondary	73	49	85	30	62
SSC	0	0	77	0	77
HSC	85	0	0	0	85

Educational Status of the Total Sample



APPENDIX-B

Description of Multiple Regression Model

Model-I is estimated considering equal weights for different empowerment issues. Model-II is estimated considering unequal weights for different empowerment issues based on expert opinion obtained from the survey method. In the entire cases empowerment index is expressed in percentage. The multiple regression model used for this analysis is described as follows:

$$y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + e_i$$

Where,

y_i = Composite empowerment index of individual women expressed in terms of percentage.

β_0 = Intercept term

β_i = Regression co-efficient of the respective variables

X_1 = Study location (Control site-0, Barajamul-Bhitikhal- 1, Beel Salua-2, Baranurpur-3)

X_2 = Husband income (Tk/yr)

X_3 = Respondent own income (Tk/yr)

X_4 = Total land occupied by the HH (decimal)

X_5 = Respondent own occupation

X_6 = Respondent own education level

X_7 = Involvement with other NGO

X_8 = WMCA membership status

e_i = Random error, which is normally and independently distributed with mean zero and constant variance

APPENDIX-C

Different level of gender equality:

Gender Inequality: Gender inequality manifests as the unequal power relations between women and men. For instance, within the household, a husband's control over his wife's labor, and of resulting cash income, means that a wife's increased productivity may not result in increased welfare for herself and her children. In this instance gender inequality is seen in the lack of connection between effort and reward.

Welfare: This is the level of material welfare of females, relative to males in such areas as nutritional status, food supply and income. In this level gender equality is very meager in terms of women as mere statistics rather than individuals capable of changing their lives more as passive recipients of welfare benefits.

Access: This level refers to women's access for utilization of resources and opportunities including their own labor. Time is also a resource to which there is gender inequality. Relative to men women have less access to education and wage employment and less access to services and skill trainings which makes productive employment possible.

Mobilization: Mobilization means state, where women's collective analysis reveals the extent that they have common problems and face common obstacles, arising from structural discrimination which affects all of them. Individual woman is not likely to make much progress in challenging traditional assumptions, but women together are able to collectively discuss gender issues.

Control: Equality of control means a balance of power between women and men, so that neither is in a position of dominance. It means women have power alongside men to influence their destiny and that of their society. Control level enables women to gain improved access to resources and welfare.

3 Do you have any connection with/ involvement with development organization?

Yes No

If yes, then explain.

4. Do you know about water Management Cooperative Association in Your locality?

Yes No

5. Do you a member of water Management Cooperative Association in Your locality?

Yes No

Sec-B. Empowerment Index (For both area)

6. Mobility Issue

Can you go to the following places?

- i. Visiting places outside villages
- ii. Visiting to health care center
- iii. Visiting to market for selling or shopping
- iv. Visiting to cooperative society
- v. Attending to Women's meeting
- vi. Joining non govt offices
- vii. Going outside the house to bring water
- viii. Going to work with LCS/ embankment repairing
- ix. Going to take any IGA training
- x. Going to work in field

Code Alone-2, Jointly-1, Not at all-0

7. Do you think your mobility has changed due to participation to WMCA?

Yes No

If no, why you could not go outside?

.....

8. Decision Making Issue

Can you decision on the following issues:

- i. Spending her own money
- ii. Spending her husband's money
- iii. Decision regarding children well being (health care, education)

- iv. Involvement with any cooperative society or NGO
- v. Visit to father or other house
- vi. Purchase of households or other like cloths, ornaments, utensils
- vii. Purchase or sale of land
- viii. Taking part in project implementation
- ix. Take any decision water use
- x. Take part in decision regarding income generation from alternative occupation
- xi. Take part in conflict resolution (household, community)
- xii. Take decision in O&M committee
- xiii. Take part in conflict resolution (in water use)
- xiv. Take part in irrigation decision (when & how)

Code: Alone-2, Jointly-1, Not at all-0

9. Autonomy Issue

Do you have any role on the following matters?

- i. Talks with un known person
- ii. Cast vote in election
- iii. Provide support (economic and social) to others
- iv. Exercise control on family income
- v. Share opinion about having children
- vi. Buy household assets
- vii. Initiate income generating activities independently
- viii. Work outside home
- ix. Share in agriculture due to subproject
- x. Share in aquaculture due to subproject

Code: Alone-2, Jointly-1, Not at all-0

10. Economic Status

Have you access on the following:

- i. Right to own land
- ii. Access to own cash and savings
- iii. Access to household cash and savings
- iv. Make investment choice independently
- v. Access to household assets
- vi. Any contribution to family income
- vii. Mk use of own income due to water project

Code Yes-1 No-0

11. Exposure to information

Have you regular access to the followings:

- i. Listening to radios
- ii. Watching TV
- iii. Reading newspaper
- iv. Participating in public meeting/ workshop/ seminar

Code- Yes-1, No-0

12. Institutional Involvement

What type of involvement you have with the following institution

- i. Involvement in local govt institution
- ii. Involvement in school committee
- iii. Involvement in NGO activities
- iv. Involvement in cooperative society

Code: yes -1, No-0

Sec-C. Water Management Activity (only for project area)

13 Why women participation is needed in water management? Please give your opinion

.....

14. Why you have come to participate in WM?

.....

15. As you are a member of WMCA, please tick mark on the following one which belongs to you.

General/Management/Agriculture/Fisheries/O & M/Health & sanitation/others

16 Do you think that women can work/contribute in water management?

Yes No

17 What are the activities you are doing/roles you are playing being a member of the committee?

a.....
 b.....
 c.....
 d.....
 e.....

18 Do you think your responsibilities are sufficient being a member of WMCA?

Yes No

19. If no, please identify some newer area of activity for women in WM.

- a.
- b.
- c.
- d.

20. Do you think women can work efficiently in WM committee?

Yes/ No. If no, please mention some challenges in working with WMCA.

.....

.....

21. What are the benefits (direct & indirect) you have received due to the water projects/participating in water project?

- a. Society.....
- b. Family.....
- c. Personally.
- c. Others

22. What are benefit society has received due to your participation in WM?

.....

.....

23 Do you feel any problem to your family/society in participating SSWRDSP?

Yes/ No. If yes, please explain the causes under the following category.

- a Social.
- b. Security issue.....
- c Financial
- d Cultural.
- e. Religious..
- f. Others (Please explain)

Signature

APPENDIX-E

Women's Empowerment through their Participation SSWRDSP Checklist for Focus Group Discussion (FGD)

1. Group Type: Male/Female/ Combined
2. Name of the WMCA.
3. Address:
Vill..... Union Upazilla.....District.....
4. Occupation: How many of you are.

Farmer	Fisherman	Agro day labor	Day labor	Van puller/Rickshaw puller	others

5. Land ownership status
6. What are water related problem your community has faced for last ten years?
 - Describe the past (before subproject) and present (after subproject) problems regarding water use especially for women and children (domestic use including home gardening) in your locality.
 - Describe the past (before subproject) and present (after subproject) problems regarding water use agriculture in your locality
 - Describe the past (before subproject) and present (after subproject) problems regarding water use fisheries in your locality
 - Describe the past (before subproject) and present (after subproject) problems regarding water use especially for poultry, livestock and duckery etc.
7. Are there any conflict among the water users and occupational groups?
8. Do you feel women should take part in Water management in your locality?
9. If no, then what are the barriers in your society?
10. If yes, then explain the activities in which women can contribute apart from male?
11. How you are becoming benefited from the subproject?
12. What also you can get from the subproject?
13. Do you feel any change in your Society / culture due to SSWRDSP?

APPENDIX-F

EXPERT OPINION SURVEY

**Women's Empowerment through their Participation in Small Scale Water
Resources Development Sector Projects
Checklist: Expert Opinion Survey**

Dear Sir/Madam,

Greetings from Sayeda Asifa Ashrafi research student, Bangladesh University of Engineering and Technology.

As apart of my M. Sc research entitled "Women's Empowerment through their Participation in Small Scale Water Resources Development Sector Projects" I am hoping to conduct an opinion survey among some experts in this field.

As apart of study I have selected some issues, under each issues there are some indicators to measure the issues. But each of the indicators is not equally importance for the respective issue. Due to measure the empowerment index in weighted method, expert are being requested to assign a score for each of the indicator within 1 to 5 on the basis of the degree of relationship of the indicator with the empowerment level. The higher the degree of relationship of the indicator, the higher the score has to be assigned.

I have designed a checklist to collect your opinion regarding some indicators of some issues.

Your opinion is very important and will provide valuable information for future policy decision and management options for women in development especially in water sectors.

To enrich the research potentials significance of the study I would like to request you to kindly participate in this study.

I am attaching a checklist sheet for your convenience. If you consent to be participant in this study please assign weight (score) and sign the checklist and send it to me on or before 15th September 2006.

Thanking you in anticipation for taking time to participate in this study.

Sincerely yours

Sayeda Asifa Ashrafi

Student # MP0428002

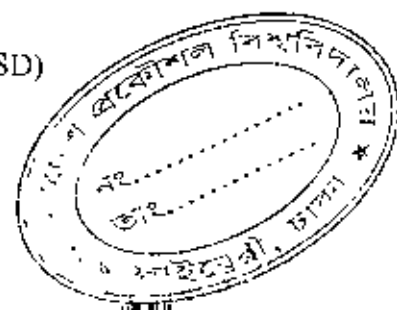
Institute of flood and water management

Bangladesh University of Engineering and Technology

Dhaka-1000, Bangladesh

Tel: 8802-966565-80, mobile: 01716-612277, 01710-924626 (ISD)

E-mail: tasim_ku@yahoo.com



Checklist for Opinion Survey

Women's Empowerment through their Participation in Small Scale Water Resources Development Sector Projects

Please score within 1 to 5 for various indicators under each of the issue according to descending order of priority.

Issue	Indicator	Score	Remarks
Mobility	Visiting places outside villages		
	Visiting health care center		
	Visiting market for selling or shopping		
	Visiting cooperative society		
	Attending women's meeting		
	Joining non govt./ govt offices		
	Going outside the house to bring water		
	Going to work with LCS/ embankment repairing		
	Going to take any IGA training		
	Going to work in field		
Decision Making Issue	Spending of her own money		
	Spending of her husband money		
	Decision to children well being healthcare, education, etc)		
	Involvement with any cooperative society or NGO		
	Visit to father or other house		
	Purchase of households or other like cloths, ornaments, utensils		
	Purchase or sale of land		
	Taking part in project implementation		
	Take any decision in water use		
	Take part in decision regarding income generation from alternative occupation		
	Take part in conflict resolution (household, community)		
	Take decision in O&M committee		
	Take part in conflict resolution (in water use)		
Take part in irrigation decision (when & how)			
Autonomy Issue	Talks with unknown person		
	Cast vote in election		
	Provide support (economic and social) to others		
	Exercise control on family income		
	Share opinion about having children		
	Buy household assets independently		
	Initiate income generating activities		
	Work outside home		

Issue	Indicator	Score	Remarks
	Share in agriculture due to subproject		
	Share in aquaculture due to subproject		
Economic Status	Right to own land		
	Access to own cash and savings		
	Access to household cash and savings		
	Make investment choice independently		
	Access to household assets		
	Any contribution to family income		
	Make use of own income due to water project		
Exposure to information	Listening to radios		
	Watching TV		
	Reading newspaper		
	Participating in public meeting/ workshop/ seminar.		
Institutional Involvement	Involvement in local govt. institution		
	Involvement in school committee		
	Involvement in NGO activities		
	Involvement in cooperative society		

Name of the Expert:

Designation:

Organization:

Date:

