

Fig. 3.2.6 Arsenic Contamination in the Study Area

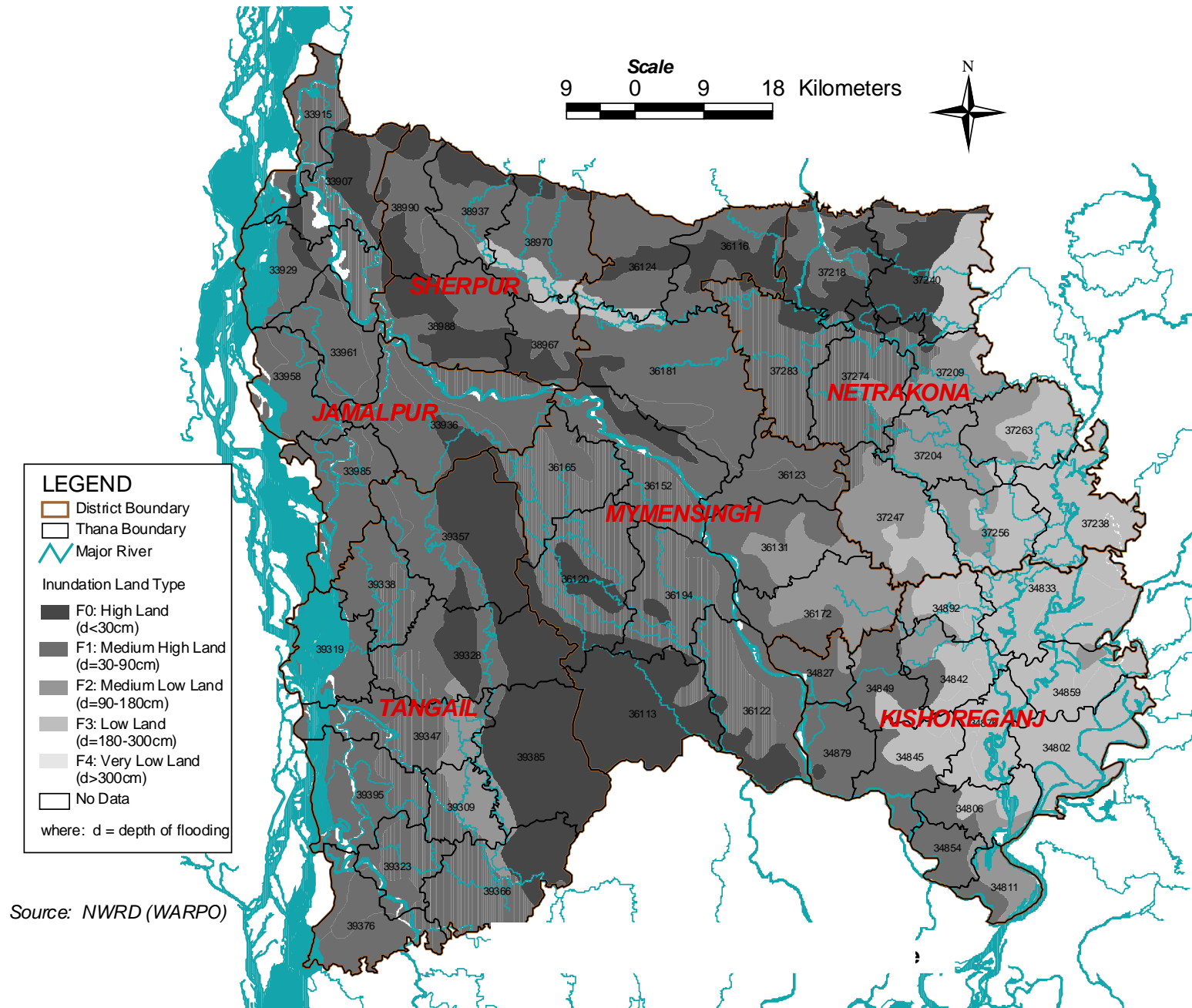


Fig. 3.2.7 Land Classification by Flood Phase

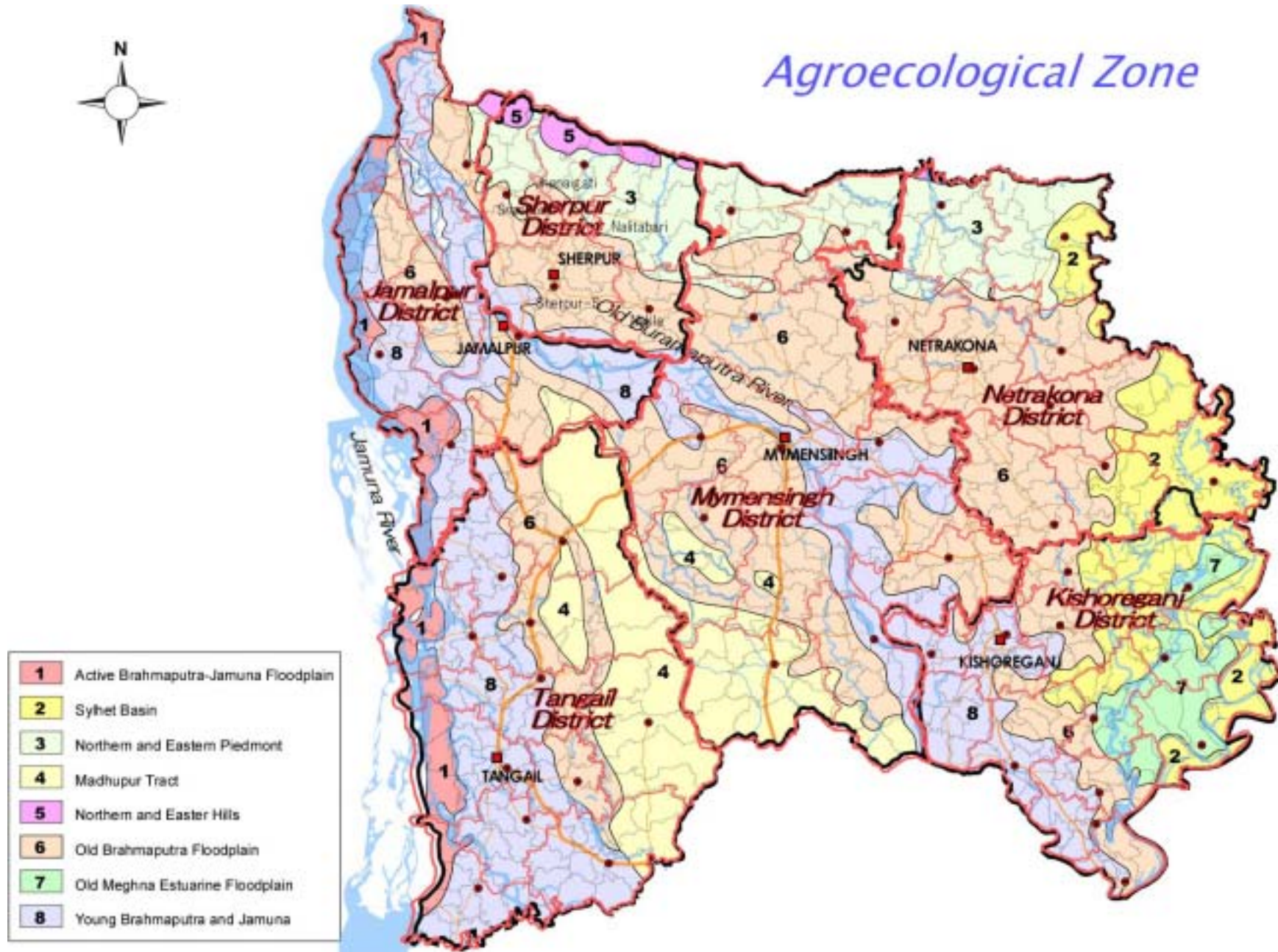


Fig. 3.9.1 Agro-ecological Zone in the Study Area

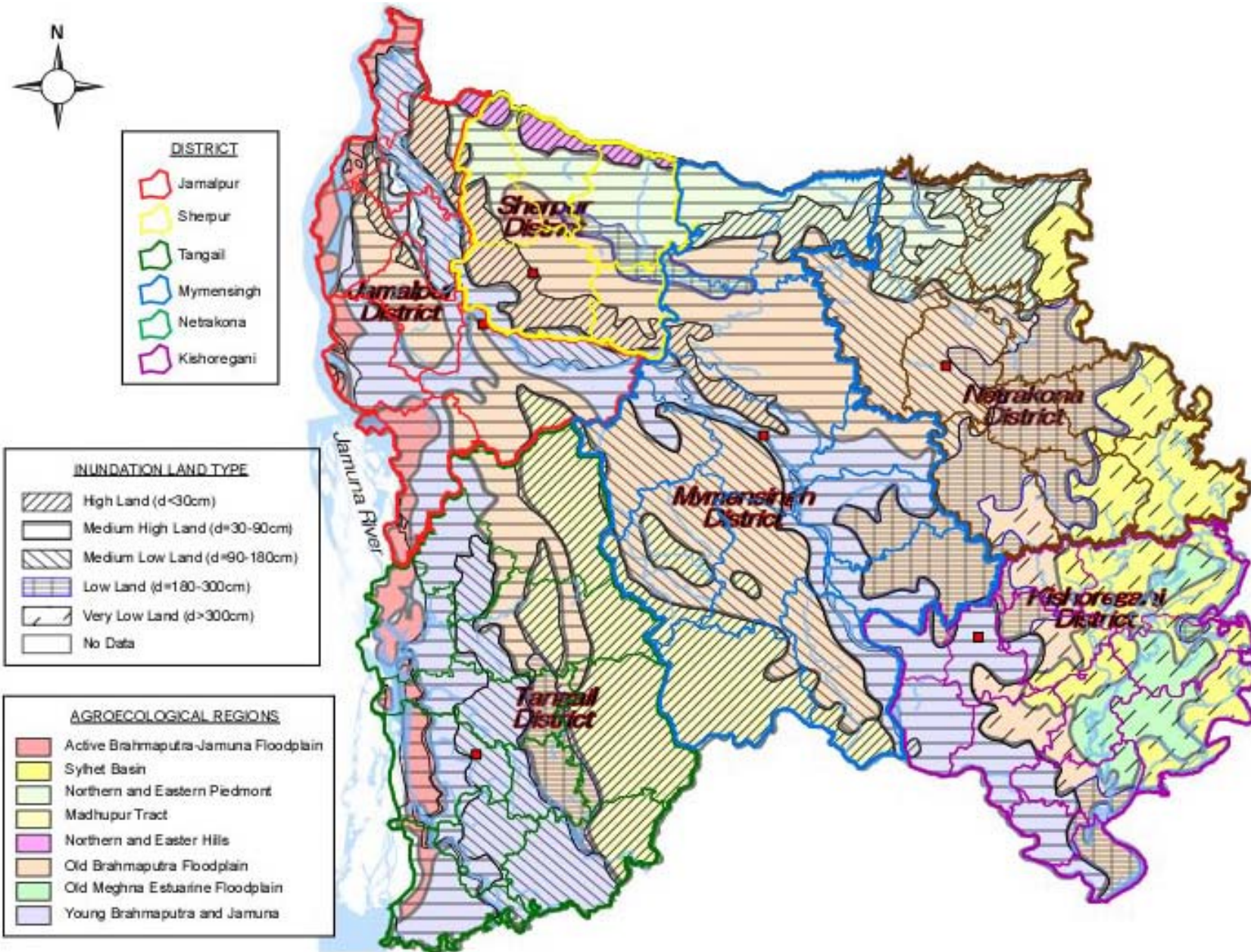


Fig. 3.9.2 Zoning of Upazila in the Study Area

CHAPTER 4

PROBLEMS ANALYSIS IN THE STUDY AREA

4.1 Problems Identified through the Workshops / Interviews in the Study Area

In order to clarify the main issues concerning water resources and the livelihood of the Study Area, a total of 20 workshops for problem identification were held at various levels. The workshops were largely divided into two types; workshops targeting government officials to explain the contents of the Study and to discuss the related problems, and workshops targeting local residents to identify the problems related to their livelihoods and water resources development. Problem analyses were done in each workshop and problem trees were structured through the discussions. (Record of problem identification workshops are shown in Annex A-5.1)

4.1.1 Problem Identification Workshops of Government Officials

Workshops targeting government officials were held at central and district levels. The central workshop was held on August 21, with representatives of relevant government agencies, donor organizations and LGED Chief Engineer and officials as participants. Contents of the Study were explained to the participants and issues related to Small Scale Water Resources Development (SSWRD) were discussed.

District-level workshops were held at each of six districts in Greater Mymensingh during the period of 29 August to 7 September 2004. Each workshop took about two hours for discussing the issues related to SSWRD, with the participation of field LGED officials/officers (District Executive Engineer, Assistant Engineer, Assistant Engineer SSWRDSP-2, Socio-economist SSWRDSP-2, Upazila Engineers and Community Organizers), district level representatives of relevant government agencies (BWDB, DAE, DoC, DoFo, DoFi and DoWA) and representative of Union Parishad (UP).

4.1.2 Problem Identification Workshops of Villagers in Subproject Areas

Workshops at Union/WMA level were held at 13 unions and WMAs during the period of 9 - 26 September 2004. Each workshop took about three to four hours for discussions. Arrangements of the workshops were kindly made by the UP Chairman/WMA Chairman through LGED Upazila Engineer and District Assistant Engineer/Socio-economist. Some workshops held with wide variations, such as lack of female participants or a total of more than 600 participants, which were too many.

Selection of the workshop sites was done based on the zoning of the Upazilas in Greater Mymensingh using elevation data and gross cropped area data of *Census of Agriculture-1996* so that each site not only represent the district but also a zone (Table 3.9.2). Among the proposed subprojects, one that have passed screening of SSWRDSP-2 and the other that have not passed were selected in each district of the Study Area.

4.1.3 Summary of the Problem Analysis Workshops

Problem analyses were done at each workshop with the core problem defined as “villagers income is low”. Discussions were made with local residents and government officers, and problem trees consisting of various issues leading to the core problem were structured. The results of problem analysis in the workshops are summarized as follows.

(1) Direct Causes

Ranking of the direct causes of the core problem was done by voting for 11 workshops at Unions/WMAs level. The issue of “agricultural production is low” was chosen as the most significant of the direct causes at nine Unions/WMAs. For other Unions/WMAs, “villagers cannot market their crop products” was chosen at Rasulpur Union, Ghatail Upazila, Tangail District, and “it is difficult to find jobs/work” was chosen at Iswanganj Union, Iswanganj Upazila, Mymensingh District (Table 4.1.2).

“It is difficult to find jobs / work” was determined as the second significant direct cause in five Unions/WMAs, while “fishery production is low” was second in three Unions/WMAs, and “villagers cannot get good price of products” was also second in two Unions/WMAs. Other direct causes were “family expenditure is large”, “women cannot earn”, “livestock production is low”, “villagers’ wage is low”, “per capita farm land is small” etc.

Since no women participated in two workshops and only one woman participated in three workshops, the ranking did not represent the voice of the women. It is expected that “women cannot earn” could be at least second or third direct cause, if women were there.

Ranking of Direct Causes Identified in Union/WMA Workshops

	Number of Unions/WMAs regarding the issue as:	
	Most significant	Second significant
Agricultural production is low	9	-
Villagers cannot market their crop products	1	-
It is difficult to find jobs/work	1	5
Fishery production is low	-	3
Villagers cannot get good price of products	-	2

(2) Problem Analysis Model for Greater Mymensingh

The least common multiplier of all the problems identified in the Union/WMA level workshop is described in Fig. 4.1.1. The direct causes identified are:

1. Agricultural production is low.
2. Limited work opportunity.
3. Low profits from production
4. Fish production is low.
5. Family expenditure is high.
6. Less opportunity and access to income generation activities for women¹.
Livestock production is low.
Most of the villagers are landless.
Villagers cannot work hard.
Few family members earn. (Tangail, Jamalpur and Sherpur)
Villagers cannot sell timber. (Jamalpur, Sherpur and Kishoreganj)
Villagers wage is low. (Netrokona)

¹ only the 6th in ranking, just because only few women participated the problem analysis workshops.

4.1.4 Interviews and Statements at the Workshops

Interviews were conducted at each workshop site to listen to the voices of villagers and to prepare for the problem analysis. To avoid the influence of local leaders and politicians such as UP Chairman and WMA Chairman, the workshop team tried to visit medium or rather shabby farm houses.

Also additional interviews were conducted at two sites to find out the reasons for failure and success; 1) Digha Beel Subproject, Jatia Union, Iswanganj Upazila, Mymensingh District where many villagers opposed to the subproject, and 2) Mutbari Khal Khonnon, Mesta Union, Jamalpur Sadar Upazila, Jamalpur District.

The individual findings from the interviews at workshop sites and workshop statements are summarized in Table 4.1.3. However, it must be noted that these findings are indications of limited information sources. Still yet, the information is regarded valuable in regard that the voices of the local stakeholders do reflect the real situations of the area in many cases, but often missed. The findings will therefore be reflected to the Master Plan after closer examinations in the course of the Study.

4.1.5 Other Issues

(1) PRA used in SSWRDSP-2

The PRA¹⁾ used in SSWRDSP-2 is a step of a project appraisal process by SSWRDSP-2. Therefore the PRA starts from the proposed project²⁾, not from the needs of the villagers or the future image of the area.

If it is just an appraisal process, the objective of PRA is to decide the pass or fail of the subproject. However, if it is part of participatory planning, PRA is to get consensus of the stakeholders and to improve the design of the subproject.

➤ The Study Team expects the PRA workshops to become the venue to talk about the development of the area, to get better consensus among the stakeholders and to improve the design of the subproject.

Then one of the questions is how to connect top-down approach from macro level point of view and bottom-up approach from micro level point of view. Both are important, but there is always a need to reach a compromise. The venues are needed for district, upazila, union and people to participate and it seems that there is miscommunication between decision making at union level and decision making at village- and *para-* level.

Also from the experiences of problem analysis workshops conducted by the Study, the Study Team found that not so many women can attend the workshops at union-level. There were no woman participants in two problem analysis workshops, only one woman participant in three workshops and only two to four woman participants in two workshops. About 1/3 of the

¹⁾ The “Small Scale Water Resources Subproject Planning and Design Guidelines”, prepared under SSWRDSP-2, states that the purpose of PRA is to *obtain a comprehensive overview of the perceptions of different local interest groups (stakeholders) concerning water issues in the subproject area*. However, the initial objectives in the original design of the SSWRDSP-2 and the positioning of PRA within the subproject development cycle of the project puts emphasis on verification of subprojects in terms of social acceptance and environmental soundness.

²⁾ In the subproject development cycle of SSWRDSP-2, the basis of the proposed subproject is to be prepared prior to PRA, and PRA is conducted after several steps of appraisal are done.

participants were women only at two workshops out of 13 workshops.

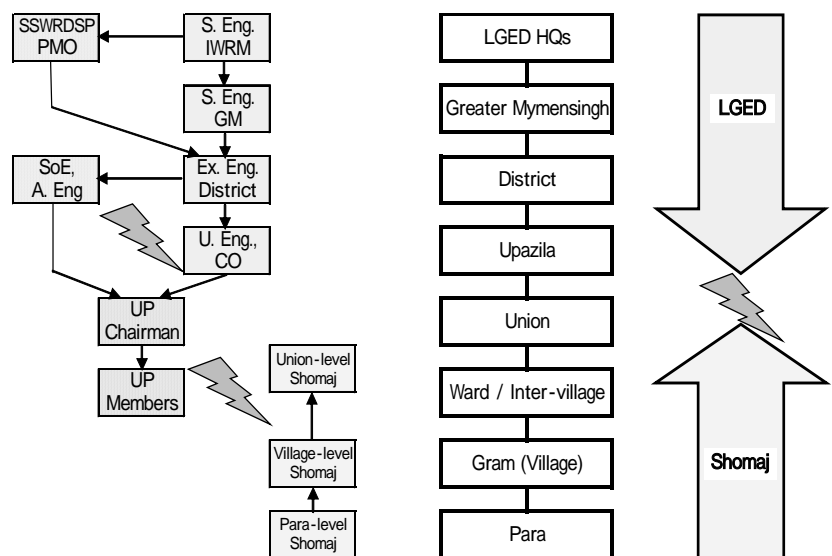
Several women said it is difficult for them to go to distant places (say 1 hour distance) at the workshops. Also a *shomaj* elder of Jamalpur said 3-4 villages are the maximum for community-based activities in *char* area because of the distances among settlements. 5-6 villages are possible in *beel* area, and also combination of *char* and *beel* area, he added.

(2) Communication Gap

There seems to be two major communication gaps in the planning of the subprojects. One gap is between Union level and village / *para* level, and the other is between project employee and LGED employee line. The former gap hinders getting the consensus of the people and establishing participation and ownership of the people. The latter gap hinders identifying and designing a good subproject.

An Assistant Engineer SSWRDSP-2 said “Community Organizer of Upazila does not support much; where he / she could play a big role in different aspects of the project, and where it is important to deal with the community. The beneficiaries do not get support from the Upazila; so they have to directly contact the district office. The project does not have any staff at the upazila-level, even though Upazila LGED officers get training from the project.”

A Socio-economist said that “While working, I sometime face a problem of “technical vs. non technical”. At times engineers see things from rigid technical or engineering point of views and they do not seem like appreciating the non-technical professionals in the project”. “If I am told to improve the process, I would do the design-discussion meeting before the appraisal phase. It also helps to collect the contribution money more easily”; he added.



Communication Gap

- More participation of Upazila Engineer and Community Organizer to design-discussion meeting seems to be necessary.

The Study Team did extra interviews at Mutbari Khal Khonon in Mesta Union, Sadar Upazila, Jamalpur District, and found that there were little gaps 20-25 years ago and the village headmen, *shomaj* elders of 37 villages, and *Upazila* Officers worked together.

- Consensus of *shomaj* elders at village-level and *para*-level should be reached before finalizing the proposal of subproject.

4.2 Problems of Small Scale Water Resources Development

4.2.1 Natural Conditions

In general, countermeasures for problems for Small Scale Water Resources Development (SSWRD) related to natural conditions of the Study Area are regarded to be very limited. Activities in the scope of SSWRD do not (cannot) aim at largely changing the topography nor the meteorology of the Study Area. Therefore the possible measures will be limited to what is acceptable at the presence of the existing conditions. The followings are the major problems for SSWRD related to natural conditions of the Study Area.

(1) Flat Low Lying Terrain

Topography is one of the major reasons for the long lasting floods in the Study Area. The low lying flood plains of the old Brahmaputra and Jamuna, forming the majority of the Study Area has little gradient, and therefore has very poor capacity of natural drainage. This, along with the similar topographic features of the downstream area and all the way to the Sea of Bengal, results in major congestion of water in the rainy season. This results in a vast flooding in the Study Area, where nearly 80% is annually inundated with more than 0.3m of water. However, there are differences of topographic conditions within the Study Area, resulting as different obstacles for SSWRD.

The eastern part of Netrakona and Kishoreganj form a large natural depression located near the Meghna River. This area, partly including the so-called haor area, is deeply inundated during the rainy season. Areas with inundation depth from 1.8 – 3.0m cover about 42% of the two districts, making it unpractical to cope up by small-scale schemes. Flood Control itself is difficult in some of the areas, and Flood Management activities would be limited to mitigation of early flood damages and improved drainage in the post-flood period.

The flat terrain of the Study Area limits the area with little potential for gravity irrigation. Thus low lift pumps will be required for irrigation in most of the Study Area resulting in more initial investments. The lack of distinct watersheds also makes reservoirs less efficient, and only capable of holding water obtained during the flooding of the area. The limited highlands (areas with inundation depth of 0 to 0.3m) of the Study Area are sensitive to draught damage due to limited surface water resources and low groundwater table. The areas near the Indian borders are prone to flash floods coming across the border from the northern mountains.

(2) Strong Seasonal Bias of Rainfall

Along with the flat terrain, the strong seasonal bias of rainfall in Bangladesh and the surrounding countries is also the major cause of the water related problems in the Study Area. Extensive rainfall during the period of June to September lead to major floods while scarce rainfall during October to March often inflicting severe droughts results limiting agricultural production.

(3) Arsenic Contamination

Arsenic contamination in groundwater resources of Bangladesh is an issue of increasing attention. Chronic intoxication by Arsenic will lead to various health hazards including skin and lung cancer. Although comprehensive measurements of arsenic in Bangladesh are yet to be carried out, existing indications show that the Study Area is rather of low risk. However, some studies indicate the existence of Arsenic contaminated wells in the eastern part of

Netrakona and some parts of Kishoreganj. Though the Study does not have direct provisions for groundwater development, the risk of Arsenic pollution should be kept in consideration at the preparation of development strategies and subproject formulation.

4.2.2 Socio-economic Conditions

The major problems related to socio-economic conditions of the Study Area are mentioned below.

(1) Poverty/Vulnerability of Farmers

The Study Area is one of the areas with high rates of poverty incidence. Many of the farmers are small-scale, and produce food barely enough for their own consumption. Results of interviews at the village level indicated that *boro* is usually the staple food, and that inputs for *Boro* is obtained by selling *aman* / cash crops / oilseeds produced in the post monsoon. Late floods and long inundation of the area in this season may significantly effect the production of these crops, making the farmers very vulnerable to such phenomena. The farmers with insufficient production of post-monsoon crops usually have to borrow money to purchase agricultural inputs. Furthermore, some farmers will result in selling some (or all) of their land due to lack of access to credit, stepping further in to the cycle of poverty.

(2) Fragmented Agricultural Area and Small Landholdings

The pressure of high population and the traditional system of land distribution has fragmented the land into small patches. Landholdings are generally small, and many of the small-scale farmers must work for additional income due to the limited production of their own lands. Interviews in the village level indicated that the minimum requirement of land to feed a household would be about 0.2 ha. Furthermore, this number will have to increase at areas where only one or two crops per year can be produced.

(3) Local Conflicts

Though remarkable examples were not seen in the field survey, some indications show that local conflicts may occur in the absence of mutual trust and consideration for all stakeholders. This may lead to major problems as seen in the public cuts of embankments of large scale water resources development projects. The two cases of embankments cut after construction in SSWRDSP-1, and the forced removal of the earth dam constructed without consensus of the adjacent villages in Tangail indicate the possibility. The findings of interviews at village levels indicate that “Benefited farmers vs. Affected fishermen” is a typical structure of social conflict regarding SSWRDSP-2.

(4) Communication Gap between Local Government and Villagers

One of the problems identified in the field survey was the communication gap between Unions as the tail end of government agencies and village/*para* level where local residents form their own power structure. This may hinder formulation of consensus among the people and establishing participation and ownership to SSWRD interventions.

(5) Illegal Land Occupation

Land is a limited resource especially under the pressure of high population. Farmers try to expand their farmlands whenever the chance is there. Utilization of sedimented canals and roadside ditches, which are legally owned by state, were seen in many places during the field survey. The people illegally occupying these lands are not regarded of their rights for utilization in SSWRDSP-2.

(6) Gender Issues

It is well known that gender issues are a deep-rooted problem in Bangladesh. The interviews and statements at the workshops indicated many deficits. These are; 1) lack of place to share information with women from other communities, 2) difficulty in accessing benefits of NGOs, 3) prevalence of traditional manners such as dowry, 4) lack of access to education, 5) early marriage, 6) lack of access to financial resources and so on.

(7) Other Problems

Other Problems related to socio-economic conditions of the Study Area include; low agricultural production, insufficient job opportunities, inadequate knowledge of farmers in agricultural technology, mal-distribution of agricultural inputs, insufficient marketing system, and limited social infrastructures.

4.2.3 Agriculture, Fisheries and Livestock

(1) Agriculture

Agricultural conditions in Bangladesh are still vulnerable, especially in terms of natural conditions and agricultural technology. The master plan for SSWRD is the process of production of water required for cultivation of crops, activities for fisheries and livestock and also for human welfare. Improvement of irrigation and drainage require significant amounts of inputs; and therefore, it is important to secure a state where inputs other than water will not be limiting factors. In this survey, the following technical packages for agricultural products were examined on their current supply conditions, in view of confirming its stability. Production costs and income expenditure of farm households were also surveyed by the interview survey to farmers. Income diversity by agricultural diversification such as crop diversification, fisheries and livestock was also examined. The items to be improved urgently are as follows:

1) Land development

Agricultural lands in Bangladesh are generally flat by a macroscopic point of view, but in actual farming, the farmers utilize the small difference of land elevation. A case observed in Kishoreganj is informative. The difference of land elevation is as small as 0.5 to 1.0 m. In this small difference, the farmers changed the planting time within the span of about one month, and also changed varieties according to water depth: HYV T. Aman in higher place and local variety in lower area. They expressed that higher profits are obtained in higher places. From these observation, preparation of terraces will be useful, and worth to study. Considering the development of mechanization of rural area, ridges are required to be passable to tractors. The terraces will be useful for water retention for dry seasons.

2) Malnutrition by poor protein supply

Child mortality is high in Bangladesh, where even the richest 20% show high rates. Children stunted and/or underweight were widely spread in this country. The figures for richest 20% of the country also represent a rate of 23.5% and 28.1%. In Bangladesh it is reported that at the household level, food distribution among the family members is not necessarily equal. Generally, women and children have less access to food than adult male (I-PRSP). Malnutrition of the vulnerable (Poor people, children, pregnant women) is serious. “Maternal and children protein energy malnutrition in Bangladesh remains amongst the highest in the world”². This evaluation indicates that the production of protein foods is of vital importance in agricultural production. Protein foods should be targeted in the future farming system.

3) Problems of deficit farmers

Balance of income and expenditure is one of the common important factors, which covers farmers of all sizes; from large-scale farmers to small-scale farmers. Deficit farmers are in unstable economic conditions, and they are likely face poverty in the long run. In the Farm Household Survey, 15 of 72 farmers were found to have deficiency in their income- expenditure balance.

4) Seed Production and Supply

i) Degradation of seed quality by insufficient renewal of seeds

Due to high price of seeds and difficulty in access to certified seeds, farmers continuously use their own domestic seeds. This causes degradation of seed quality, and results in poor quality of products.

ii) Supply of pure seeds

BADC provides 5-10% of the distributed quality seeds. BADC’s function is not only to provide pure seeds, but also to demonstrate practical seed production methods from cultivation to processing. Seed processing machines are usually simple including winnower and sieves. Considering that the farmers complaints of low quality of seeds, these simplified units need to be prepared and extended.

iii) Self-supply

90% of rice seeds are produced by farmers themselves. To improve farmers’ seed quality, it is necessary to develop farmers’ skill for quality seed production. To produce quality seeds, farmers should follow the procedures of processing, free from floods and damages by early floods, and taking into regard the well-ripening of grains, purity, not drying in strong sun-shine etc.

5) Rice Monoculture (Poor agricultural diversification)

The Bangladesh rice farming system representing a style of water-based farming has well adapted to the natural conditions of the country. However, rice monoculture has to be diversified in the post-rice sufficiency era. Crop diversification is an important factor in developing farming systems. For stable diversified farming, there are still important items to be solved as follows:

- Water resources management is not widely practiced.
- Land area is limited for rice production for small farmers.
- Farmers agricultural technology is not high enough for diversification such as fish

² Annual Programmer Review Mission for HPSP by World Bank, June 2005

culture and vegetable growing on commercial bases.

- Financial status of small farmers is not sufficient for diversification.

6) Traditional Farming (Poor agricultural mechanization)

a) Land preparation: ploughing and puddling

Ploughing and puddling are done by power tillers and hired power tillers are used in most cases. Introduction of agricultural machinery is costly. Therefore, it is necessary to organize a collaborative group for low-cost mechanization. Union offices will be appropriate to organize a community-based body to provide machinery services.

Mechanization is not advanced in the survey areas due to low cash- income of farmers and limited farmland. Country plough (Plowing by bullog) is a typical traditional agricultural practice and is still used in rural areas. However, it has several problems and needs to be replaced to power tillers or small hand-tractors.

b) Farm Mechanization

Current and future farming demands small scale mechanization involving small hand tractors, STWs and Engelberg rice mills.

c) Healthy rice seedlings

Yellowed, aged and unhealthy rice seedlings of T. Aman were often observed in rice producing areas in several districts. These seedlings are required for transplanting of rice in deep water paddy field. The fact that there may be no difference in yield between the yellowed seedlings and healthy seedlings in grain yield is often reported. However, if water management is properly done and actual yield will be increased, the poor growth in early stage will cause lower yield.

d) Fertilizer use, soil fertility and recycling

Fertilizer use is directly related to crop yields – Ex. Every 1 ton paddy /ha needs 20 kg N/ha. Chemical fertilizers such as urea and TSP have a relatively high share in crop production. Therefore, efficient use of fertilizers, use of green manure (i.e. Sesubania) and improvement of soil fertility are strongly requested by farmers. Soil Fertility and Fertilizer Management Project (SFFP) (Phase-I: 1993-1999), (Phase-II: 1999-) has been conducted for demonstration to individual farmers. For low-cost farming and environmental protection in rural areas, besides fertilizer use, recycle of wastes of livestock, poultry production and rural industrial residues (i.e. bagasse) are important.

7) Water Related Problems

a) Flood Damages: Most serious damages

Farmer's constraints in the Farm Household Survey indicate flood damages as the most serious of those to crops. In the Farm Household Survey, Aman, vegetables and jute indicate high frequency of yield decrease by flood damage. Winter crops such as Boro and wheat have damages by drought. This indicates that effective counter measures are urgently required through water resources management. Diseases and insect damages were widely spread in rice and vegetables. Damage by diseases were seen in jute, while insect damages spread in wheat. However, in these cases, the decrease of yield was not severe. Rat damages were found in potato, rice and wheat at a wide extent but not serious in terms of yield decrease. Bird

damages were seen mainly in winter crops. The extremes changes in soil conditions due to dry and monsoon season bring about advantages in crop protection by controlling pest and diseases.

b) Floods and sedimentation

Floods spread widely in Bangladesh. Floods are usually caused by the large amount of water from coming in from India and the flat terrain making the water to stay there for a long period. The situation is induced by such macroscopic elements and there are no effective / economical countermeasures for agriculture at present. Farmers just wait until floodwater recedes. Farmers are often forced to keep their fields in fallow condition for a considerable period. On the other hand, some indications show that floods often bring about good harvests in dry seasons.

Floods by river water cause sedimentation. The sedimentation has double-edged functions; micronutrient supply, and soil accumulation including sandy and clay soils. Sandy soil is not suitable to rice plants but is good for sugar cane. Clay is appropriate for rice, but not suitable to vegetables, especially for root crops. It is important to explore methods to utilize the advantages of flooding and sedimentation.

c) Inadequate irrigation water supply

Inadequate irrigation water supply was ranked fourth of the 10 items. Problems in crop cultivation such as rice mono-cultivation (Poor diversification) and traditional farming (Poor agricultural mechanization) were ranked in the second and third. This indicates that farmers desire to diversify agricultural production and introduce machines in daily work. The marketing problems were ranked fifth. However, it should be noted that many of the interviewed farmers were located within 2-3 km from their market, and most of them indicated surplus in the balance of cash income and expenditure. Inadequate quality and availability of seeds, poor agricultural technology and low inputs were ranked the lowest group. It is estimated that due to activities by extension services and high rice consumption in markets, problems in crop cultivation were not regarded serious at present.

(2) Fisheries

1) Flood damages

A vast extent of land is inundated during the rainy season. Inundation causes sedimentation of water bodies, leading to unfavorable conditions for fish culture. Also during the flooding period, fish losses occur by wash-aways.

2) Shortage of water during dry season

During the severe dry seasons, most of stored waters in water bodies are dried up due to pumping for irrigation. This induces inadequate depth of water bodies for fish culture. Under such conditions, fishes are sold before reaching ceiling in the growth curve (before the water bodies dry up) resulting in lower profit.

3) Shortage of improved species/varieties, quality fingerling and fish feed

The number of private hatcheries is rapidly increasing in Mymensingh and Kishoreganj districts. Farmers who live in adjacent district without hatcheries are buying them from these districts. However, the hatcheries producing fry/fingerling do not necessarily handle enough production to cover all the districts.

To realize effective fish culture, quality of brood stock and initial stage feeding (nursing) for fry is essential. Growth of fish improves in high correlation with provision of initial feed. Normally, farmers stock fry fish without producing initial feed using organic fertilizer, and the efficiency of production is not good

4) Insufficient fishery extension services

Fisheries research and extension service are done by Upazila Fisheries Officer in each Upazila. Though there are five staffs in Upazila Fisheries Office, officers directly engaged in extension service in Upazila are only Field Survey Officer and Assistant Fisheries Officer. Moreover, there are difficulties for such staff to frequently visit the fields. NGOs have high potentials in supplementing the lack of the fisheries officers for the development of sector, as seen in some projects for the conservation of indigenous fish etc.

5) Lack of freezing storage

When steady fish production is realized, not only sales to the Greater Mymensingh area but also sales for to large cities such as Dhaka and Rajshahi, etc. will become possible. Moreover, in regard of the active fisheries activities in the area, there are also possibilities that the Study Area will become one of the centers of freshwater prawn culture such as Khulna and Satkhira.

In addition, it is necessary to consider various strategies for getting profit:

- Shipment when amount of fish supply is small in dry season
- Export of freshwater prawn

6) No management of indigenous fish and conservation area

There is not necessarily enough action taken for management of indigenous fish and conservation areas in the Study Area. The following should be taken into regard:

- Maintaining fish biodiversity.
- Maintaining the multiplication of small indigenous species (SIS).
- Establishment of facilities for sustainability of both small and big fish species in area
- Shortage of appropriate water bodies:
- Devastation of fish growing areas by sedimentation

7) Difficulty of access to water bodies leasing by poor fishermen

Because of undeveloped cooperative activities and the lack of finance for lease charges, poor fishermen cannot obtain the lease of water bodies. Rich groups such as fish traders usually obtain the lease of water bodies from DOL and poor fishermen are employed as fishing workers by such groups.

(3) Livestock

1) Major constraints in animal husbandry

Bangladesh is located in a tropical area and the climate alters from dry to wet periodically. Such conditions result in serious constraints in animal husbandry.

2) Feed shortages in dry seasons

In dry seasons, the amount of biomass reduces due to water shortages. This induces a competition between animals and crops. To cope up with such problems “scavenging livestock farming/poultry” is widely spread in rural areas. The method is to use wastes efficiently by recycling. It can be carried out with small fund and is usually managed by children and women as a home industry. For future development, enlargement of feeds by

crop production and recycling by rural industrial complex are required. Development of char is also important for obtaining natural grasses.

3) Veterinary services

Veterinary services to livestock and poultry are not enough due to shortages of Veterinary Field Assistants (VFA) in field levels and shortage of vaccination facilities. Veterinary services are maintained by private technical persons. Training for these persons is essential

4) Integrated forestry-livestock farming

To extend grazing areas, integrated forestry-livestock farming should be explored. In regard of environmental protection, government-owned forests are firmly guarded by laws. It is difficult to approach integration from the livestock side. Considering forest protection, forest management is important. Opening access to forests from the forest side is a key issue.

(4) Marketing

Marketing is a crucial issue for raising cash income and alleviating poverty in rural areas. Comparing the prices of agricultural and fisheries products, difference in prices between farmers and large markets is quite large. This is mainly caused by poor conditions of transportation and road conditions as mentioned above.

Daily market price is provided by radio broadcast. Traders and Union staff monitor the market price through radio and mobile telephones. Information gap between farmers and markets is not likely to be a reason of low farmer's price.

Price Development of Major Commodities in Kishoreganj

Crops/commodities		Unit	Farmers (Selling Price)	Union market	Upazila/District market	Dhaka market
Rice	Boro	Tk/40 kg	320	330	350	400
	Aus	Tk/40 kg	350	370	400	500
	Aman	Tk/40 kg	350	370	400	500
Cereals	Wheat	Tk/ kg	12	14	15	20
	Maize	Tk/ kg	13	15	15	20
Vegetables	Tomato	Tk/ kg	10	12	15	80
	Potato	Tk/ kg	10	12	15	30
	Papaya	Tk/ kg	12	14	15	25
	Carrot	Tk/ kg	15	16	20	60
	Cabbage	Tk/ kg	15	16	20	25
Other crops	Cauliflower	Tk/ kg	15	16	20	25
	Jute	Tk/40 kg	500	520	550	600
Fish	Rui Fish	Tk/ kg	100	110	140	200
	Katla Fish	Tk/ kg	100	120	140	200
	Mrigel Fish	Tk/ kg	80	100	120	180
	Carp Fish	Tk/ kg	110	120	120	170
	Garmcarp Fish	Tk/ kg	70	60	100	130
	Minarcarp Fish	Tk/ kg	70	80	100	130
	Pangash Fish	Tk/ kg	60	70	100	120
	Shar-puti Fish	Tk/ kg	80	90	100	120
	Talapiya Fish	Tk/ kg	60	70	90	150
Chingri Fish	Tk/ kg	150	160	170	250	

Sources: Kishoreganj District, Kishoreganj Sadar UZ, Binnati Union>

4.2.4 Rural Infrastructure Conditions

(1) Poor Transportation and Road Conditions

1) Damages to roads

Poor transportation and road conditions are the worst constraints in every District and Union. Roads are flat and wide enough that vans and power tillers can pass even in villages. However, there are often severe damages on roads, which obstruct the transportation for marketing and daily communication in community. Major aspects of these damages are as follows:

- Occasional damages of major roads: Major roads connecting large cities and upazila headquarters are generally in good conditions, but damages in some parts may obstruct the entire transportation
- Road erosion
- Inadequate material: Broken bricks are used for road construction, due to lack of stones
- Muddy roads during rainy seasons

2) Poor road network

Road network to markets and for rural communication is not developed. The poor road network retards rural development not only in local marketing but also welfare in rural areas. Requests for the development of transportation were the highest among those to the UP Chairmen.

(2) Rural Community Water Supply

Only district headquarters have piped water supply system. There are no community water supply systems in rural parts of the Study Area. Basically, domestic water is supplied through private wells. Arsenic contamination of shallow groundwater is found in several wells used for domestic purposes. The Bangladesh Arsenic Mitigation Water Supply Project (BAMWSP) with the aim of providing arsenic-free water supply is currently being conducted by the Department of Public Health Engineering (DPHE). The BAMESP will be conducted at hot spot upazilas having more than 80% of the wells contaminated by arsenic. In the Study Area, there is no upazila screened as hot spot.

4.2.5 Findings of Farm Household Interview Survey and Union Questionnaire Survey

(1) Farm Household Interview Survey

The survey was conducted to understand /identify profitable farming style.

- Large scale farming / small scale farming

From the observation during the interview to farmers, medium scale farmers showed high efficiency of farming. Agricultural efficiency of small scale farming was high, but the profit is not large, where as the efficiency of the large scale farming is low, but the profit is good.

- Close to markets / remote from markets

In remote areas, farmers close to agro-industry facilities such as sugar mills obtained

good cash income. Even the unions/farmers in the areas nearer to the market showed poor agricultural profits, especially when they are in severe living conditions such as no electricity.

- Diversification, marketing, and new technology,

Farmers performing diversified farming enjoyed the results of good farming system.

According to the results of farmers' interview survey, farmers expressing their requests to the Union Council are summarized as follows:

Farmers Requests to Union.

Requests	Jamalpur	Kishoreganj	Mymensingh	Netrakona	Sherpur	Tangail	Average
Transportation (Marketing)	1	1	2	1	1	1	1.2
Sanitary facilities	2	2	1	2	1	2	1.7
Irrigation	3	3	3	3	3	3	3.0
Seed supply	3	4	4	4	7	5	4.5
Drainage	6	4	6	4	4	5	4.8
Health services	3	7	7	4	5	5	5.2
Fertilizer supply	7	4	4	8	6	4	5.5
Training for new technologies	7	8	7	4	9	8	7.2
Credit services.	9	10	7	10	8	8	8.7
Information services	10	8	10	10	9	10	9.5
Cooperative services	10	10	11	9	9	10	9.8

Source: JICA Farm household survey (2004) <Smaller score shows higher request.>

(2) Problems and Constraints identified by Union Questionnaire Survey

As described in previous Sub-chapter 3.5, major problems and constraints are summarized as follows:

- Flood damage was regarded as the most serious constraints in almost all of the Unions
- This was followed by diversification of agriculture (including crop, livestock and fisheries) and mechanization. These agricultural practices will be supported by effective management of water resources.
- Constraints of availability of irrigation water were also ranked as high importance.
- It is estimated that improvement of breed, limitation of land holding, agricultural extension and insufficiency of agricultural inputs were more or less worked out by various projects, and hence they were regarded as “ Low importance”.
- From these situations, it is regarded that water resources management by SSWRDSP is urgently needed as a demand-led development scheme.

4.2.6 Lesson Learned by SSWRDSP-1 and Other Rural Development Projects

After completion of SSWRDSP-1, ADTA arranged the Project Final Report and submitted this to LGED on January 2003. The appraisal was done by ADTA regarding the results and issues obtained through the implementation of SSWRDSP-1, mentioning the lessons learned. Major lessons learned were picked up for the reference for future SSWRDSP implementation.

Additionally Bangladesh University of Engineering and Technology (BUET) and other consultants carried out the evaluation on the SSWRDSP-1 upon the request of the Royal Netherlands Embassy and arranged the External Evaluation Report of SSWRDSP-1. The lessons learned in the Report are also picked up for the reference of future SSWRDSP

implementation.

(1) Project Final Report, January 2003

The Project Final Report pointed the following issues:

- 1) Assessment of Identification and Feasibility – Stage 1: Sustainability requires that subprojects are to be identified and selected in a manner that ensures broad-based support of the direct beneficiaries, since these are the persons that will ultimately ensure that subproject infrastructure is operated and maintained.
- 2) Coordination with Other Agencies: Because of overlap between BWDB and LGED investments, there is a need for water resource planning to take place at a level above that of a project – preferably at a District level. There is a need to bring the Ministry of Land into a supporting role for investments of this type. There are a substantial number of under-utilized small water bodies that could be brought into a more productive state.
- 3) The Cooperative Institutional Framework: There is room for general improvement in the performance of these Water Management Cooperative Associations.
- 4) Beneficiaries Contribution: An initial contribution equivalent to the first year O&M should be collected, but the contribution would best be re-allocated to O&M activities by the WMA. To ensure the funds are utilized as designated, access need to be controlled.
- 5) WMA Management: The WMA must have an independent office facility (rented or owned) for the exclusive use of its management committee and membership.
- 6) Women in Development: Women were included in First Management Committees, but were not always elected in subsequent phases of WMA development. There were some important shortcomings, viewing the Project from a purely women in development perspective.
- 7) Micro-Credit and the Role of NGOs: The micro-credit program has been a source of modest income for the WMAs, offsetting overhead expenses.
- 8) Design Discussion Meetings: The meetings need to be arranged sufficiently early in the design process so that the changes can be agreed upon and be incorporated into the final design. By extension, this would dictate that the discussion be properly documented.
- 9) Assessment of Construction and First Year Maintenance – Stage 3: LGED needs to demonstrate more willingness to acquire land for water management infrastructure. The argument that provision of land is a demonstration of public support to a particular subproject is weak since those contributing land are too often not the beneficiaries.
- 10) Beneficiaries Observing Construction: It is considered that beneficiary involvement during construction will result in improved construction quality, more ready acceptance of responsibility for subproject infrastructure, and improved operation and maintenance.
- 11) Agriculture Extension: There appears to be no long-term option to working with DAE as the primary extension service provider for farmers benefiting from the subproject infrastructure constructed by LGED.
- 12) Earthwork and Labor Contacting Societies: Embankment alignments need to be finalized prior to signing the implementation agreement and recorded on a Mouza map. These need to form part of the Implementation Agreement with specific reference made to them.
- 13) Construction Quality (Concrete Structures): Quality control systems need to be established and operated with the recognition that the LGED Executive Engineer and the Upazila Engineer will provide only minimal support. The Project Assistant Engineer needs a stronger mandate from the PMO to attend to Project related matters and an

LGED Sub-Assistant Engineer should be designated full-time as a site engineer.

- 14) Environment and Fisheries: More attention needs to be directed at identifying fishery activities directly affected by water management interventions so that programs can be designed to mitigate these effects.

(2) External Evaluation by BUET and Other Consultants, June 2003

The following major points are pointed out as the lessons learned in the External Evaluation.

- a) In some cases, LGED field engineers were not fully aware of the local water management problems. A preliminary field visit by the field engineers prior to forwarding the proposal to PMO is essential.
- b) Coherence and interrelations of the proposed subprojects with existing BWDB projects have not always been properly addressed. The compatibility of the subproject with existing BWDB projects should be investigated.
- c) In some cases, there is a lack of consultation with the beneficiaries at the subproject identification stage. Stakeholders and beneficiaries should be properly involved in identification of the subprojects.
- d) In a number of subprojects, the original concept of the technical solution for solving the problems identified has been changing in the process of reconnaissance, PRRA, feasibility appraisal, design and construction. Preparation of the subprojects in close consultation with the stakeholders and beneficiaries may improve the conceptualization of the problems and technical solutions required.
- e) Some of new embankments and khals where problems regarding acquisition of land have had an influence on the alignment.
- f) Complete design reports are not always available. LGED district offices and PMO should both maintain a complete file of design data, reports, calculations and drawings.
- g) The design team did not always visit the subproject site and design meetings with local stakeholders and beneficiaries have not always been conducted. Stakeholders and beneficiaries have had little opinion on the designs.
- h) In some subprojects, the structures have not been built according to the design documents. The reason for the changes has not been documented. As built drawings has to be submitted by the Contractor and LGED district offices and PMO should both maintain it.
- i) The quality of earthwork in some subprojects was not acceptable. Improvement of the pre-qualification process for short-listing only qualified and reputed contractors is essential.
- j) Some of the subprojects are dysfunctional due to serious design or construction errors. Consultants support and endorse the recommendations made by LGED PMO to improve the quality of the design. A fulltime site engineer assignment for each active construction site is essential.
- k) In water conservation projects, improvement of water-related habitats may be expected, but substantial evidence could not and probably can not be obtained from the field inspections. For proper assessment of environmental impacts, possible indicators have to be monitored for a long period in order to connect them to the implementation of the subprojects.

(3) Project Completion Report on SSWRDSP by ADB, July 2004

The following major points are pointed out as lessons learned in the project completion report:

- The Project proved development of small-scale water resources as a feasible and sustainable means of poverty reduction as manifested in the implementation of the ongoing second phase.
- Such development entails social, technical, financial, and management issues involving rural people of all levels. Therefore, its implementation requires a longer time than that for other types of projects, that requirement is already recognized in the longer project implementation period in the ongoing second phase project. EA capability is important for setting physical targets for the subprojects.
- A good quality subproject needs to be carefully selected, with a feasibility study undertaken professionally. The subprojects must be designed based on good quality survey data, constructed by qualified contractors and well managed by LCS under strict engineering supervision, managed by a well-developed WMA capable of good governance, and properly monitored by line departments.
- The poor and disadvantaged, especially the landless and women, can benefit from small-scale water resources facilities through earthworks and labor intensive agriculture and fishing activities. However, the formation of LCS groups must be free from socio-political considerations to include only the poor and disadvantaged, especially destitute women.
- Although relatively new in water resources management, LGED proved efficient and effective. Given the potential for development of many more small-scale water resources subprojects, LGED should further develop necessary in-house technical skills of its own and reduce dependence on external assistance.

(4) Fishery Development in SSWRDSP-1

1) Fishery development Subprojects in SSWRDSP-1

Inland open water catch has increased from 600,000 to 700,000 MT during the past decade. The portion of flood land out of the whole inland open water production shows a gradual increase. Production from the river & estuaries and beels shows a very limited increase or no increase at all. Production of inland close water shows drastic increases from 200,000 to 750,000 MT. It is regarded that fish culture production is the principal cause for the fishery production increase in Bangladesh. Fish culture is a very important factor to develop fish production in the country. To estimate the changes in the situation of fisheries after SSWRDSP-1, catch data are compared between the following six SSWRDSP-1 targeted districts and six SSWRDSP-2 districts in the Study Area. SSWRDSP-1 districts are situated opposite side of the Jamuna River to SSWRDSP-2 districts.

District	Bogra	Gaibandha	Jaypurhat	Naogaon	Natore	Sirajganj
No. of Subproject	3	1	5	10	6	6

The following table shows fisheries activities implemented in SSWRDSP-1. In total 31 subprojects were executed in six districts, among which 10 subprojects included fisheries related activities.

List of promoted fisheries activities in SSWRDSP-1

	Identity Number	District	Upazila	Sub PJ
1	SP1003	Bogra	Sonatala	Lohagara Khal FCD
2	SP3101		Sherpur	Mirzaour FCD
3	SP3110		Sherpur	Simbari FCD
4	SP1002	Gaibandha	Sundarganj	LangaKhal FCD
5	SP3074	Naogaon	Mohadebpur	Ramchandrapur FCD
6	SP3070	Natore	Sador	Rampur FCD
7	SP4147		Singra	Singradaha FCD
8	SP2025	Sirajganj	Belkuchi	Chandi Beel FCD
9	SP3063		Ullapara	Barahar FCD
10	SP3089		Ullapara	Dahapara Goyhatta FCD

Source: Project Final Report, January 2003, Small Scale Water Resource Development Sector Project

2) Changes in total catch

The total catch from inland waters are compared between SSWRDSP-1 targeted districts and the Greater Mymensingh districts targeted in SSWRDSP-2. The total catch for SSWRDSP-1 districts (98,496 MT) is about 60% lower than that for SSWRDSP-2 districts (164,480 MT) in 1999. However, there is no difference between catches of two district groups, both at the level of 160,000 MT, in 2002. The growth rate of the catch in SSWRDSP-1 districts was 163%.

3) Changes in catch by waters

Productions from inland close water (pond) and inland open water (river, Beel, flood land) are compared between two district groups in Table 4.2.1. The catch from inland open water in SSWRDSP-2 group (109,042 MT) was much higher than that in SSWRDSP-1 group (42,436 MT), while production from Inland close water was almost equal at the level of 56,000 MT in 1999. In 2002, the catch from open water did not increase in SSWRDSP-2 group, while it considerably increased in SSWRDSP-1 group (78,619 MT). Also in close water production, only SSWRDSP-1 group showed a considerable increase (to 81,952 MT). Thus, it is evident that the catches in SSWRDSP-1 groups increased in 2002 both from inland open water and inland close water. Although scrutiny, based on more detailed data, is necessary for those changes, it may be said that the production from flood land and pond tends to increase through the implementation of SSWRD subprojects.

4.3 Participatory Workshops (PRA)

4.3.1 Objectives and Methodology

(1) Objectives

The Study Team conducted problem analysis workshops and interviews in September 2004 at 13 potential sub-project areas, of which 6 had passed appraisal and 7 had failed after pre-screening, and the Team found “There seems to be two major communication gaps in the planning of the sub-projects.

One gap is between union level and *gram* (village) / *para* level, and the other between project employee and LGED employee line. The former gap hinders getting the consensus of the people and establishing participation and ownership of the people. The latter gap hinders identifying and designing a good sub-project.”

Therefore, the Team assumed that organizing several participatory workshops (PRA)

at *gram* level beside sub-project level, with active participation of villagers, local leaders, *Upazila* Engineer, District Assistant Engineer (SSWRDSP-2), District Socio-economist (SSWRDSP-2), District Sub-assistant Engineer (SSWRDSP-2) and other local LGED staff, can conquer these communication gaps and promote better project design and better consensus among all the actors. The Team requested Assistant Engineer (SSWRDSP-2) and/or Socio-economist (SSWRDSP-2) of each district to choose one promising sub-project area to organize participatory workshops.

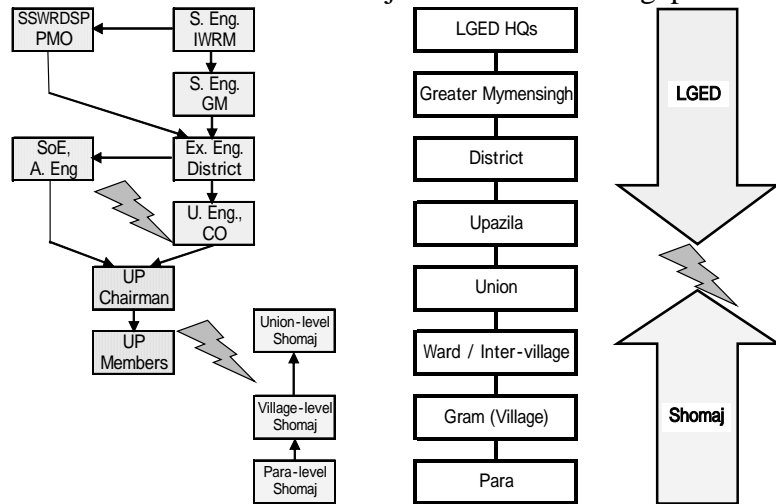
The participatory workshops (PRA) including interviews, which were organized by the Team, have two major stakeholders, the Study Team / LGED and the local communities, and the expected benefits are different:

1) Expected output for the Study Team / LGED

- i) To collect more grass-roots information especially on decision-making and collaboration in the community-base projects and activities.
- ii) To clarify the needs of the community
- iii) To verify a participatory planning and decision making process for small-scale water resources development including involvement of *Upazila* Engineers, District Assistant Engineers (SSWRDSP-2), District Socio-economists (SSWRDSP-2), District Sub-assistant Engineers (SSWRDSP-2) and other local LGED Staff.

2) Expected outcome for the local communities as a by-product

- i) To share the ideas and opinions at intra-*gram*, inter-*gram* and sub-project levels.
- ii) To start some collaborative actions for consensus and for the future.
- iii) Capacity building of the individuals and the communities.



Communication Gap

(2) Selection of PRA Sites

Site Selection for the PRA site each district among the subproject area of SSWRDSP-2 was made through the discussion with Assistant Engineer and Socio economist of SSWRDSP in each district LGED. They area as follows:

Subproject Name	Location	Status	Type & Area
Not known yet.	7 Grams In Trishal, Rampur, MYMENSINGH	Under preparation.	CAD Not know yet
Not known yet.	9 Grams In Noabad, Joyka & Boulai, Karimganj And Sadar, KISHOREGANJ	Under preparation.	CAD & DI Not know yet
Krishnakhali & Karonkhola Canal Re-excavation & Construction of Regulator SP	10 Grams In Medni, Sadar, NETRAKONA	UDCC approved	CAD & DI 900 (750ha)
Kharamura Drainage SP	7 Paras In Ranishimul, Sribordee, SHEPUR	UDCC approved.	CAD & DI 210 (160ha)
Nikla-Gabira-Ghunggee-Amaldaha SP	8 Grams In Alowa, Bhuapur, TANGAIL	Under preparation. UDCC approved.	FM & DI 950 [600ha]
Chinitola-Madardaha SP	10 Grams In Kulia, Nangla & Melandaha Pourshova, Melandaha, JAMALPUR	F/S completed. No decision yet.	FM & DI 1,000 [900 ha]

(3) Process of Participatory Workshops (PRA)

The Team and the PRA Contractor made of four men and three women consultants spent about 10 days at each proposed sub-project area for preparation, interviews, workshops and report writing. Major activities of the Team and the PRA contractor at each sub-project area were as follows:

1) Arrangement of workshops with local leaders

- i) Preparation of about four gram level workshops to strategically cover all the study area.³
- ii) Preparation of one integrated workshop at sub-project level for summary and some consensus building.
- iii) Miking by UP Chairpersons, UP Members, *matabbors* and other local leaders for participation.

2) Gram level interviews and workshops

- i) Interviews focused on poor villagers.
- ii) Mapping, rich-poor profile and other RRA tools if necessary.⁴
- iii) Appreciative Inquiry :
 - a) Discovery Stage by sharing success stories of community- based projects and activities,
 - b) Dream Stage by sharing the future image of individuals and the community where they can repeat more success stories,
 - c) Design Stage by sharing what actions they can take today, tomorrow and next week.

³ Study area for this PRA is basically a catchment area and is wider than the project area.

⁴ The Team also planned to conduct an Objectives Analysis and actually tried once at the integrated workshop in *Mymensingh* District. The Team found, however, the consensus among the villagers in the project area generally does not reach the level to discuss future activities of WMA after completion of the construction work.

3) Integrated workshops

- i) Presentation of the results of the gram level workshops.
- ii) Presentation of observation and analysis by the Team: identification of intra-gram / inter-gram issues, and sub-project / upazila / district level issues if any.
- iii) Discussion especially on inter-gram and sub-project level issues, and on immediate actions.

Schedule of Participatory Workshops (PRA)

District	Upazila(s)	Union(s)	Date
Mymensingh	Trishal	Rampur	05 April (Tue) – 14 April (Thurs) 2005
Kishoreganj	Karimanj and Kishoreganj Sadar	Noabad, Joyka and Boulai	16 April (Sat) – 25 April (Mon) 2005
Netrakona	Netrokona Sadar	Medni	27 April (Wed) – 06 May (Fri) 2005
Sherpur	Sribordee	Ranishimul	08 May (Sun) – 17 May (Tue) 2005
Tangail	Bhuapur	Alowa	19 May (Thurs) – 28 May (Sat) 2005
Jamalpur	Melandaha	Kulia, Nangla and Melandaha Pouroshova	30 May (Mon) – 08 June (Wed) 2005

Interviews and Participatory Workshops Schedule at Each Sub-project Area

Day	Activities
1 st – 3 rd day:	Meeting with key persons and arrangement of workshops by the Study Team, transect of the study area and interviews of villagers by the PRA Contractor.
4 th – 7 th day	Four <i>gram</i> level workshops (three <i>para</i> level workshops at the sub-project area in <i>Sherpur</i> District) using mapping, rich-poor profile and <i>Appreciative Inquiry</i> .
8 th day:	An integrated workshop at sub-project level: <ul style="list-style-type: none"> - Presentation of the results of the four <i>gram</i> level workshops by villagers - Presentation of the observation and analysis by the Study Team and the PRA Contractor - Technical issues of the proposed sub-project by Upazila Engineer and/or District Assistant Engineer (SSWRDSP-2) or Sub-assistant Engineer (SSWRDSP-2) - Social issues and WMA by District Socio-economist (SSWRDSP-2) - Question & answer, and free discussion
9 th – 10 th day	Reporting by the PRA Contractor

4.3.2 Important Findings of Participatory Workshops

These are summary of important findings through participatory workshops and interviews, more details can be referred to Annex 6 in the separate report. Also outline of each district PRA is summarized in Table 4.3.1 at this chapter.

(1) Mymensingh District

<u>Sub-project Name:</u> Not known yet. <u>District:</u> <i>Mymensingh</i> <u>Upazila:</u> <i>Trishal</i> <u>Union:</u> <i>Rampur</i>	<u>Grams:</u> 1) <i>Namapara-Charpara</i> , 2) <i>Vatipara</i> , 3) <i>Kakchar-Noyapara</i> , 4) <i>Kakchar</i> , 5) <i>Darilla</i> , 6) <i>Khbiapara</i> , and 7) <i>Uzanpara</i>	<u>Appraisal Status:</u> Under preparation.
<u>Type / Project Area (Benefited Area):</u> Catchment area development / Area not known yet.		
<u>Major Proposed Activities / Facilities:</u> Canal re-excavation.		
<u>Necessary Modification:</u> Outlet canals need to be included in the project area.		

- 1) An NGO lead by the wife of a high government officer tried to take a *beel* on lease for 99 years and many villagers are very sensitive about the *beel* issue.
- 2) There is a social conflict especially between two *grams*. They built a village elementary school at the backyard of *matabbor*'s house to avoid sending their children to go to the government elementary school in the other *gram*.
- 3) The villagers of that *gram*, however, came to the integrated workshop by a large group. They said they want to discuss with the villagers of the other *grams*, and waited for other villagers to come.



An integrated workshop
(Mymensingh)

(2) Kishoreganj District

<u>Sub-project Name:</u> Not known yet. <u>District:</u> Kishoreganj <u>Upazilas:</u> Karimanj and Sadar <u>Unions:</u> Noabad, Joyka, and Boulai	<u>Grams:</u> 1) Ulkhola 2) Sindrip 3) Uttar-Nansree in Noabad 4) Baliabari 5) Khidirpur, 6) Shimulgora 7) Bankata in Joyka 8) Patda-degreekanda 9) Patda-pataria in Boulai	<u>Appraisal Status:</u> Under preparation.
<u>Type / Project Area (Benefited Area):</u> Catchment area development and drainage improvement / Area not known yet.		
<u>Major Proposed Activities / Facilities:</u> Canal re-excavation and construction of a sluice gate.		
<u>Necessary Modification:</u> It is a two-upazila and three-union, not a one-upazila and two-union sub-project as in the proposal.		

- 1) The UP Chairperson who submitted the proposal left the office and the new UP Chairperson might not be so enthusiastic about the sub-project.
- 2) The actual project area includes 3 unions 2 upazilas different from that mentioned in the project proposal, more over, an additional gram of the third union could be benefited by the proposed sub-project the most. The villagers of that gram are very serious about the sub-project and outnumbered other villages including where the venue was.
- 3) By the initiative of the *matabbors* of the additional gram, local leaders decided after the integrated workshop to have a meeting to reach a consensus on the sub-project.



An integrated workshop
(Kishoreganj)

(3) Netrakona District

<u>Sub-project Name:</u> Krishnakhali & Keronkhola Canal Re-excavation & Construction of Regulator Sub-Project <u>District:</u> Netrakona <u>Upazila:</u> Sadar <u>Union:</u> Medni	<u>Grams:</u> 1) Medni, 2) Krishnapur, 3) Rampur, 4) Digjan, 5) Vatlivita, 6) Baroari, 7) Shaljan, 8) Khoerbangla, 9) Dhorerbangla 10) Bangladaspara	<u>Appraisal Status:</u> UDCC approved.
<u>Type / Project Area (Benefited Area):</u> Command area development and water conservation / 900 ha (750 ha).		
<u>Major Proposed Activities / Facilities:</u> Karonkhola canal re-excavation and construction of a regulator.		
<u>Necessary Modification:</u> Outlet canal and a <i>beel</i> need to be included in the sub-project.		

- 1) The villagers who live near the river think they can pump up water from the river

by the sub-project. The villagers who live at the center of the project area near the beel welcome the sub-project only if it benefits fish culture.

- 2) The villagers who live near the outlet of the canal said they already suffer back flow. They are afraid that the sub-project might bring more back flow.
- 3) A villager said re-excavation of the same khal was done five to seven times so far, but none was complete. So if the same thing happens, then it is useless to do it again.



Upazila Engineer
(Karimanj, Kishoreganj)

(4) Sherpur District

<u>Sub-project Name:</u> Kharamura Drainage Sub-Project	<u>Gram:</u> Kharamura <u>Paras:</u> 1) Porabari, 2) Kutchpara, 3) Kharamura, 4) Garopara, 5) Tilapara, 6) Nahanpara, and 7) Moddhppara	<u>Appraisal Status:</u> UDCC approved.
<u>Type / Project Area (Benefited Area):</u> Command area development and drainage improvement / 201 ha (160 ha).		
<u>Major Proposed Activities / Facilities:</u> Lining of drainage canals.		
<u>Necessary Modification:</u> The benefited area has been irrigated for nine years now, so that the project purpose is not command area development but drainage improvement only.		

- 1) Major activity of this subproject is lining of drainage canal for a 100% community- based project initiated by a *matabbor*. This is the ninth season and usually 20 to 30 landowners invest in the construction of the earthen dam (200-250 ft long) before Boro season and collect water fee of Tk. 800/acre from other landowners after the season(Tk. 500/acre for investors). Small landowners (20-25 decimals) are exempted.
- 2) This season, 29 landowners and one landless invested about Tk. 240,000, of which about Tk. 90,000 in the construction (35 laborers x 30 days x Tk. 100/day) and Tk. 50,000 in guard (6 persons x 6 months x Tk. 1,500/month). The benefited area is about 450 acre and expected revenues are about Tk. 360,000 (450 acre x Tk. 800/acre).
- 3) Because of drought in Aman season, rice production was quite low two years ago. So no landowners could become the members of the management committee and could invest in the construction of the earthen dam. Landless (33 people) constructed the earthen dam voluntarily and they became the management committee. Landowners were supposed to pay Tk. 600/acre that year, but some landowners did not pay. Some management committee members of that year, who constructed the earthen dam and collected the water fee, mishandled the money and escaped to Dhaka.



An earthen dam made by community (Sherpur)

(5) Tangail District

<u>Sub-project Name:</u> <i>Nikla-Gabira-Ghungree-Amaldaha</i> Sub-Project <u>District:</u> <i>Tangail</i> <u>Upazila:</u> <i>Bhuapur</i> <u>Union:</u> <i>Alowa</i>	<u>Grams:</u> 1) <i>Amula</i> , 2) <i>Dighikatuli</i> , 3) <i>Bilamula</i> , 4) <i>Chanamula</i> , 5) <i>Nikla-Gopal</i> , 6) <i>Nikla-Gobardhan</i> , 7) <i>Anarkhapura</i> and 8) <i>Changthapara</i>	<u>Appraisal Status:</u> Under preparation (UDCC passed by the former proposal).
<u>Type / Project Area (Benefited Area):</u> Flood management and drainage improvement / 950 ha (600 ha).		
<u>Major Proposed Activities / Facilities:</u> Re-excavation of three canals and construction of an embankment and a sluice gate.		
<u>Necessary Modification:</u> Outlet canals need to be included in the sub-project. Inlet canals and <i>beels</i> might need to be included too.		

- 1) Some villagers claim that the canal goes through their private land. They said their land was registered long time ago and they voluntarily contributed the land for canalization when it was originally made. They said they cannot give up their land now because population has increased and the land has become very scarce.
- 2) The UP Chairperson, who is the wife of the late UP Chairperson, admitted that she has never visited the ward and met the matabbors.
- 3) There is no doubt that the sub-project needs to include re-excavation of the downstream canals and it might become three-union three-upazila rather than one-union one-upazila sub-project.



Upazila Engineer
(Buapur, Tangail)

(6) Jamalpur District

<u>Sub-project Name:</u> <i>Chinitola-Madardaha</i> Sub-Project <u>District:</u> <i>Jamalpur</i> <u>Upazila:</u> <i>Melandaha</i> <u>Unions:</u> <i>Kulia</i> Union, <i>Nangla</i> Union and <i>Melandaha Pauroshova</i>	<u>Grams:</u> 1) <i>Chinitola</i> , 2) <i>Bhaluka</i> , 3) <i>Sadipati</i> and 4) <i>Tarakandi</i> in <i>Kulia</i> Union, 5) <i>Haripur-Pathaliya</i> , 6) <i>Charaildar</i> , 7) <i>Bagurpara</i> , 8) <i>Gobindapur</i> and 9) <i>Boiradanga</i> in <i>Nangla</i> Union, and 10) <i>Pachurpara</i> in <i>Melandaha Pauroshova</i>	<u>Appraisal Status:</u> Feasibility Study completed, but no decision yet.
<u>Type / Project Area (Benefited Area):</u> Flood management and drainage Improvement / 1,000 ha (900 ha).		
<u>Major Proposed Activities / Facilities:</u> Re-excavation of canals, re-sectioning of embankment and construction of three regulators and one sluice gate.		
<u>Necessary Modification:</u> Outlets of the canals and outside of the embankment need to be included in the sub-project area.		

- 1) The embankment along the river in the PRA Report was originally re-sectioning of the road in the proposal. It was changed by the reconnaissance team. The UP Chairperson of the other side of the river attended the integrated workshop and expressed his worry about the negative impact of embankment to the other side.
- 2) Some villagers live along the embankment along the canal said at a gram level workshop that they cannot cultivate their land if surface soil is taken away for embankment. They



An integrated workshop with
UP Chairperson (*Nangla, Jamalpur*)

said the soil is only 1 ft thick and the bottom is sand. After the workshop, village leaders gathered and reached consensus to take a little bit of soil from a wide area to mitigate the negative impact.

- 3) Some villagers who live downstream of the project area expressed their worry about the negative impact of making a sluice gate and of re-excavation. AE (SP-2) Jamalpur explained that another proposal for the downstream area has been already submitted.

4.3.3 Cross Sectional Analysis

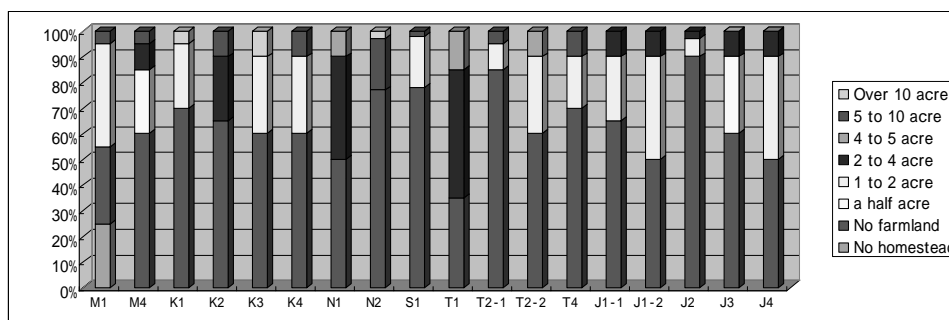
Some of the essential findings of the Survey are indicated as follows:

(1) Rich-poor profiles at the *gram* level workshop

- 18 Rich-poor profiles conducted at the *gram* level workshops show that villagers define landless farmers as poor and the ratio of the poor ranges from 50% to 85% except in the workshop at *Amula Dhakhjl Madrasa* in *Alowa Union, Bhuapur Upazila, Tangail District (T1)*, where the poor is only 35% and the rest (65%) of the villagers own more than one acre.
- The *villagers* of *Haripur-Pathaliya* and *Charaildar Grams* in *Nangla Union, Melandaha District (J2)* said the poor, who own no farmland, account for as high as 90% in the area.
- The ratios of the poor vary from 35% to 85% in the sub-project area of *Tangail* and 50% to 90% in a sub-project area in *Jamalpur*, Social structure at *gram* level might be totally different even in a 1,000 ha area.
- At all of the *gram* level workshops in *Kishoreganj*, villagers define the rich as the landowners of more than 20-40 *kany* (7-14 acre) or 2.5 ha (6.25 acre) and that is more than any other districts. It is probably because they are in the *haor* area and there are some large landowners.

Rich-Poor Profile at *Gram* Level Workshops

	M1	M4	K1	K2	K3	K4	N1	N2	S1	T1	T2-1	T2-2	T4	J1-1	J1-2	J2	J3	J4
No homestead	25%																	
No farmland	30%	60%	70%	65%	60%	60%	50%	77%	78%	35%	85%	60%	70%	65%	50%	90%	60%	50%
a half acre		25%																30%
1 to 2 acre	40%		25%		30%	30%			20%		10%	30%	20%	25%	40%	7%		40%
2 to 4 acre		10%		25%			40%			50%				10%	10%	3%	10%	10%
4 to 5 acre							10%			15%		10%						
5 to 10 acre	5%	5%		10%		10%		20%	2%		5%		10%					
Over 10 acre			5%		10%			3%										



Note: Mymensingh (M1, M4), Kishoreganj (K1 to 4), Netorakona (N1, N2), Sherpur (S1), Tangail (T1, T2-1, T2-2, T4), Jamalpur (J1-1, J1-2, J2 to 4)

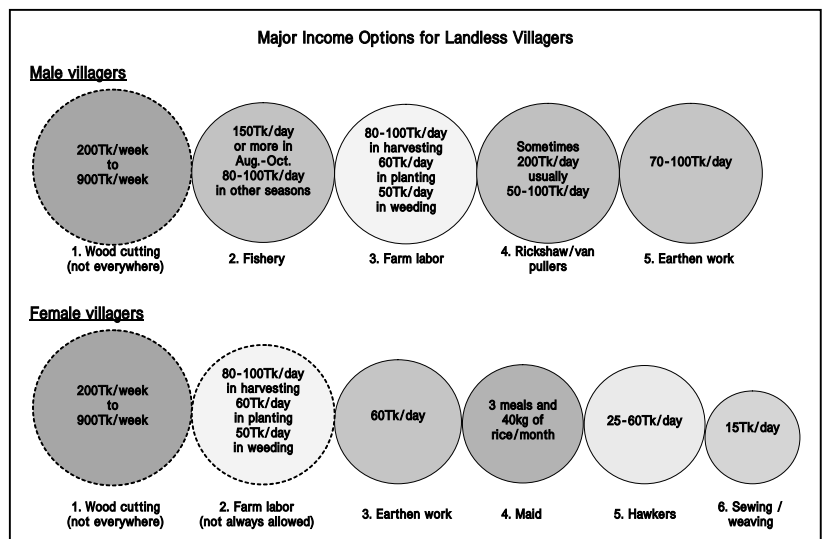
(2) Cash income of relatively poor villagers

- The PRA Consultant Team made 92 interviews in total, 15 or 16 interviews at each

sub-project site. They did a purposeful sampling of interviewees by visiting rather small and shabby huts. 26 out of 92 interviewees or 28.3% are women, and strikingly, 15 out of 26 or 57.7% of the women are single (14 widows and one divorcee). In *Kishoreganj*, all the 4 women interviewed were widows.

- 8 out of 26 female interviewees or 30.8% said they are doing maid and earn something like three meals and Tk. 30/day or 0.5 kg of rice per day to 1 mond (40 kg) per month. 6 out of 26 or 23.1% are day laborer earning Tk. 30 to 100 and they are all in *Sherpur*. 5 out of 26, or 19.2% said they are hawkers of fishes, vegetables and household goods, and earn Tk. 25 to 60/day. Also another 5 were housewives.
- 32 out of 92 interviewees or 34.8% said their major income source is day labor and the daily wages range from Tk. 30 to 100/day. At the sub-project area in *Sherpur*, 14 out of 15 interviewees or 93.3% are engaged in day labor of farming, forestry and earthen work etc. One villager said he is a farmer with 50 decimal (0.5 acre) of farmland.
- The daily wages and availability of farming labor vary from month to month. For example in *Jamalpur*, the wage is about Tk. 50/day in July-September, about Tk 60/day in January-March, about Tk. 80/day in November-December, and about Tk. 100 in April-June. Usually one meal and 0.5 kg of rice are provided by the landowners in planting and weeding seasons, and two meals and 1 kg of rice in harvesting season.
- 9 out of 92 interviewees or 9.8% said they are sharecroppers but their land sizes are something like one or two *bigha* (0.33 or 0.66 acre) and they do day labor substantially. 8 out of 92 interviewees or 8.7% are rickshaw/van pullers and earn Tk. 50 to 200/day. Some are working in Dhaka. 7 out of 92 interviewees or 7.6% are hawkers of fishes, vegetables, ice cream and household goods and earn Tk. 25 to 100 (Tk. 25 to 60 for women)/day.

- In conclusion, options of day labor for women are less and wages are lower than men. Men can choose fishery or farm labor in high season, and rickshaw / van pullers, earthen work or hawkers in low season. Many of them can still make Tk. 50-70/day all year round. Maximum wages that women can



make, is Tk. 60/day if earthen work is available. Only some women are lucky enough to find woodcutting / planting jobs or to be able to work in the field. Otherwise, to work as a maid might be the best regular occupation.

- The majority of poor farmers (55 out of 92 interviewees or 59.8%, the cases with no interest are excluded) are borrowing money at very high interest (8% to 20% per month or 100% to 240% per year). 57.9% are the loans for food, agriculture, business

etc. and the average amount is Tk. 1,873. 34.2% are for health problems and the average amount is Tk. 3,431. Others are for land and houses (Tk. 20,000 and Tk. 14,000 from NGOs), and for wedding (Tk. 7,800).

4.3.4 Participatory Planning and Decision Process

Based on the findings through PRA and interviews to various expected stakeholders, the most common issues that were identified in regard of Small Scale Water Resources Development, along with possible immediate actions and further measures for improvement are as follows.

(1) Common Issues

1) On Project Designing

- All of the six sub-projects where the Team had workshops go beyond union borders. If the benefited area is close to 1,000ha and the area of each union is something like 2,000-3,000 ha, the sub-project most likely is a multi-union project.
- Negative impacts tend to occur near the border of the project area, especially beside the facilities such as embankment, sluice gates and culverts. They are not paid attention so that no mitigation measures can be taken, if appraisal teams only study inside of the project area.
- Project purpose, major project facilities and activities are not so clear in the sub-project proposals, and they are being refined through “appraisal” process by the appraisal teams.
- UEs, AEs (SP-2) and other local LGED staff are not involved in substantial project designing because it is considered as “appraisal” process.
- Phasing of the projects and priority in upazila/district development (plans) are not clear.

2) On Consensus Building

- Few districts or upazilas have full appraisal reports and local LGED staff cannot explain the results fully to UP Chairpersons and villagers either pass or fail.
- Few UP Chairpersons consult gram level leaders, sometimes not even UP members, before submitting sub-project proposals.
- One transect walk and one workshop in a sub-project area are not enough for consultation. Important negative impacts and social conflicts can be unrecognized by the appraisal teams, and many questions of the villagers will be unanswered.
- Neighboring villagers of a sub-project do not have opportunities to be consulted by the appraisal teams.
- Many villagers do not have opportunities to get information on WMA so that they do not know what WMA is even after they have agreed to join WMA.

(2) Possible Immediate Actions

1) On Project Designing

- Assuming all the sub-projects are multi-union, UE, AE (SP-2), SoE (SP-2) and other local LGED Staff need to check/rewrite all the sub-project proposals.
- The study area for the appraisal teams need to include potentially affected areas such as outside of embankment, outlets or inlets of sluice gates and culverts, and upstream of dams. The study area must be significantly wider than the project area.

- UEs, AEs (SP-2), SoE (SP-2) and other local LGED staff must refine the sub-project proposals so that the project purpose, major project facilities and activities are clear.
- Full and active participation of UEs, AEs (SP-2), SoE (SP-2) and other local LGED staff in project designing is a must. Participation does not only mean participation of the villagers, but of all the actors.
- UEs, AEs (SP-2) and other LGED staff at Upazila and District levels need to add comments to the sub-project proposals on phasing and priority in upazila and district.

2) On Consensus Building

- For transparency and accountability to UP Chairpersons, UP members, local leaders and villagers, copies of all the appraisal reports must be sent to each district and the upazila(s) so that AEs (SP-2), SoE (SP-2), UEs and other local LGED staff can explain the results of appraisals to them.
- Accountability to the villagers and consensus of gram level leaders such as matabbors need to be the pre-requisites for UP Chairpersons to submit sub-project proposals
- Two-day interviews and three to five gram level workshops need to be conducted in addition to one transect walk and one workshop by the PRA team. A workshop for more than three grams usually cannot attract so many ordinary villagers from all the grams. A workshop for every one or two grams is recommended.
- The villagers of neighboring grams and unions must be included to the interviews and workshops by the PRA team. They could be affected negatively by the proposed sub-project. The primary purpose of impact assessment is not to show there are little negative impacts, but to show how many mitigation measures are identified and how much project design has improved from the original one.
- Full explanation to the villagers on major activities, pre-requisites and benefits of WMA is necessary before asking about their promises to join WMA.

(3) Way Forward

- Original technical sub-project identification needs to be done by LGED and UP Chairpersons are to make proposals from the potential sub-project list. Multiple UP Chairpersons usually need to coordinate before submitting proposals.
- Under current project design / appraisal system, a concrete image of the sub-project cannot be completely clear before the feasibility study. Major impact assessment and consensus building process, however, is done by the PRA before the feasibility study. It is necessary to clearly separate participatory project design process including consensus building and appraisal process of the sub-project.
- All the planning process needs to be constructed so that the level of participation goes up gradually through project designing and appraisal toward implementation.
- Many UEs, AE (SP-2), SoE (SP-2) and other local LGED staff think that sub-project designing is the job of consultants sent by LGED HQ. LGED has to make it clear that it is the job of LGED itself, and arrange human resources and capacity development for that.
- Appraisal system of sub-project needs to be transformed from pinpoint appraisal system to areal appraisal system with development plans.

Table 4.1.1 Record of Problem Analysis Workshop

Date	District	Upazila	Union	Proposed SSWRDSP-2	Participants (women)	Result as of August 2004
9 Sept. 04 Th	Tangail	Kalihati	Nagbari	Ratanganj	50 - 60 (0)	Passed
10 Sept. 04 Fr		Ghatail	Rasulpur	Doli Beel - Atarochura	600 - 700 (40 - 50)	Reconnaissance Failed
11 Sept. 04 Sa	Jamalpur	Sadar	Kendua	Tetulia - Sadarbari	100 - 120 (25 - 30)	Passed
12 Sept. 04 Su		Dewarganj	Chukaibari	Begid Beel	600 - 700 (40 - 50)	PRA Failed
16 Sept. 04 Th	Mymensingh	Ishwarganj	Iswarganj	Goria Beel	100 - 120 (25 - 30)	Passed
17 Sept. 04 Fr			Jatia	Digha Beel	45 - 50 (1)	Appraisal Failed
18 Sept. 04 Sa	Sherpur	Sadar	Pakuria	Gaowa Beel - Dhurungi Beel	40 - 50 (2)	Appraisal Failed
19 Sept. 04 Su		Nalitabari	Marichpuran	Hushikhali Khal	120 - 150 (1)	Passed
			Noya Beel	Dudkura Khal	50 - 60 (4)	Reconnaissance Failed
23 Sept. 04 Th	Netrakona	Sadar	Sinher Bangla	Fazar Ali Khal (Rupsha Beel)	40 - 50 (12)	Passed
24 Sept. 04 Fr				Ghagotia Khal	40 - 45 (0)	Reconnaissance Failed
25 Sept. 04 Sa	Kishoregonj	Karimganj	Joyka	Joyka	100 - 120 (7)	Passed
26 Sept. 04 Su		Tarail	Tarail	Bherantala	100 - 120 (1)	PRA Failed
Total	6	10	11	13	2,000 - 2,250 (160 - 190)	

Table 4.1.2 Results of Problem Analysis

Name of District / Upazila / Union	Crops	Direct Cause 1.	Direct Cause 2.	Direct Cause 3.	Direct Cause 4.	Direct Cause 5.
Tangail District		Agricultural production is low.	Villagers can't find jobs / work in the area.	Many villagers don't have land.	Villagers can't get good price of products.	
Nagbari Union, Kalihati Upazila (Passed)	Mustard / cash crops	1. Agricultural production is low.	2. Villagers can't find jobs / work in the area.	3. Fishery production is low.	Expenditure is large.	Villagers can't do livestock in flood.
Rasulpur union, Ghatail Upazila (Reconn. failed)	Mustard / cash crops	1. Villagers can't market their crop products.	2. Agricultural production is low.	3. Villagers can't find jobs / work in the area.	Women can't earn.	Expenditure is large.
Jamalpur District		1. Agricultural production is low.	2. Villagers can't find jobs / work in the area.	3. Fishery production is low.		
Kendua Union, Sadar Upazila (Passed)	Aman / vegetables	Agricultural production is low.	Villagers can't get good price of products.	Fishery production is low.	Livestock production is low.	Villagers can't find jobs / work in the area.
Chukaibari Union, Dewanganj Upazila (PRA failed)	Wheat / cash crops	1. Agricultural production is low.	2. Fishery production is low.	3. Villagers can't find jobs / work in the area.	4. Livestock production is low.	5. Family expenditure is large.
Mymensingh District		Villagers can't find jobs / work in the area.	Farmers can't get good price of products.	Agricultural production is low.	Villagers' wage is low.	
Iswanganj Union, Iswanganj Upazila (Passed)	Aus / aman	1. Villagers can't find jobs / work in the area.	2. Agricultural production is low.	Family expenditure is large.	Per capita cultivable land is small.	Women can't earn.
Jatia Union, Iswanganj Upazila (App.failed)	Aus / aman	1. Agricultural production is low.	1. Villagers can't find jobs / work in the area.	Women can't earn.	Family expenditure is large.	
Sherpur District		Landless farmers can't find farming jobs.	Agricultural production is low.	Farmers can't get good price of products.	Fishery production is low.	Villagers can't find jobs / work in the area.
Pakuria Union, Sadar Upazila (Reconn. failed)	Aman / vegetables	1. Agricultural production is low.	2. Fishery production is low.	3. Villagers can't make money from trees.	Women can't make money from poultry.	Women can't earn.
Marichpuran Union, Nalitabari Upazila (Passed)	Aman	Agricultural production is low.	Villagers can't find jobs / work in the area.	Fishery production is low.	Livestock production is low.	Family expenditure is large.
Noya Beel Union, Nalitabari Upazila (Reconn. failed)	Aman	1. Agricultural production is low.	2. Villagers can't find jobs / work in the area.	3. Villagers can't get good price of products.	4. Villagers can't make money from livestock.	Fishery production is low.
Netrakona District		1. Villagers can't find jobs / work in the area.	2. Agricultural production is low.	3. Villagers can't get good price of products.		
Sinher Bangla Union, Sadar Upazila (Passed)	Aman	M-1,F-3 Agricultural production is low.	F-1,M-3 Villagers can't find jobs / work in the area.	M-2,F-2 Family expenditure is large.	Villagers' wage is low.	Villagers can't get good price of products
Sinher Bangla Union, Sadar Upazila (Reconn. failed)	Aman	1. Agricultural production is low.	2. Villagers can't find jobs / work in the area.	3. Family expenditure is large.	Fishery production is low.	Villagers can't get good price of products
Kishoregonj District		1. Agricultural production is low.	2. Villagers can't find jobs / work in the area.	3. Fishery production is low.		
Joyka Union, Karimganj Upazila (Passed)	Boro	1. Agricultural production is low.	2. Fishery production is low.	Agriculture production cost is high.	Family expenditure is large.	Women can't earn.
Tarail Union, Tarail Upazila (PRA failed)	Boro	1. Agricultural production is low.	2. Villagers can't get good price of products.	3. Villagers can't find jobs / work in the area.	Women can't earn.	Family expenditure is large.

Table 4.1.3 Summary of Findings from Interviews and Statements at the Workshops

Livelihood	<ul style="list-style-type: none"> • 50-60 decimals (1/2 acre or 0.2 ha) might be large enough to produce sufficient rice for a small family (4-5) if he owns the land, but 100 decimals (1 acre or 0.4 ha) might be necessary if he is a share cropper. It would be 200 decimals (2 acre or 0.8 ha) if he can harvest only one crop a year. Also if his land is much smaller than 50 decimals, he needs to do share cropping (or other work) for self-sufficiency. • <i>Boro</i> is usually the staple food and is more productive in the area. Cash by selling <i>aman</i> / cash crops / oil seeds (e.g. mustard) is used for buying seeds and fertilizer of <i>boro</i>. If they cannot get enough cash from crops, they need to have other income sources. • Not a few farmers own some land but that is not enough at all to support themselves. Those who are not landless but marginal farmers are of overriding importance.
Farming	<ul style="list-style-type: none"> • Farmers must have several countermeasures to minimize the negative impact of floods. • Some farmers said they do not plant vegetables because it is low land. Also it is difficult for share croppers to plant vegetables in their farmland probably because income from vegetables is not as stable as that from crops. • Farmers can get more money from farm labor than share cropping if they can get enough work in planting and harvesting seasons.
Fishing	<ul style="list-style-type: none"> • Most of 500 fulltime Hindu fishermen in the benefited area of Begid Beel Subproject fish in Jamuna River, not at the embankment where part-time fishermen would be negatively affected. • Except serious fishermen and fish pond owners / fish businessmen, villagers mainly fish for family consumption. Many villagers fish when they are not so busy such as early morning or dusk, and between planting and harvesting seasons. • “Benefited farmers vs. negatively affected fishermen” is a typical structure of social conflicts regarding SSWRDSP-2
Gender Issues	<ul style="list-style-type: none"> • To get active participation of women, meetings, workshops, training and courses etc. need to be done at <i>para</i>-, village- and multi-village level • Some women cannot access to loans and benefit from NGO’s activities even if they live in Sadar Upazila. • Limitation of homestead land is one of the constraints for income generating activities for women especially in vegetable cultivation, poultry and other livestock keeping. • No adult male in the family automatically means the hardships of life in rural area. • Dowry still is a heavy burden for villagers despite government’s campaign. • Women in rural area are still facing a lot of social problems such as access to education, early marriage, dowry and decision making to go out or to spend money.
PRA and Subprojects	<ul style="list-style-type: none"> • In some cases, PRA teams might not be conducting enough interviews or real bottom-up workshops / meetings. • In some cases, UP Chairmen did not get a consensus at village- and <i>para</i>-level. • Explanation of the outline of the proposed subproject to the villagers might not be good enough. Accountability and villagers’ participation for decision making are at stake.
Digha Beel Subproject (appraisal failed)	<ul style="list-style-type: none"> • There is a purely community-based project of an earth dam in the subproject area and six villages are working together every year. At least some villagers do not feel the necessity of a permanent structure and that might be one of the reasons why so many villagers opposed the subproject. • There was a social conflict in the subproject area in 1974 and as many as 1,000 villagers took a direct action. A fear for social conflict like this might be another reason for opposition. • Some influential villagers including UP member and fish businessmen are opposing the subproject and the main reason behind seems to be illegal occupation of the <i>khas</i> land.
Mutabari Khal Khonon	<ul style="list-style-type: none"> • There was a project where 37 villagers contributed 50-60 villagers each for earthwork and dug a canal. • % of wheat + 8 mother pumps / 12 small pumps (about 10% of the project cost) by the government and 95 % of contribution for construction by villagers. • Though the project was initiated by the government and UP Chairmen, village headmen (gram shankar) and shomaj elders were involved and consensus of 37 villages was reached.

Table 4.2.1 Total Catch of Inland Water in the Study Area and SSWRDSP-1 Area

Total catch of inland water, 1999

(Unit: MT)

	River	Beel	Flood land	Pond	Shrimp farm	Total
Jalalpur	1,708		4,535	4,184		10,427
Kishoreganj	2,712		18,254	13,089	5.37	34,060
Mymensingh	2,818	18,878	30,649	18,617		70,962
Netorakona	848		14,203	11,988		27,039
Sherpur	223		5,838	2,642		8,703
Tangail	955	2,387	5,034	4,913		13,289
Total	9,264	21,265	78,513	55,433	5.37	164,480
Bogra	148	1,761	12,718	14,963		29,590
Gaibandha	316		2,715	3,792		6,823
Jaypurhat	93		1,418	5,921		7,432
Naogaon	894		12,882	12,280		26,056
Natore	34		4,903	8,092		13,029
Sirajganj	486		4,068	11,012		15,566
Total	1,971	1,761	38,704	56,060		98,496
National Total	154,335	72,825	424,805	561,050	92,448	1,327,585
%	11.6	5.5	32.0	42.3	7.0	100.0

Source: Fisheries Statistical Yearbook of Bangladesh, Department of Fisheries (1999)

Total catch of inland water, 2002

(Unit: MT)

	District	River	Beel	Flood land	Pond	Shrimp farm	Total
Study Area	Jalalpur	755	2,287	6,746	3,241		13,029
	Kishoreganj	1,284	5,584	19,191	9,237	15.82	35,312
	Mymensingh	2,607	5,332	25,270	23,314		56,523
	Netorakona	1,344	8,013	8,867	15,682		33,906
	Sherpur	85	2,330	3,830	2,486		8,731
	Tangail	1,032	1,456	9,341	5,605		17,434
	Total	7,107	25,002	73,245	59,565	15.82	164,935
SSWRDSP-I Area	Bogra	151	1,428	7,060	17,183		25,822
	Gaibandha	415	356	9,343	3,228		13,342
	Jaypurhat	180	93	3,585	7,194		11,052
	Naogaon	556	3,014	33,414	23,466		60,450
	Natore	141	621	10,022	18,106		28,890
	Sirajganj	300	603	7,337	12,775		21,015
	Total	1,743	6,115	70,761	81,952		160,571
National Total	137,848	75,460	475,116	752,054	100,804	1,566,287	
%	8.8	4.82	30	48	6.44	100	

Source: Fisheries Statistical Yearbook of Bangladesh, Department of Fisheries (200)

Table 4.3.1 Site for Participatory Workshops and Interviews

Sub-project NAME / Description	Not Known Yet. FORM-1 Under Preperation	Not Known Yet. FORM-2 Under Preperation	Krishnakhali & Keronkhola SP	Kharamura Drainage SP	Nikla-Gabira-Ghungree-Amaidaha SP	Chinitala-Madardaha SP
LOCATION						
District	<i>Mymensingh</i>	<i>Kishoreganj</i>	<i>Netrakona</i>	<i>Sherpur</i>	<i>Tangail</i>	<i>Jamalpur</i>
Upazila(s)	<i>Trishal</i>	<i>Sadar & Karimganj</i>	<i>Netrakona Sadar</i>	<i>Sribordee</i>	<i>Bhuapur</i>	<i>Melandaha</i>
Union(s)	<i>Rampur</i>	<i>1. Noabad(Karimganj), 2. Joyka (Karimganj), 3. Boulai (Sadar)</i>	<i>Medni</i>	<i>Ranishimul</i>	<i>Alowa</i>	<i>1. Kulia, 2. Nangla, 3. Melandaha Pouroshova</i>
Grams (paras)	<i>1)Namapara-charpara, 2)Vatipara, 3)Kakchar-Noyapara, 4)Kakchar, 5)Darilla, 6)Khablapara, 7)Uzanpara.</i>	<i>Noabad Union : 1)Ulukhola, 2)Sindrip, 3)Uttar-Nansree Joyka Union: 4)Baliabari, 5)Khidirpur, 6)Shimulgora, 7)Bankata. Boulai Union: 8)Patda-degreekanda 9) Patda-pataria</i>	<i>1)Medni, 2)Krishnapur, 3)Rampur, 4)Digjan, 5)Vativilva, 6)Baroari, 7)Shaljan, 8)Khoerbangla, 9)Dhorerbangla, 10)Bangladaspara.</i>	<i>1) Kharamura (big gram) Paras: 1)Porabari, 2)Kuychpara, 3)Garopara, 4)Tilapara, 5)Nahanpara, 6)Moddhoppara.</i>	<i>1)Amula, 2)Dighikatuli 3)Bilamula, 4)Chanamula, 5)Nikla-Gopal, 6)Nikla-Gobardhan, 7)Anarkhpara, 8)Changthapara.</i>	<i>Kulia Union : 1)Chinitola, 2)Bhaluka, 3) Sadipati, 4)Tarakandi, Nangla Union: 5)Haripur-Pathaliya, 6)Charaildar, 7)Bagurpara, 8)Gobindapur, 9)Boiradanga Pouroshova: 10)Pachurpara</i>
PROJECT DESCRIPTION						
Project Area	Not Known Yet	Not Known Yet	900 ha	201 ha	950 ha	1,000 ha
Benefitted Area			750 ha	160 ha	600 ha	900 ha
Project Purpose	Type: CAD	Type: CAD & DI	Type: CAD / WC; to ensure water for boro irrigation in winter; components: 1 no WRS.	Type: CAD & DI	Type: FMD	Type: FMD; Purpose: To improve drainage congestion during pre-monsoon and ensure aman cultivation from flood of Melandah river; components:
Major Proposed Activities / Facilities	Canal re-excavation	Canal re-excavation, Construction of a sluice gate	Karonkhola Canal Re-excavation and Construction of a Regulator	Lining of drainage canals	Re-excavation of 3 nos. of canals, Construction of an embankment, a sluice gate	Re-excavation of khal, re-sectioning of embankment, construction of 3 nos. of regulators and 1 no sluice-gate.
APPRAISAL STATUS	New proposal not made yet.	New proposal not made yet.	Not Yet (Passed UDCC)	Not Yet (Passed UDCC)	Not Yet (Passed UDCC)	Feasibility Study Completed; no decision yet.
PARTICIPANTS OF WORKSHOPS						
Gram (para) level Workshops	1.[M: 20, F: 25, C: 30, T: 75] 2.[M: 45, F: 60, C: 20, T:125] 3.[M: 25, F: 15, C: 15, T: 55] 4.[M: 30, F: 35, C: 10, T: 75] T:[M:120, F:135, C: 75, T:330]	1.[M: 25, F: 50, C: 15, T: 90] 2.[M: 25, F: 45, C: 15, T: 85] 3.[M: 60, F: 30, C: 15, T:105] 4.[M: 45, F: 20, C: 0, T: 65] T:[M:155, F:145, C: 45, T:345]	1.[M: 36, F: 70, C: 0, T:106] 2.[M: 29, F: 29, C: 35, T: 93] 3.[M: 17, F: 36, C: 35, T: 88] 4.[M: 64, F: 15, C: 18, T: 97] T:[M:146, F:150, C: 88, T:384]	1.[M: 45, F: 40, C: 15, T:100] 2.[M: 52, F: 48, C: 20, T:120] 3.[M: 96, F: 53, C: 32, T:181] T:[M:193, F:141, C: 67, T:401]	1.[M: 58, F: 35, C: 12, T:105] 2.[M: 75, F: 30, C: 27, T:132] 3.[M: 42, F: 25, C: 15, T: 82] 4.[M: 42, F: 15, C: 13, T: 70] T:[M:217, F:105, C: 67, T:389]	1.[M: 50, F: 15, C: 31, T: 96] 2.[M: 72, F: 15, C: 10, T: 97] 3.[M: 50, F: 26, C: 30, T:106] 4.[M: 60, F: 25, C: 20, T:105] T:[M:232, F: 81, C: 91, T:404]
Integrated Workshops	[M: 75, F: 0, C: 30, T:105]	[M: 75, F: 15, C: 50, T:140]	[M: 80, F: 0, C: 15, T: 95]	[M:150, F: 70, C: 40, T:260]	[M: 90, F: 0, C: 25, T:115]	[M:175, F: 0, C: 50, T:225]
INTERVIEWEES						
Number of Interviewees	[M: 13, F: 2, Total: 15]	[M: 11, F: 4, Total: 15]	[M: 9, F: 6, Tptal: 15]	[M: 9, F: 6, Total: 15]	[M: 9, F: 7, Total: 16]	[M: 15, F: 1, Total: 16]
Major occupations	Laborer: 4, sharecropper: 2	Laborer: 4, hawker: 3	Hawker: 4, rickshaw puller: 3	Laborer / wood: 14, farmer: 1	Laborer: 5, maid: 4	Laborer: 6, sharecropper: 5
Female headed households	1 6.7%	4 26.7%	3 20.0%	3 20.0%	4 25.0%	0 0.0%

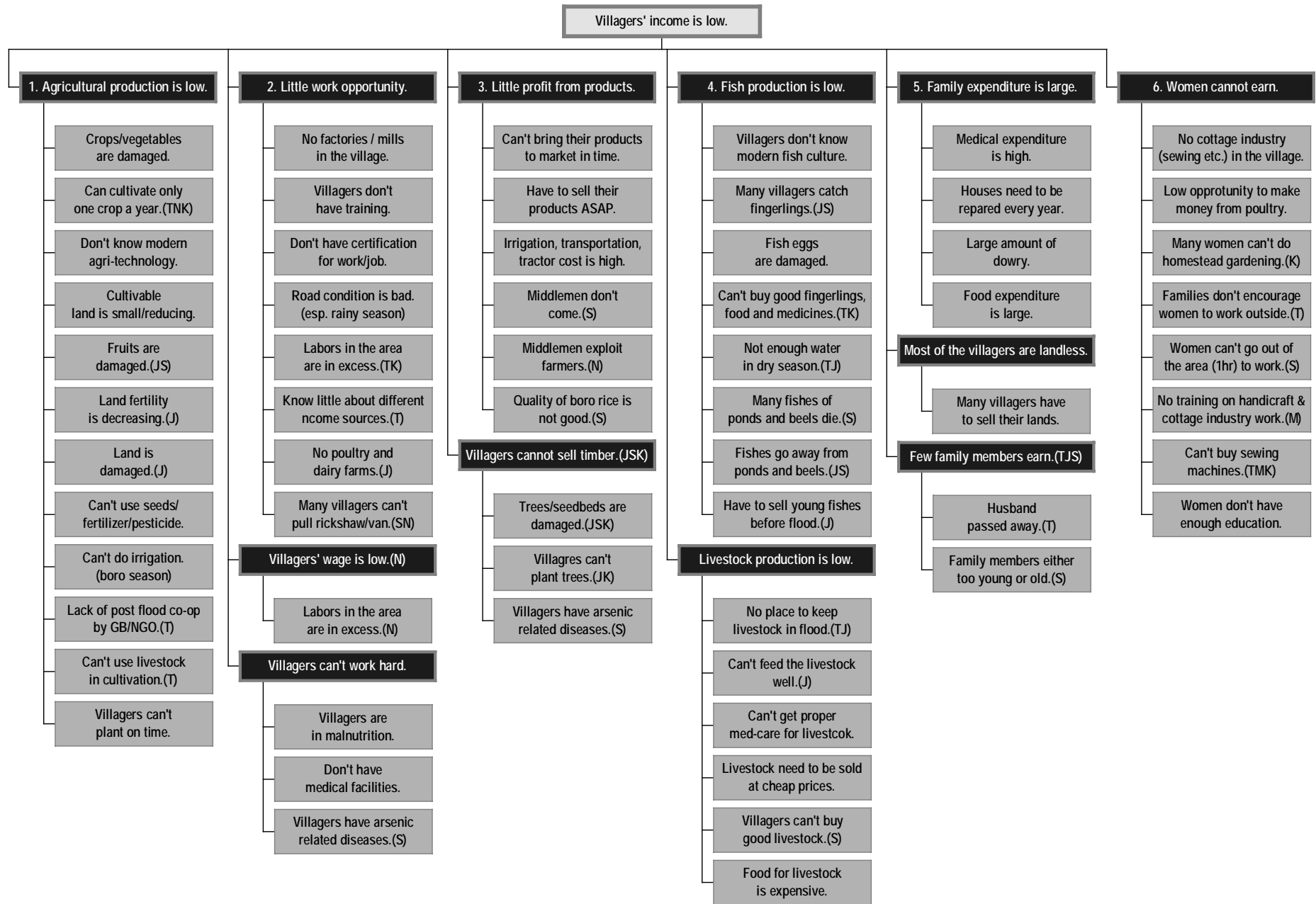


Fig. 4.1.1 Problem Analysis Model for Greater Mymensingh (simplified)

CHAPTER 5

SMALL SCALE WATER RESOURCES DEVELOPMENT POTENTIALS

5.1 Potentials for Water Resources Development

5.1.1 Natural Conditions

(1) Surface Water Resources

1) River systems

According to the National Water Resources Database (NWRD) of WARPO, about 250 rivers, including the three major rivers of the Brahmaputra (Jamuna), Old Brahmaputra and Meghna, comprises the river system of the Study Area. The area of these rivers sums up to about 38,000 ha. The water level of the rivers decline at a significant amount during the dry season, but are regarded as precious sources of water for irrigation. Except for the major rivers, almost all the other rivers / channels dry up leaving no perennial flow. However, interventions for water resources development in major rivers are under the authorization of BWDB.

2) Haor and char area

The eastern part of Netrakona and Kishoreganj districts are classified as Haor areas, as characterized by its low altitude and long inundation period. Inundation depth rises up to more than three meters, and continues for several months.

The Char lands are extending along the Jamuna River at the western border of the Study Area. The rivers themselves flow in broad channels, which become a series of sand or silty islands or Chars at low water period, and are completely submerged during the wet season. The char lands may be regarded as the active flood plains in which the rivers are constantly changing courses.

Flood protection in such areas is clearly unpractical. However, agricultural production may be enhanced/stabilized by mitigating early flood damage and promoting post-monsoon drainage. In consideration of the development plan of both areas, the master plan study was conducted as “The Study for Rural Development forecasting on Flood Proofing” by JICA in 2002. The master plan set the strategies for minimal flood proofing measures as well as flood warning and evacuation system and a set of livelihood development. And the model projects are implemented at present.

3) Perennial/seasonal waterbodies

There are about 2,807 perennial waterbodies, with a total area of about 21,921 ha which cover 1.3% of the Study Area (ref. the table in 3.2.3 (2)).

Among them, beels are counted as 399 (549 by ID numbers of NWRDB of WARPO) with an area of 15,033 ha in the Study Area as shown in the following table. There is no beel in 6 upazilas and 315 unions; in other wards, only 44% of unions have beels in the Study Area.

District	Total Numbers		No. having Beel		No. of Beel*	Beel Total Area (ha)
	Upazila	Union	Upazila	Union		
Jamalpur	7	69	6	33	62	879
Kishoreganj	13	110	12	50	160	1,158
Mymensingh	12	146	10	60	154	2,361
Netrakona	10	85	9	46	117	725
Sherpur	5	52	5	33	98	1,304
Tangail	11	103	10	28	73	8,606
Total	58	565	52	250	664	15,033

Source: NWRD, WARPO

Notes: * because a beel locates in the several unions

In regard to the water scarcity in dry season, it may be said that all waterbodies especially beels with considerable scale have some potential for SSWRD. Installation of supplemental water retention facilities or dredging may improve its utilization. However, it must be noted that water levels in these water resources must be maintained to a certain point to preserve the existing ecosystem and fisheries resources.

4) Flood water

While floods are the major limitation for livelihood in the Study Area, it is also a fact that it is a source of water, and with an excessive amount. Retention and utilization of flood water for supplementary irrigation may enhance agricultural production particularly in areas with relatively high altitude.

(2) Drainage

1) Highland

The areas classified as “highland” (inundation depth less than 0.3m) are generally free of post-monsoon inundation. Potential for drainage may be found in small depressions at limited extent.

2) Medium highland/lowland

This classification with the inundation depth of 0.3 to 1.8 m is expected to have the highest potential for drainage activities. Excavation/re-excavation of drainage canals will have significant impact on agricultural production. Moreover, the area classified as medium highland/lowland covers about 60% of the area.

3) Lowland/very lowland

Effectiveness of drainage at this area will also be limited. Similar to the haor areas, mitigation of early flood damages can be done.

(3) Groundwater

As in most other areas of the country, groundwater is abundant in the Study Area. Though excessive utilization of groundwater for irrigation in the dry season may result in temporary declining of groundwater table, it is believed to recover to its normal levels during the monsoon season. However, the potential for groundwater utilization is yet ambiguous due to its potential danger of arsenic contamination.

5.1.2 Socio-economic Conditions

The major potentials related to socio-economic conditions identified in the field survey are mentioned below.

- (1) There is a conventional decision making system functioning in the *shomaj* (village) level. If consensus for development activities can be built at this level, it may have significant effect on the sustainability of SSWRD interventions, as villagers tend to follow the decisions made in *shomaj*.
- (2) The presence of purely community based earth dam project with six villages working together indicate the possibility of similar activities taken into the activities in the Master Plan. Community activities at inter-village levels may enhance the capability of social groups to be established in the Master Plan activities.
- (3) Furthermore, the presence of a previous irrigation project where 37 villages participated supports the possibility. Villagers contributed 95% of the construction costs, indicates that villagers have great potential to carry out their own projects with appropriate motivation.
- (4) Though the number of women participants in workshops were small, the woman participant who attended the workshop was active. This may indicate the presence of active women who can act as leaders of local women groups.
- (5) The statements made in the interviews and workshops at village level indicated that the absence of adult male in the family does not indicate the hardship of life in the rural areas. This indicates the presence of acceptability of fatherless families both socially and economically.
- (6) Existing infrastructure, particularly road embankments also has the potential to work as embankments for flood management, in premise that water resource facilities are installed as appropriate. Embankment roads, connected together with each other usually form somewhat of a circle levee.

5.1.3 Agriculture, Fisheries and Livestock

Potentials are keys to develop agriculture, livestock and fisheries in the future. Mode of the future development was considered from 4 aspects:

- i) Change of farming system by economic development ,
 - ii) Change of food consumption
 - iii) Internationalization (Export, import)
 - iv) Industrialization
 - v) Population pressure/ land limitation
- (1) Land and Soils
 - 1) Water resources and sedimentation

Periodical floods bring water and sedimentation to agricultural fields. It was observed that the soil fertility is poor in the highland area, since there was no/less sedimentation of silt and clay which could improve the soil fertility. Sandy soils are also useful for root and tuber crops. It is important is to identify the soil property and its distribution, and explore the suitability of crops in terms of cropping and economic factors.

2) Use of char

Large rivers produce a lot of chars, along river sides. The areas are free from soil diseases, and have abundant water. Better use of char is quite profitable and progressing to frontier areas in agriculture and livestock and fisheries. Besides rice, tall and high-soil moisture resistant crops such as sugarcane and maize and grasses for animals can be grown efficiently.

3) Soil Fertilities

Inundation induces anaerobic conditions in soils. It is useful for protection of upland crops from soil-born diseases such as nematodes in successive cultivation in dry seasons.

(2) Agricultural Production

1) Crop diversification

Due to abundant amount of water mentioned above, Bangladesh is in a strategic position to protect farm lands in a severe tendency that many countries are suffering from desertification, water shortage and soil losses. For future development in agricultural production, high potentials of production can be expected in 1) Varietal improvements for high value added crops, and 2) High-water philic plants.

2) Crops replacing jute

Jute is one of the most important strategic crops, but its demand is decreasing. It is necessary to explore new crops which can replace jute. Crops suitable for cash income and exportable are required such as cotton, maize, rush, lotus for food, etc.

3) Vegetable and fruit production in off-seasons.

In the off-season, the agricultural commodities can be sold at a higher price. Water management and breeding will enable to cultivate crops in off-seasons.

4) Irrigation development in Highland area for livestock and vegetable farming.

Highland and medium highland are suitable for mixed farming of livestock and vegetables. It is a profitable farming, and hence it can cover costs of water development.

5) Selection of High Yielding Local-variety

Local varieties are usually of good eating quality and resistant to diseases, but the yield is low. Irrigation is costly, and hence high-yielding and high-market value varieties are required.

(3) Livestock Production

1) Development of aqua-animals

Aqua-animals are promising animals for export, although raising them requires specific techniques.

2) Integrated farming of forest-livestock

Forests have high potentials for grazing and pasturing of animals. Integration of forest-livestock is useful for extending pasturing areas.

(4) Post-harvest processing and Marketing

1) Small scale mechanization of post-harvesting

In Bangladesh, agricultural technology has not yet been developed. Most of the agricultural activities are done by hands from land preparation to food processing: Harvesting, threshing, drying and processing are usually done by manual work except rice milling. However, technology of informal sector is rather well developed as observed in manufacturing of power threshers. Small scale mechanization in agriculture will be developed in future.

2) Rural industrial development

There are sufficient labour forces in the Study Area for the rural industries after solving the investment problems. It increases needs of agricultural products and enhances low-cost production.

3) Development of processed food

- i) White rice: At present, 90% of rice is parboiled rice. However, as observed in super-markets, large amounts of white rice are sold. Economic development will cause diversification of food consumption in Bangladesh from parboiled rice to white and scented rice. At the same time, export of rice will be targeted. For that purpose, breeding of quality rice and use of rubber-roller-type integrated rice mills are indispensable.
- ii) Processed food: To increase value-added of products, food processing is important. As rice production reached to self-sufficiency, variation of rice consumption is required.
- iii) Marketing: After the achievement of rice self-sufficiency, rice export will be increasingly important. Middle Eastern countries to which a large number of Bangladesh people emigrate will be possible areas.

(5) Extension for agricultural development

1) Integrated training of agriculture, livestock and fisheries

At present, training is conducted as an independent course of farming. However, integrated training courses in other areas are important such as crop diversification and mixed farming.

2) Development of specialized farming

To enhance bargaining power of agricultural products and increase cash income, farmers shall be oriented to specialized farming. It is similar to idea of “1 village 1 best product” activity of specified farming in Japan.

(6) Fishery Production

One of the most serious problems for evaluation of actual fisheries situation in the Study Area is insufficiency in accurate statistical data on fisheries activities. Furthermore, it is difficult to obtain even such inaccurate data. Therefore, it is necessary to set up a system for basic information and data collection utilizing the information to be obtained by evaluation and monitoring of subprojects. According to the fisheries specialist of ADTA (Advisory Technical Assistance), in the record of stage-1 (subproject identification and feasibility), there were cases that some non-existing fisheries were recorded, while in other cases some existing fisheries were not correctly identified. LGED survey team who conducted surveys on stage-2

(design and institutional establishment) and stage-3(construction and first year O&M) was able to get concrete data and information on fisheries.

In regard to the potentials and basic concept of the SSWRD in the Study Area, the report "Approach to Fisheries Development" prepared by ADTA in February 2004 is very useful. This report covers almost all items to be dealt with SSWRD-2. Especially, regarding the four types of structures to be constructed in subprojects, the influences of such structures on the natural fish resources and ecosystem have been well analyzed, and alternative measures have been presented, based on the evaluation of performances of SSWRD-1. In addition, all survey items necessary for justification of subprojects have been included in the questionnaire form for the fisheries sector survey.

However, descriptions on the following four points are not sufficient in the report.

- 1) Issues of surface water/flood water use are not only related to the subproject area but also related to the area surrounding the subproject, because fish migrates both areas. Therefore, it is necessary to examine the impact on fisheries for the surrounding area too.
- 2) It is necessary to clarify the actual socio-economic situation and social structure of whole system of fish culture + capture fisheries + cultivation farming in subproject areas.
- 3) It is important to present measures concerning construction of facilities for culture, seed production and seed supply of fish in order to secure the stable supply of animal protein to the people.
- 4) Socio-economic impacts by subprojects on villager including genuine fishermen and part time fishermen should be accurately evaluated both inside and surrounding subproject areas.

On the other hand, as seen in active fisheries activities in some of the districts, the Study Area has significant potentials for fisheries development. The major potentials for fisheries development are summarized in the following.

Hilly area: Generally not suitable for fish culture. If water remains in ponds/ditches/khals/ rivers with the depth of 0.5m depth and minimum period of 6 months, it may be possible to introduce low cost seasonal fish culture such as;

- Tilapia mono culture, Tilapia with Pangas polyculture, and Integrated fish culture (fish with chicken/duck and vegetable crop on the dike) in closed water bodies such as ponds and ditches
- Small size pen culture in open water bodies such as khals, beels and rivers

Terrace Area: Generally suitable for fish culture. If water remains in ponds/ditches/khals/ rivers/ beels with the depth of 1m for minimum 6-10 months, it possible to introduce low cost subsistence fish culture or income generating fish culture such as;

- Tilapia with Pangas polyculture, Integrated fish culture, Rice- com fish culture, Rice-com fish culture with duck, Polyculture, Fresh water prawn, Fresh water ornamental fish polyculture and Indigenous/natural fish culture in closed water bodies such as ponds and ditches
- Pen or cage culture of pangus or major carps, Fish culture, Indigenous/natural fish conservation and capture by Katas/ pen, and Kuas in beel and khal (like small hole or

pool, it becomes fish shelter in low level water) in open water bodies such as khals, beels and rivers

Floodplain Area: Generally partly suitable for fish culture. If water remains in ponds/ditches/khals/rivers/beels with the depth of 1m for minimum 6-10 months, and with the premise that fishponds will not be destroyed by floods, it may be possible to introduce low cost subsistence fish culture or income generating fish culture such as;

- Tilapia with Pangas polyculture, Integrated fish culture, Rice- com fish culture, Polyculture, Indigenous/natural fish, Stocking fish culture, Fresh water prawn polyculture, Fresh water ornamental fish polyculture, and Indigenous/natural fish culture in closed water bodies such as ponds and ditches
- Pen or cage culture of Pangas or Major carps, Beel fish culture, Indigenous/natural fish conservation and capture by katas/pen, and Kuas in beel and khal in open water bodies such as khals, beels and rivers

Deeply Flooded Area: Generally not suitable for fish culture. If pond/ditch etc. can be defended from flood, it may be possible to introduce low cost seasonal fish culture such as;

- Integrated fish culture, Rice- com fish culture with duck, Polyculture, and vegetable crop on the dike and Indigenous/natural fish culture in closed water bodies such as ponds and ditches
- Pen or cage culture of Major carps, Beel fish culture, Indigenous/natural fish conservation and capture by Katas/ pen, Kuas in beel, khal, and Floating cage culture in open water bodies such as khals, beels and rivers

Charlands, River Char Lands: Not suitable for fish culture. But fishing can be conducted at open water surrounding the area to get protein and income.

- Indigenous/natural fish conservation and capture by Katas/ pen, Floating cage culture, and Collecting natural fish seed/fry for sale or own fish culture in open water bodies such as khals, beels and rivers

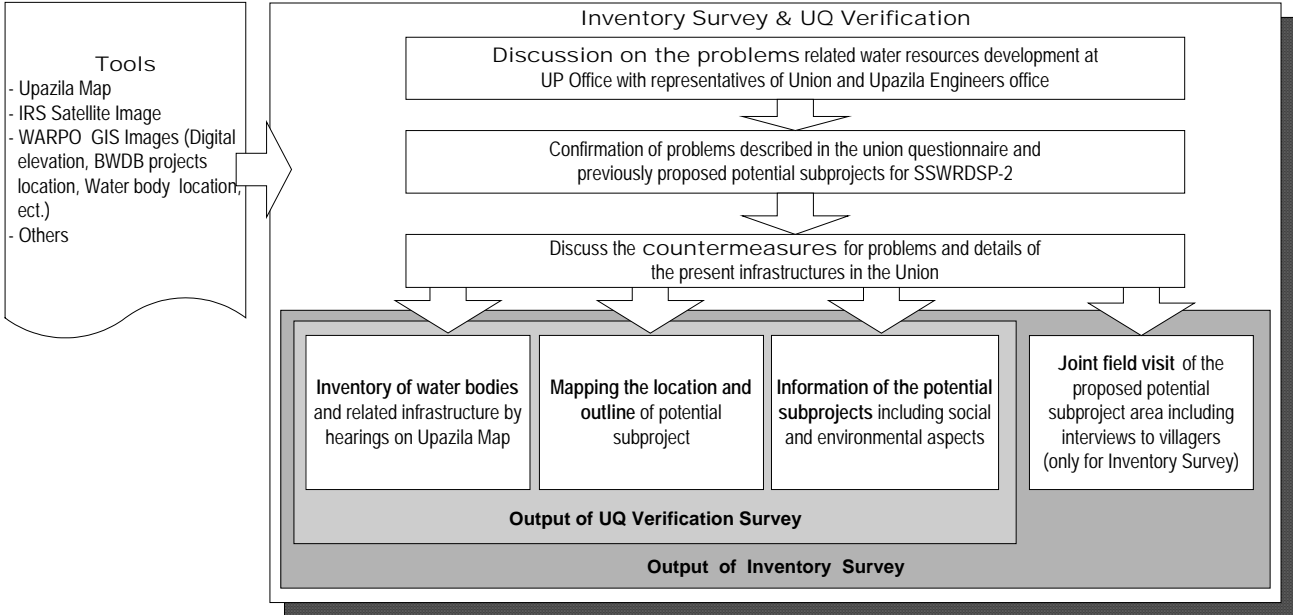
Haor Areas: Not suitable for fish culture due to heavy flooding and strong waves. If pond/ditch etc., can be defended from flood, it may be possible to introduce low cost seasonal fish culture such as;

- Integrated fish culture, Rice- com fish culture with duck, Polyculture in closed water bodies such as ponds and ditches, and Indigenous/natural fish culture in closed water bodies such as ponds and ditches
- Beel fish culture, Indigenous/natural fish conservation and capture by Katas/ pen, Kuas in beel, khal, and Floating cage culture in open water bodies such as khals, beels and rivers

5.2 Identification of Potential Subprojects

5.2.1 Methodology

Identification of potential SSWRD subproject was conducted by the inventory and union questionnaire verification surveys. Both surveys conducted firstly, discussion and clarification of the answer of union questionnaires on the water related problems in the Union among UP chairman and members, representative of villagers and staff of Upazila engineer’s office at Union office. Then the locations, necessary countermeasures for the problems faced by people in the Union were confirmed. These scopes of works for the potential subprojects not only the technical aspects but also environmental and social aspects were discussed and recorded by surveyor and enumerator of the Study Team. In case of the inventory survey, the proposed potential subprojects were visited to confirm the present conditions and conduct the preliminary technical assessment including interviewing the potential beneficiaries by members discussed in the Union office. Processes of both surveys are shown below:



5.2.2 Inventory Survey

(1) Objectives

To examine the situation of water resources related infrastructure, confirm the contents of the collected Union Questionnaires and to identify the potential subprojects for SSWRD in selected 211 Unions of the Study Area

(2) Selection of Unions to be surveyed

Selection of unions to conduct the inventory survey was done based on the submission of subproject proposals. Unions, which were previously selected, based on the understanding that information on present water bodies and related infrastructure is required. Furthermore, an additional 13 Unions were selected based on the following considerations:

- Cover all the agro-ecological zones
- Cover all the inundation land types
- Cover all the upazilas
- Include all the unions that submitted subprojects to LGED
- Take into account problem areas as identified by Union Questionnaire Survey
- Consider geo-physical balance

(3) Survey Procedures

The survey was conducted by dispatching consultants to each Union and by conducting interviews to relevant government officers, UP chairmen and members, village heads, Upazila Engineers and other local stakeholders and actual field survey to the water resources infrastructures and potential subproject sites. The survey process for each union was as follows:

- 1) Explanation of survey to relevant officers at Union complex
- 2) Identification of water bodies / infrastructure location and access route
- 3) Survey on water bodies / infrastructure
- 4) Verification of information indicated in the Union Questionnaires
- 5) Discussion with relevant officers at Union complex for identification of potential subproject areas and possible intervention plans based on identified water bodies/ infrastructure

(4) Potential Subprojects identified in the Survey

The survey was conducted by 6 teams of consultants during the period of 9 Apr. to 18 Jun. A total of 258 potential subprojects were preliminarily identified in the field. These were further examined together with those identified in the Union Questionnaire Verification Survey for their consideration in the list of prioritized potential subprojects.

5.2.3 Union Questionnaire Verification Survey

(1) Objective

To verify the contents of the collected Union Questionnaires and to identify / collect information relevant to potential subprojects for SSWRD in the 351 Unions of the Study Area, which were not selected for the Inventory Survey.

(2) Survey Procedures

The Survey was done through interviews to local stakeholders including UP chairmen, members, village heads, Upazila Engineers and other local representatives.

(3) Potential subprojects identified in the survey

The survey was conducted by 6 teams of consultants during the period of 9 Apr. to 13 Jun. A total of 419 potential subprojects were preliminarily identified in the field. These were further examined together with those identified in the Inventory Survey for their consideration in the list of prioritized potential subprojects.

5.2.4 Identified Potential Subprojects

(1) Results of Potential Subproject Identification Survey

In preparation of the list of potential subprojects for SSWRD in the Study Area, the results of field surveys were carefully examined and necessary modification were made. Accordingly, the Study Team identified 694 ungrouped potential subprojects in the Study Area. The identified potential subprojects were categorized into four types; 1) Flood Management: FM, 2) Drainage Improvement: DI, 3) Command Area Development: CAD and 4) Surface Water Conservation: WC, accordingly to their contents. The type, scale of gross area and relation with BWDB projects in the district are summarized in the following tables, while the locations of these subprojects are indicated in Fig. 5.2.1. However, it must be clearly noted that these figures are of preliminary stage and not yet meant for indicating the number of subprojects for implementation. The preliminary list of potential subprojects has further been screened to clarify whether they should be implemented under small-scale water resources development schemes, and then has been prioritized in order to select those for further implementation arrangements.

Identified Potential Subprojects by type

District	FM	DI	CAD	WC	FM&DI	FM & WC	DI&WC	FM, WC&DI	Total
Jamalpur	31	14	0	0	9	1	19	11	85
Kishoreganj	22	13	0	29	8	2	48	19	141
Mymensingh	18	40	1	7	22	3	47	21	159
Netrakona	22	26	1	10	21	14	25	5	124
Sherpur	8	19	0	7	1	1	19	0	55
Tangail	17	33	0	14	22	4	27	13	130
Study Area Total	118	145	2	67	83	25	185	69	694
% within total	17.0	20.9	0.3	9.7	12.0	3.6	26.7	9.9	100

Identified Potential Subprojects by Scale of Area

Upazila	Gross Subproject Area (ha)					BWDB Related
	1,000	1,000 < 1,500	1,500 < 2,000	> 2,000	Total	
Jamalpur	77	7	1	-	85	16
Kishoreganj	126	9	3	3	141	15
Mymensingh	124	19	10	6	159	49
Netrakona	75	10	1	38	124	45
Sherpur	42	11	2	0	55	18
Tangail	128	1	1	0	130	33
Total	572	57	18	47	694	176

Out of the potential subprojects, those with the components of DI indicated the highest in numbers reaching up to nearly 70% of the total potential subprojects. Out of this, about 40% was identified as a combination of DI and WC for the purpose of irrigation. Potential subprojects of the component of FM and WC were about the same in number, while there were only 2 potential subprojects with the component of CAD out of the total 694.

Identified Subprojects by Component

	FM	DI	CAD	WC	FM&DI	FM & WC	DI&WC	FM, WC&DI	Sub-total	Share within total SPs
SP related to FM	118	-	-	-	83	25	-	69	295	42.5
SP related to DI	-	145	-	-	83	-	185	69	482	69.5
SP related to CAD	-	-	2	-	-	-	-	-	2	0.3
SP related to WC	-	-	-	67	-	25	185	69	345	49.7

(2) Verification of Identified Potential Subprojects

After discussion in the UDCC, DSSWRCC and IMCC, the identified subprojects were reviewed in the light of the comments received in these meetings. The hydrological features and contents of the identified subprojects were also examined to verify its adequacy as a single subproject. Consequently, a total of 593 potential subprojects were verified. About 5 to 20% of the potential subprojects were grouped in each district. This was mainly due to: 1) multiple upstream-downstream subprojects with contents of re-excavation continuously located on the same river/*khal* and 2) multiple subprojects with continuous contents of embankment rehabilitation/construction. These were seen most in Jamalpur and Sherpur where some 20% of the identified subprojects were grouped.

Out of the 593 verified subprojects, 473 had gross areas of 1,000ha or below. This counts up to some 80% of the total verified subprojects.

Verified Potential Subprojects by type

District	FM	DI	CAD	WC	FM& DI	FM & WC	DI& WC	FM, WC& DI	Total	Total before verification
Jamalpur	20	6	0	1	10	0	14	13	64	85
Kishoreganj	16	7	0	24	9	4	38	25	123	141
Mymensingh	13	26	1	6	20	3	42	20	130	159
Netrakona	19	18	1	8	20	13	24	9	112	124
Sherpur	9	12	0	7	1	1	14	0	44	55
Tangail	14	32	0	11	20	3	25	15	120	130
Study Area Total	91	101	2	57	80	23	157	82	593	694
% within total	15.3	17.0	0.3	9.6	13.5	3.9	26.5	13.8	100.0	-

Verified Potential Subprojects by Scale of Area

District	Gross Subproject Area (ha)					BWDB Related
	1,000	1,000 < 1,500	1,500 < 2,000	> 2,000	Total	
Jamalpur	47	11	4	2	64	13
Kishoreganj	107	7	2	7	123	29
Mymensingh	91	20	9	10	130	36
Netrakona	92	11	2	7	112	42
Sherpur	35	2	3	4	44	17
Tangail	101	12	4	3	120	33
Total	473	63	24	33	593	170

After verification of the potential subprojects, there were no major changes in the general tendency of the contents of the subprojects. However, the share of DI related subprojects significantly dropped from 70% to 40%, indicating that DI type subprojects proposed in one union were likely to connect to those of other unions.

Verified Potential Subprojects by Component

	FM	DI	CAD	WC	FM& DI	FM & WC	DI& WC	FM, WC& DI	Sub-total	Share within total SPs
SP related to FM	91	-	-	-	80	23	-	82	276	27.1
SP related to DI	-	101	-	-	80	-	157	82	420	41.3
SP related to CAD	-	-	2	-	-	-	-	-	2	0.2
SP related to WC	-	-	-	57	-	23	157	82	319	31.4

5.3 Prioritization of Potential SSWRD Subprojects

5.3.1 Necessity of Prioritization

In order to effectively utilize limited inputs, development activities of the Master Plan should be implemented at the right place for the right purposes, contributing at the maximum extent to its overall goals. Prioritization of subprojects should be done with necessary criteria to select the most important interventions. Before prioritization, the verified subprojects which were obviously unqualified for SSWRD Subprojects were screened out, and then the qualified potential subprojects were scored and categorized into four categories (A, B, C and D) depending on their scores and maturity in planning.

5.3.2 Method of Prioritization

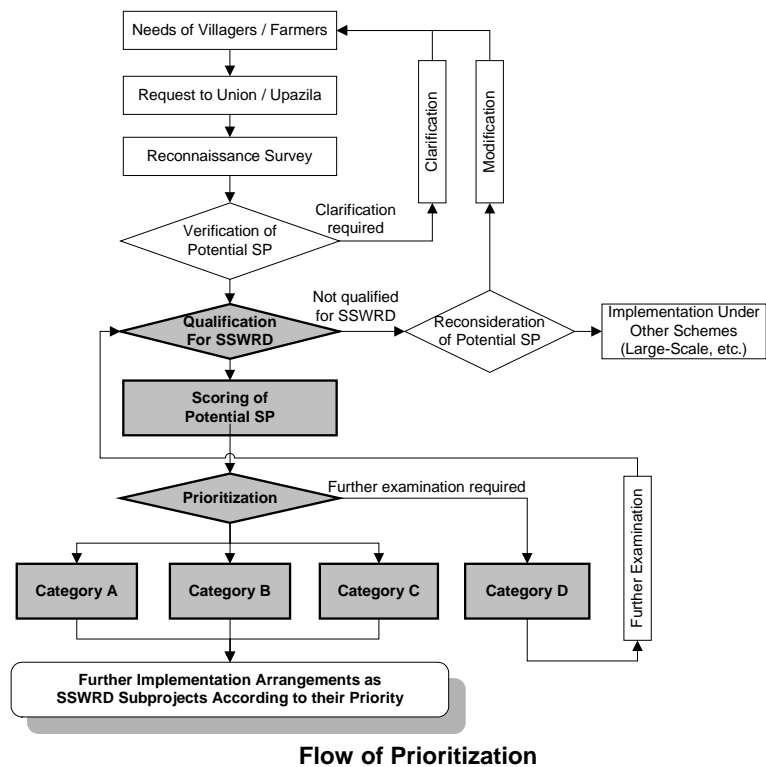
As mentioned in section 5.2, identification of potential subprojects was done by first identifying the needs of the local villagers and then by formulating a package of measures to cope with these problems. This was done so that the measures to cope with the most important problems were not forced to take the form of SSWRD, neglecting the possibilities of other forms such as medium and large-scale interventions, which may be more suitable in certain cases. In this context, the verified subprojects were not necessarily designed as SSWRD subprojects from the beginning.

Among prioritization, the verified potential subprojects were pre-screened to exclude subprojects that clearly do not fit into the SSWRD scheme. For this process, the gross area and location of the verified subprojects were applied, where medium and large-scale subprojects as well as small-scale subprojects lying in areas protected for the purpose of environmental conservation were excluded.

After pre-screening, the qualified subprojects were scored by applying a method for multi-criteria analysis. The criteria and weight of the scores were carefully examined based on available information, and each qualified subproject was scored accordingly. The main items regarded in the criteria were:

- Impact on Poverty Alleviation
- Significance of Benefit
- Hydrological and Environmental Considerations, and
- Easiness of Implementation of the Subproject and O&M by Local Beneficiaries in the Subproject Area

Subsequently, the maturity of the qualified subprojects were checked based on the criteria



developed under the SSWRDSP-2, which is the current scheme for implementation of SSWRD subprojects. Those found to require further examination for implementation as SSWRD subprojects were categorized as Priority D, while others were categorized into A, B and C according to their scores.

5.3.3 Qualification of Verified Subprojects

(1) Criteria for Qualification of Verified Subprojects

Under the NWPo, water resources development interventions with the benefiting are of 1,000ha or less are categorized as “Small-Scale”. In this regard, all such interventions can be referred to as potential SSWRD subprojects. However, LGED has developed a set of selection criteria under the SSWRDSP-1 and 2 to qualify subprojects that are expected to be effective and efficient. This criteria covers a wide range of issues from economic viability / technical feasibility to social acceptability and environmental soundness.

In regard that the potential subprojects that are identified and prioritized under this study are to be implemented by LGED, and that the SSWRDSP-2 following its first phase is currently the only scheme under LGED to implement SSWRD subprojects, these criteria (or modified according to future needs) would be most appropriate in qualifying such potential subprojects.

However, in order to give concrete decisions on whether the potential subproject is fully qualified or not, analysis must be done in detail for each individual criteria. In regard that the Master Plan Study has not stepped in to the very details of the individual subprojects, but rather concentrated in collecting general but overall information to provide the directionality for SSWRD, it is not favorable to completely judge the potential subprojects at this stage, where those judged unqualified will be excluded from further examinations. In this regard, two fundamental criteria were applied for qualification (pre- screening) of the verified potential subprojects, while the remaining selection-criteria were considered later on for the prioritization of qualified subprojects.

Selection Criteria for SSWRDSP-2	
-	The SP must be in line with district strategies and guidelines for SSWR and approved by DIAPEC
-	More than 40 % of the SP benefited area will be operated by landless share croppers, marginal farmers
-	No more than 30 % of the households depend on subsistence capture fisheries.
-	Each SP will entail rehabilitation / upgrading of an existing water control system
-	SP cost must not exceed \$ 1000/ha for CAD and \$ 500 for other schemes without ADB’s prior approval.
-	Benefited area served by the SP must be more than 50 ha and not exceed 1000 ha.
-	Each subproject must be technically feasible; economically viable (EIRR > 12 %)
-	Capacity of beneficiaries in ensuring the sustainability of submersible embankments must be shown for Interventions in the deeply flooded part of the Northeast Region
-	The SP shall be environmentally sound and IEE/EIA study has to be undertaken and appropriately approved after consulting the beneficiaries and project affected people
-	The SP shall be socially sound and require no or minimal displacement of people and land acquisition, and not involving sensitive areas
-	Enrollment of 70 % of the direct beneficiary households as member of the WMA.
-	Recurrent cost of subproject O&M shall be covered by beneficiaries through formulated WMA

The criteria applied were:

Gross Subproject Area

Based on the definition of SSWRD subprojects, the benefiting are of each subproject must be 1,000ha or less. At this stage, detailed analysis of topography and hydrology is not done for individual subprojects and therefore, accurate figures of benefiting areas are not present.

Taking into regard that based on GIS analysis of the layout of verified subprojects, some 20% of the subprojects area is expected to be settlements, roads etc., qualification of the subprojects were done by adding 20% margin to the current frame. Also taking into regard that the range of benefiting area as defined in SSWRDSP-2 is 50 to 1,000 ha, verified subprojects with the gross area falling outside of the range of 60 to 1,200 ha were excluded.

Overlapping with protected areas

In order to prevent obvious negative impact on the environment, implementation of subprojects in protected areas should be avoided. In this regard, verified subprojects located in Madhupur National Park and its buffer zone as defined by the Department of Forestry was excluded.

(2) Qualified Potential Subprojects

Through the process of pre-screening in regard to the criteria set above, some 16% of the verified subprojects were considered to be of large scale, while 1 was located within Madhupur National Park. As a result, 496 subprojects out of the 593 verified subprojects were found qualified. These qualified subprojects will be prioritized for further implementation arrangements. The average area of a single qualified subproject is 538 ha, ranging from 469 to 624 ha in the six districts of the Study Area. Out of the whole study area, 16.0% will be under the gross subprojects area if all 469 subprojects are implemented. By type, subprojects with the objective of DI were most dominant. This was followed by FM. The tendency seemed to be similar in most of the districts in the Study Area. However, in Jamalpur, the majority of the SPs aimed at FM.

District-wise Number and Area of Qualified Subprojects

District	Number of verified subprojects	Number of qualified subprojects	Total gross area of subprojects (ha)	Average gross area of subprojects (ha)	Total area in the District (ha)	% of Total gross area within the district
Jamalpur	64	53	32,837	619.6	203,200	16.2
Kishoreganj	123	110	51,544	468.6	268,900	19.2
Mymensingh	130	99	61,738	623.6	436,300	14.2
Netrakona	112	97	51,825	534.3	281,000	18.4
Sherpur	44	35	20,564	587.5	136,400	15.1
Tangail	120	102	48,235	472.9	341,400	14.1
Total	593	496	266,743	537.8	1,667,200	16.0

Type-wise Number of Qualifies Subprojects

District	FM	DI	CAD	WC	FMDI	FMWC	DIWC	FMDI & WC	District total
Jamalpur	19	4	0	1	9	0	10	10	53
Kishoreganj	14	5	0	23	8	4	32	24	110
Mymensingh	10	23	1	5	16	1	31	12	99
Netrakona	17	18	1	6	18	12	20	5	97
Sherpur	8	11	0	6	1	1	8	0	35
Tangail	13	28	0	11	18	3	17	12	102
Total by Type	81	89	2	52	70	21	118	63	496

5.3.4 Prioritization of Qualified Potential Subprojects

(1) Prioritization Method

After qualification, the potential subprojects were prioritized and categorized into four categories (A, B, C and D) according to their priority. This was done by two approaches. One to screen out and lower the priority of potential subprojects that are qualified but yet require additional information to confirm if they satisfy certain criteria for SSWRDSP-2. The other is to score the qualified subprojects by using a multi-criteria analysis method, and selecting those with higher priority based on a set of criteria. The potential subprojects selected in the former process was categorized into category D, while the remaining were categorized in to A, B, and C.

1) Screening of Category D Subprojects

Out of the set of selection criteria developed under SSWRDSP-2, two were applied in the process of qualifying the potential subprojects. The remaining criteria were not applied in consideration that the potential subprojects should not be completely screened at Master Plan level. However, based on the information collected in the study, preliminary judgment for the criteria concerning subproject construction cost can be made, where potential subprojects not satisfying the criteria at this point should be bound for further examination. In regard that such examination will require more time and resources, they should have lower priority among implementation. The potential subprojects not satisfying the criteria were categorized into “Category D”, which require further examination to clarify whether they can (with or without modification) satisfy the set of selected criteria.

SSWRDSP-2 Selection Criteria and its Application for Screening “D Category” Subprojects

SSWRDSP-2 Selection Criteria	Application	Reason
The SP must be in line with district strategies and guidelines for SSWR and approved by DIAPEC	Applied for qualification	The Master Plan itself is positioned as the district strategy for SSWRD. Approval of DIAPEC will be done at the stage of implementation
More than 40 % of the SP benefited area will be operated by landless share croppers, marginal farmers	Not applied	Examination should be done based on reliable information obtained at the stage of feasibility study
No more than 30 % of the households depend on subsistence capture fisheries.	Not applied	Examination should be done based on reliable information obtained at the stage of feasibility study
Each SP will entail rehabilitation / upgrading of an existing water control system	Not applied	Examination will be done at field reconnaissance
SP cost must not exceed US\$ 1000/ha for CAD and US\$ 500 for other schemes without ADB's prior approval.	Applied	Examination will be done by checking the contents of the potential SPs
Benefited area served by the SP must be more than 50 ha and not exceed 1000 ha.	Applied for qualification	Already applied for qualification of verified subprojects
Each subproject must be technically feasible; economically viable (EIRR > 12 %)	Not applied	Detailed study should be examined at the stage of feasibility study.
Capacity of beneficiaries in ensuring the sustainability of submersible embankments must be shown for Interventions in the deeply flooded part of the Northeast Region	Not applied	Detailed study should be examined at the stage of feasibility study
The SP shall be environmentally sound and IEE/EIA study has to be undertaken and appropriately approved after consulting the beneficiaries and project affected people	Partially applied for qualification	SP areas in environmentally sensitive areas have been taken into consideration
The SP shall be socially sound and require no or minimal displacement of people and land acquisition, and not involving sensitive areas	Not applied	Detailed study should be examined at the stage of PRA
Enrollment of 70 % of the direct beneficiary households as member of the WMA.	Not applied	Detailed study should be examined at the stage of PRA – WMA formulation
Recurrent cost of subproject O&M shall be covered by beneficiaries through formulated WMA	Not applied	Detailed study should be examined at the stage of PRA – WMA formulation

2) Scoring Method of Qualified Subprojects

Scoring of subprojects was done by applying *Analytical Hierarchy Process (AHP)* method, which is a tool for decision making with various parameters (multi-criteria analysis). During the last three decades, especially when the social or administrative and environmental or hydrological impacts have been emphasized in decision making process, traditional methodologies such as Cost-Benefit Analysis (CBA) or Cost-Utility Analysis (CUA) have been gradually replaced or complemented by Multi-Criteria Decision Methods (MCDM), with prominence for AHP. The main concept is to examine relative importance of various factors for decision-making using a matrix chart called a "decision-tree". Comparison of importance is examined by hierarchy by examining relations of two items and then integrating the relations into one matrix.

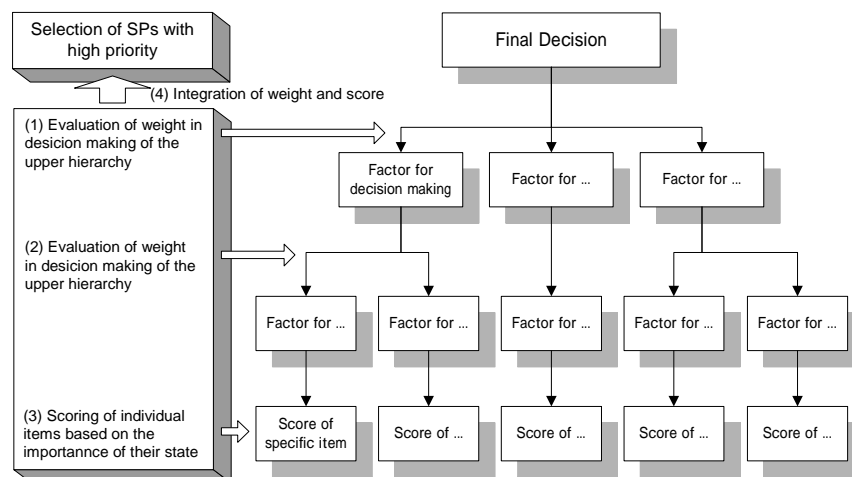
Relative importance of items/decision factor called "natural states" regarded for categorization of SPs was considered and weights for scoring of these items were examined. The main procedure consists of four steps.

- Examining weight of importance of each category
- Examining weight of importance of each item in the same category
- Scoring of individual items in consideration of each state
- Integration of individual scores and weight to prioritize potential subprojects

In scoring individual items, a pair-wise comparison matrix is formed reflecting relative importance of the items based on a nine-point Relative Importance Scale as shown below.

Pair wise Comparison Scale

Relative Preference / Importance	Numerical Rating
Extremely preferred/important	9
Very strong to extremely	8
Very strongly preferred/important	7
Strongly to very strongly	6
Strongly preferred/important	5
Moderate to strongly	4
Moderately preferred/important	3
Equally to Moderately	2
Equally preferred/important	1



Process of Subprojects Prioritization

3) Criteria for Scoring

Among implementation, the basic requirements for SSWRD subprojects will be covered by applying the selection criteria of SSWRDSP-2. In this regard, scoring for prioritization of potential subprojects shall concentrate on selecting subprojects that may have more positive effect than the others. The items for considering the scoring of the subprojects are as follows.

Effect on Poverty by the Subproject (applicable to all types of subprojects)

In order to contribute to the overall goal of the Master Plan, the subprojects must be effectively implemented in poverty stricken areas. In order to attach high priority to subprojects in such areas, the subproject location is overlaid with a union-wise map of “Probability of High Level of Extreme Poverty” (Local Estimation of Poverty and Malnutrition in Bangladesh, 2004, BBS and WFP) on the GIS database prepared in the Study. The map indicates four categories of probability in poverty level, which are: Very High, High, Moderate and Low, where higher priority was attached to subprojects in areas with higher probability of poverty for all type of subprojects.

Significance of Benefit

In terms of project efficiency for best utilizing the limited resources and for selecting priority subprojects that should be implemented prior to the others, subprojects with benefits tangible and easy to recognize should be of higher priority. In this regard, the three criteria of cropping intensity, access to and from growth centers and proximity to national and regional highways were selected. Cropping intensity is related to land inundation type, where deeply inundated areas are regarded to have lower cropping intensity. In such areas, appropriate water management will increase cultivable land, thus leading to increased agricultural production. Access to and from growth centers and proximity to national and regional highways were selected in regard of easiness to convert agricultural production to economic activities.

Hydrological and Environmental Considerations

Criteria regarding hydrological and environmental considerations were selected for specific types of subprojects. These are: Arsenic contamination, dry season rainfall, post-monsoon rainfall and dry season groundwater table. Arsenic contamination was selected to prioritize WC type subprojects in regard of the potential risk for utilizing groundwater resources in Arsenic contaminated areas. Dry season rainfall was also applied to WC type subprojects in regard that such subprojects will have higher potentials in areas with higher rainfall in dry season. Post-monsoon rainfall was selected to prioritize DI type subprojects in areas likely to be inundated in post-monsoon season. Dry season groundwater table is applied to WC and CAD type projects, due to needs of surface water irrigation in areas with low groundwater table.

Easiness in Implementation of the Subproject and O&M by Local Beneficiaries

Criteria indicating the easiness of implementation and O&M are: administrative issue and technical suitability. Administrative issue refer to the administrative bodies (unions) concerned in one subproject, where there are less obstructions for implementation of subprojects lying in one union than those concerning many. Technical suitability is judged by the number and scale of mechanical structures (regulators, water retentions structures, etc.). Both implementation and O&M by local beneficiaries are regarded to be difficult for subprojects with large structures.

The following table summarizes the criteria selected for prioritization of the subprojects:

Criteria for Subproject Prioritization

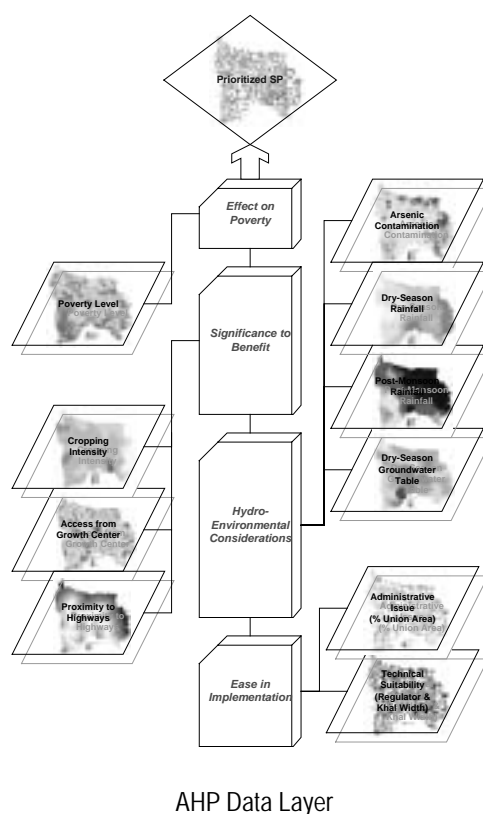
Criteria		Parameter and Source
Effect on Poverty by the Subproject		Poverty Level: Union-wise data extracted from "Local Estimation of Poverty and Malnutrition in Bangladesh", BBS in association with UNWFP, 2004
Significance of Benefit	Cropping Intensity	Cropping intensity in relation to Inundation Land Type: Upazila-wise data from DAE for years 2001 to 2004
	Access to and from Growth Center	Distance from Subproject Area to Growth Center: Analysis of GIS database; Point data from LGED GIS Department
	Proximity to National and Regional Highways	Distance from National and Regional Highways: Analysis of GIS database; Point data from LGED GIS Department
Hydrological and Environmental Considerations	Arsenic Contamination (applicable to WC type SP only)	Severity of Contamination: DFID (2001) Report "Arsenic Contamination in Groundwater of Bangladesh" and WARPO NWRD
	Dry Season Rainfall: Nov. ~ Mar. (applicable to WC type SP only)	Amount of Dry Season Rainfall: BWDB data (1981 – 2002)
	Post-Monsoon Rainfall: Sep. ~ Oct. (applicable to DI type SP only)	Amount of Post-Monsoon Season Rainfall: BWDB data (1981 – 2002)
	Dry Season Ground Water Table: Nov. ~ Mar. (applicable to WC/ CAD type SP only)	Depth of Groundwater During Dry Season Upazila wise data from BADC for period 2002 to 2003
Easiness of Implementation of the Subproject and O&M by Local Beneficiaries in the Subproject Area	Administrative Issue	Layout of Union boundary and Subproject Area: Union boundary updated using LGED GIS Department's data
	Technical Suitability	Scale of Structures (No. of regulators / khal width): Survey data updated through UDCC consultation meetings.

3) Weighting of Scoring Criteria

The basic idea of calculating evaluation weight of categories/items and scoring of individual items are shown in 5.3.3. Importance of each factor is calculated so that the total of each category / item will sum up to a total of one (1). The method and weight of each criterion for prioritization are indicated in the following table.

In applying the AHP method, overlaying subproject with various data collected, updated and developed by the study team and converted them to buffers and grids, has been carried out under GIS environment. The figure on the right gives an image of the GIS data layers used in prioritization.

Sensitivity Analysis has been carried out to check the effect of weight of particular criteria on overall scores of the subprojects. This eliminates skewness in sup-project priority such that a single criterion



does not play a sharp role in overall priority and smoothes out the effect of different criteria. Through such sensitivity analysis, the final weights of the criteria have been decided. The table in the next page shows the final criteria and weight.

Weight of Multi-Level Criteria for Subproject Prioritization

Primary Criteria (Level 1)	Weight	Secondary-Criteria (Level 2)	Weight	Tertiary Criteria (Level 3)	Weight	
Effect on Poverty by the Subproject (Applicable to all types of SPs)	0.61*	Very High Poverty Area	0.59	-	-	
		High Poverty Area	0.22	-	-	
		Moderate Poverty Area	0.12	-	-	
		Low Poverty Area	0.07	-	-	
Significance of Benefit (applicable to all types of SPs)	0.13*	Cropping Intensity	0.75	Low having Inundation Land Type F3 & F4	0.76	
				Medium having Inundation Land Type F2	0.16	
				High having Inundation Land Type F0 & F1	0.08	
	Access to and from Growth Center	0.18	0.18	Easy	0.68	
				Moderate	0.22	
				Difficult	0.10	
	Proximity to National and Regional Highways	0.07	0.07	Close	0.68	
				Moderate	0.22	
				Far	0.10	
Hydrological and Environmental Considerations (depends on types of SP)	0.10*	Arsenic Contamination (applicable to WC type only)	0.64*	High Contaminated Area	0.69	
				Medium Contaminated Area	0.23	
				Low Contaminated Area	0.08	
	Dry Season Rainfall: Nov. ~ Mar. (applicable to WC type only)	0.14*	0.14*	Low Rainfall	0.65	
				Moderate Rainfall	0.23	
				High Rainfall	0.12	
	Post-Monsoon Rainfall: Sep. ~ Oct. (applicable to DI type only)	0.14*	0.14*	High Rainfall	0.65	
				Moderate Rainfall	0.23	
				Low Rainfall	0.12	
	Dry Season Ground Water Table: Nov. ~ Mar. (applicable to WC/ CAD type only)	0.08*	0.08*	Deep Groundwater Table	0.65	
				Medium Groundwater Table	0.23	
				Shallow Groundwater Table	0.12	
Easiness in Implementation of the SP and O&M by Local Beneficiaries in the SP Area (applicable to all types of SPs)	0.16*	Administrative Issue	0.75	Single Union	0.83	
				Multiple Unions	0.17	
		Technical Suitability	0.25	0.25	Structures are of adequate scale	0.90
					Structures exceed adequate scale	0.10

* Different weight applied depending on type of SPs. For detailed figure, refer to Annex-7.

(2) Prioritization of Potential Subprojects

1) Screening of D Category Subprojects

Screening of Category D subprojects were done based on the costs of individual subprojects estimated from their components. Out of the 496 qualified subprojects, 145 subprojects were determined to have costs exceeding US\$ 500/ha (US\$ 1,000/ha for CAD type subprojects). In addition to this, one CAD type subproject was screened into category D in regard that necessity of medium scale low-lift pumps should be further examined. In total, 146 subprojects were screened into Category D. The numbers of such subprojects by district are indicated below.

Screening of Category D Subprojects

District	Number of qualified subprojects	Number of category D subprojects	Number of category A- C subprojects	Gross area of category A-C subprojects (ha)	Average gross area of category A-C subproject (ha)	Total area in the District (ha)	% of gross area of category A-C subprojects within the District
Jamalpur	53	14	39	26,198	671.7	203,200	12.9
Kishoreganj	110	44	66	33,420	506.4	268,900	12.4
Mymensingh	99	17	82	52,443	639.5	436,300	12.0
Netrakona	97	31	66	36,580	554.2	281,000	13.0
Sherpur	35	4	31	18,864	608.5	136,400	13.8
Tangail	102	36	66	33,437	506.6	341,400	9.8
Study Area Total	496	146	350	200,942	574.1	1,667,200	12.1

Type-wise Number of Category D Subprojects

District	FM	DI	CAD	WC	FMDI	FMWC	DIWC	FMDI & WC	District Total
Jamalpur	5	0	0	0	4	0	4	1	14
Kishoreganj	9	0	0	8	3	3	10	11	44
Mymensingh	4	0	1	1	4	0	4	3	17
Netrakona	7	0	1	3	3	2	12	3	31
Sherpur	1	0	0	3	0	0	0	0	4
Tangail	6	3	0	7	11	2	2	5	36
Study Area Total by type	32	3	2	22	25	7	32	23	146

4) Prioritization of Qualified Subprojects

After screening of Category D subprojects, each of the remaining subprojects are marked with a score indicating its relative importance in the light of the set criteria. The scores varied from 0.18 to 0.98 with the average of 0.45. However, it should be noted that because of the characteristics of the AHP method, the scores do not indicate the value of actual importance of the subprojects, but represent relative importance between the subprojects.

Prioritization of the scored subprojects was done upazila-wise in regard of the capacity of the Upazila Engineer office in implementation. One subproject with the highest score was selected in each upazila for implementation under the short-term activities of the Master Plan. Such subprojects were categorized as Priority A. Furthermore, some 30% were selected from the remaining 292 subprojects for categorization in Priority B. This counted up to 99 subprojects, varying from 8 to 25 in each district. Finally, the remaining 193 subprojects were categorized into Priority C, which will be implemented under the long-term activities of the Master Plan. The prioritized subprojects have been checked upazila-wise and then district-wise so that implementations of the prioritized subprojects become distributed among the upazilas and districts. Lists of prioritized subproject in each district are shown in Table 5.4.1 to 5.4.6. The following table summarizes the number of subprojects in each category. The distribution of prioritized subprojects is indicated in Fig. 5.4.1.

Prioritized Verified Potential Subprojects by Type

		FM	DI	CAD	WC	FMDI	FMWC	DIWC	FMDI & WC	Total	BWDB related
Category A	Jamalpur	5	0	0	0	1	0	0	1	7	3
	Kishoreganj	3	2	0	1	2	0	3	2	13	2
	Mymensingh	1	4	0	1	3	0	2	1	12	2
	Netrakona	2	5	0	1	0	0	1	1	10	5
	Sherpur	1	1	0	0	0	1	2	0	5	2
	Tangail	3	1	0	1	0	1	3	2	11	3
	Sub Total	15	13	0	4	6	2	11	7	58	17
Category B	Jamalpur	3	2	0	1	1	0	3	1	11	0
	Kishoreganj	1	0	0	7	0	0	8	3	19	1
	Mymensingh	3	7	0	2	3	0	7	3	25	6
	Netrakona	2	1	0	2	8	2	2	0	17	6
	Sherpur	3	2	0	2	1	0	0	0	8	2
	Tangail	1	9	0	1	2	0	4	2	19	6
	Sub Total	13	21	0	15	15	2	24	9	99	21
Category C	Jamalpur	6	2	0	0	3	0	3	7	21	21
	Kishoreganj	1	3	0	7	3	1	11	8	34	6
	Mymensingh	2	12	0	1	6	1	18	5	45	10
	Netrakona	6	12	0	0	7	8	5	1	39	12
	Sherpur	3	8	0	1	0	0	6	0	18	5
	Tangail	3	15	0	2	5	0	8	3	36	9
	Sub Total	21	52	0	11	24	10	51	24	193	63
Category D	Jamalpur	5	0	0	0	4	0	4	1	14	5
	Kishoreganj	9	0	0	8	3	3	10	11	44	1
	Mymensingh	4	0	1	1	4	0	4	3	17	6
	Netrakona	7	0	1	3	3	2	12	3	31	10
	Sherpur	1	0	0	3	0	0	0	0	4	2
	Tangail	6	3	0	7	11	2	2	5	36	11
	Sub Total	32	3	2	22	25	7	32	23	146	35
All categories	Jamalpur	19	4	0	1	9	0	10	10	53	29
	Kishoreganj	14	5	0	23	8	4	32	24	110	10
	Mymensingh	10	23	1	5	16	1	31	12	99	24
	Netrakona	17	18	1	6	18	12	20	5	97	33
	Sherpur	8	11	0	6	1	1	8	0	35	11
	Tangail	13	28	0	11	18	3	17	12	102	29
	Sub Total	81	89	2	52	70	21	115	59	496	136

5.4 Sustainable Water Management

5.4.1 Participatory Water Management

(1) Participation of Beneficiaries from Project Formulation to O&M of Subproject

The National Water Policy (NWPo) directs that "stakeholder involvement should be an integral part of water resources management at all stages of the project cycle". Ministry of Water Resource (MOWR) issued "Guideline for People's Participation in the Water Development Projects" and "Guideline of Participatory Water Management".

(2) Water Management (Cooperative) Association (WMA or WMCA)

Under the NWPo, numbers of Stakeholder institutions (water users group) have been formed within FCD areas of BWDB. Beneficiaries' participation in project O&M initiated mid. of 1990s, under the BWDB rehabilitation projects to organize and develop Water Users Organization (WUO). A three tier system of water users was developed consisting of Water Users' Groups (WUG), Water Users' Committees (WUC) and Water User's Association (WUA). They were registered under the Cooperative Act (1984) and the Cooperative Rules (1987). However, these frameworks for cooperatives were originally formulated for agricultural cooperatives and labor unions and do not sufficiently support the functions of WUAs.

LGED also has formulated a framework for WMA (Water Management Cooperative Association) under SSWRDSP-1. In the lack of sufficient legal framework, LGED together with other relevant agencies gave the efforts to formulate the Cooperative Societies Act 2001 as a legal framework of WMA.

Under the SSWRDSP-1 and 2, WMA is established under the legal framework of the Cooperative Societies Act 2001 and Cooperative Societies Rules framed there under. WMA must fulfill a number of preconditions including i) enrolment of at least 70 % of beneficiary households as WMA members; ii) collection of full beneficiary contributions for O&M, iii) project-affected persons are consulted, and iv) environmental mitigation and land acquisition plans are prepared.

The main function of WMAs are to act as the representatives of local stakeholders in subproject design and decision making, and to contribute to the sustainability of the subproject by bearing recurrent maintenance activities including re-excavation work (except for major damages such as those occurring from natural calamities) for maintaining design performance of the subprojects. They also function as the recipient body for technical support from government agencies such as LGED and DAE. Moreover, some of the WMAs provide services to the members in form such as loans for new economic activities.

5.4.2 Issues for Water Resources Management

(1) WMA in SSWRDSP-1

The Project Final Report, SSWRDSP-1 (2003, LGED) has evaluated the functioning of WMAs implemented during the project. This evaluation was done by scoring the WMAs on the scale of 5, in regard of paid staff, their own office, increasing capital funds, perating micro-credit program, operating some other business as parameters. The results indicate that out of 280 subprojects implemented by the preparation of the report, 156 or 55 per cent are considered to be functioning reasonably well. The functioning of WMAs provides both promising factors and valuable lessons for further implementation of subprojects which are already being reflected to SSWRDSP-2. However, in regard that nearly half of the WMAs considered “satisfactory” were scored 3 while those scored 5 were some 10%, which means that there is still a wide scope for improvement.

Evaluation of WMAs in Project Final Report for SSWRDSP-1

Functioning	Score	Number of WMAs
Satisfactory	5	18
	4	64
	3	74
Not satisfactory	2	80
	1	44

Compiled from appendix 7 of Project Final Report (2003, LGED)

(2) Issues for Sustainable Water Resources Management

Considering the finding on the SSWRDSP-1 subproject areas, followings will be pointed out for the sustainable water resources management.

- For sustainable water resources management in each subproject after completion of the project, more accurate water balance study in the project area will be essential at the feasibility level analysis.
- Additionally, basic O&M procedures for appropriate usage of water related facilities should be plainly explained in the feasibility level analysis for the future formulation of O&M plan by the WMA.
- In the O&M stage, the WMA should operate the water related facilities according to the O&M plan formulated in advance. If the water resources situation is not the same as planned, the WMA should modify the O&M plan and submit it to the Assistant Engineer of LGED located at each district office.
- The Modified O&M plan is to be confirmed by the Assistant Engineer together with the Agriculture, Fishery and Socio-Economist as technically feasible and socially viable.
- In case that the subproject is adjacent to other subproject(s) or a large-scale project by BWDB, the Assistant Engineer and other Engineers had to discuss about the modified plan regarding the technical and social aspects with the Engineers concerned to other subproject(s) by LGED or a large-scale project by BWDB.
- The WMA O&M members are to pay attention on the water utilization from the Beel.

There are 280 subprojects in SSWRDSP-1 and the average members of WMA are 413, of which 100 or 24.2% in average are female members. The members are largest at 833 (an average of four WMAs) in *Pabna* District and smallest at 110 (an average of four WMAs) in *Bogra* District.

The target amount of beneficiary contribution is Tk. 128,417 in average per WMA. The amount is highest at Tk. 363,342 (an average of six WMAs) in *Chapai Nawabganj* District and lowest at Tk. 27,259 (an average of seven WMAs) in *Thakurgaon* District.

The collected amount of beneficiary contribution is Tk. 290/member in average. It is highest at Tk. 1,247/member in *Bogra* District and lowest at Tk. 104/member in *Jhenaidah* District.

Some WMA Statistics of SSWRDSP-1

District	Number of WMCA's	Beneficiary Households	Members						Beneficiary Contribution (Tk)				
			Male	Female	Total	Members / B.H.	Female rate	Members / WMCA	Target	Collected	Collected / Target	Target / WMCA	Collected / Member
Bagerhat	5	4,054	2,591	466	3,057	75.4%	15.2%	611	873,212	865,785	99.1%	174,642	283
Barguna	8	2,584	1,709	611	2,320	89.8%	26.3%	290	351,017	327,287	93.2%	43,877	141
Barisal	19	10,199	3,914	14,113	N.A.	27.7%	743	5,438,182	5,426,429	99.8%	286,220	384	
Bhola	6	2,928	3,042	814	3,856	131.7%	21.1%	643	727,992	736,328	101.1%	121,332	191
Bogra	4	3,314	315	125	440	13.3%	28.4%	110	596,453	548,690	92.0%	149,113	1247
Chapai Nawabganj	6	4,049	2,042	424	2,466	60.9%	17.2%	411	2,180,054	1,004,186	46.1%	363,342	407
Chuadanga	10	5,527	2,217	1,348	3,565	64.5%	37.8%	357	715,646	723,019	101.0%	71,565	203
Dinajpur	10	3,919	2,122	723	2,845	72.6%	25.4%	285	790,406	676,167	85.5%	79,041	238
Faridpur	13	5,820	3,832	1,375	5,207	89.5%	26.4%	401	1,166,378	1,179,966	101.2%	89,721	227
Gaibandha	4	3,542	2,204	996	3,200	90.3%	31.1%	800	553,949	544,500	98.3%	138,487	170
Gopalganj	8	2,726	1,407	345	1,752	64.3%	19.7%	219	590,548	418,445	70.9%	73,819	239
Jessore	3	1,353	771	326	1,097	81.1%	29.7%	366	242,768	228,572	94.2%	80,923	208
Jhalokathi	11	5,396	3,166	1,065	4,231	78.4%	25.2%	385	1,540,517	1,523,118	98.9%	140,047	360
Jhenaidah	5	2,331	1,505	400	1,905	81.7%	21.0%	381	191,593	197,824	103.3%	38,319	104
Joypurhat	6	3,941	2,140	322	2,462	62.5%	13.1%	410	628,973	552,530	87.8%	104,829	224
Khulna	4	2,166	1,417	469	1,886	87.1%	24.9%	472	907,676	892,695	98.3%	226,919	473
Kurigram	9	4,406	3,322	1,470	4,792	108.8%	30.7%	532	1,337,372	1,362,870	101.9%	148,597	284
Kushlia	4	2,521	1,346	545	1,891	75.0%	28.8%	473	536,902	515,708	96.1%	134,226	273
Lalmonirhat	1	1,330	644	186	830	62.4%	22.4%	830	98,481	94,325	95.8%	98,481	114
Madaripur	6	2,892	2,258	572	2,830	97.9%	20.2%	472	875,341	655,117	74.8%	145,890	231
Magura	4	1,061	806	154	960	90.5%	16.0%	240	173,345	151,199	87.2%	43,336	157
Meherpur	8	2,007	1,922	546	2,468	123.0%	22.1%	309	324,427	360,135	111.0%	40,553	146
Naogaon	10	4,168	3,105	803	3,908	93.8%	20.5%	391	1,094,026	1,100,902	100.6%	109,403	282
Narail	9	3,266	2,093	660	2,753	84.3%	24.0%	306	560,140	596,527	106.5%	62,238	217
Natore	7	3,206	2,322	519	2,841	88.6%	18.3%	406	748,687	655,224	87.5%	106,955	231
Nilphamari	8	2,939	1,333	749	2,082	70.8%	36.0%	260	630,591	617,741	98.0%	78,824	297
Pabna	4	2,970	2,820	512	3,332	112.2%	15.4%	833	623,118	593,069	95.2%	155,780	178
Panchagar	7	2,955	1,661	541	2,202	74.5%	24.6%	315	563,076	598,550	106.3%	80,439	272
Patuakhali	10	3,786	2,329	1,073	3,402	89.9%	31.5%	340	2,012,325	1,842,342	91.6%	201,233	542
Pirojpur	12	6,148	4,337	1,230	5,567	90.5%	22.1%	464	2,470,955	2,498,429	101.1%	205,913	449
Rajbari	9	3,383	2,703	678	3,381	99.9%	20.1%	376	776,809	732,918	94.3%	86,312	217
Rajshahi	11	3,823	2,713	532	3,245	84.9%	16.4%	295	1,442,662	1,437,201	99.6%	131,151	443
Rangpur	8	3,753	1,481	758	2,239	59.7%	33.9%	280	522,398	477,869	91.5%	65,300	213
Satkhira	7	2,407	1,743	457	2,200	91.4%	20.8%	314	663,879	663,905	100.0%	94,840	302
Shariatpur	9	4,773	3,983	988	4,971	104.1%	19.9%	552	1,763,014	1,606,456	91.1%	195,890	323
Sirajganj	8	5,620	3,457	1,088	4,545	80.9%	23.9%	568	1,053,016	1,001,602	95.1%	131,627	220
Thakurgaon	7	1,797	671	260	931	51.8%	27.9%	133	190,816	181,638	95.2%	27,259	195
Average	8	3,418	2,371	758	3,129	82.7%	24.2%	413	971,804	907,818	93.4%	128,417	290

(3) Community-based Projects

From the success stories of community-based projects, the Team has found that 20 to 30 villagers invested for a gram level earthen dam project in *Sherpur* District about Tk. 240,000 every season for nine years. In case of a gram level DTW project in *Mymensingh*, 35 villagers invested Tk. 350,000. The amount is almost as much as the target amount of beneficiary contribution in *Chapai Nawabganj* District.

The water fee of the earthen dam project in *Sherpur* District is Tk. 800/acre, and that of the DTW project in *Mymensingh* District is Tk. 140/Katha (Tk. 1,750/cre). The investment, water fee, construction wages and who work as day laborer etc. were decided by *shomaj* of *matabbors* and villagers have had no serious problems of investment nor collecting water fees.

The interviews showed that more than 20% of the poorer households in the villages could be female-headed. Also more than half of the population is usually landless and poor. The figure could be as high as 90% in some grams.

Women have much less options and opportunities for cash income in the villages. If they are not lucky enough to be able to work in the forest or in the paddy field, the best they can do is

to find temporary earthen work, work as a maid (usually 40 kg of rice per month plus three meals) or as a hawker (could be Tk. 30-40/day).

(4) Recommendations

It seems to be very difficult for poor families, especially female-headed families, to contribute Tk. 300, sometimes more than Tk. 1,000, in cash to join WMA. They might not be the direct beneficiaries of the subprojects either if they are landless. On the other hand, it is not difficult for villagers to invest Tk. 300,000 at gram level if they are community-based projects, the decision was made through *shomaj*, and landowners, who are more likely the real direct beneficiaries of subprojects, invest and pay the water fee. Therefore:

- 1) To exempt poor landless farmers, especially female-headed households, from cash contribution to join WMA.
- 2) To introduce progressive cash contribution system based on gram level decision.
- 3) To charge operation and maintenance fee solely on landowners' accounts.
- 4) To include community-based water resources development projects into WMAs under SSWRDSP-2 even if they are not selected as subprojects.
- 5) To make the relation between WMA and UP clear. The advisory roll of UP for WMA should be promoted.

Table 5.4.1 Verified Subprojects with Prioritization in Jamalpur District (1/3)

Upazila	Proposed Union	SP. ID	Title	Type	Gross Area (ha)	BWDB Project	Implementation as SP for SSWRD	
							Priority	Remarks
Bakshigonj	Bagarchar	33907010	Sharmara Ramrampur-Taliapara Embankment SP	FM	511	Flood Control Embankment.	A	
	Sadhurpara	33907020	Sadhurpara SP	FMDI	786	None	B	
	Bakshigonj	33907040	Khorakhali Khal SP	DIWC	1,186	None	C	
	Merurchar	33907030	Bhoti Kheyar Char- Kathatoli Jhora SP	DIWC	643	No	D	Further examination to be required
	Nilakshmia	33907070	Kokra Beel SP	DIWC	765	None	D	Further examination to be required
	Dhanua Kamalpur	33907050	Ramcon-Shanathpara-Lowchapra Jharna SP	DIWC	1,818	None	L	Benefited area more than 1,000 ha
	Battajore	33907060	Durgadaha-Kuri Beel SP	DI	1,360	None	L	Benefited area more than 1,000 ha
Dewangonj	Char Amkhaaoa	33915030	Shananda Bari - Moulavir Char Embankment SP	FM	722	None	A	
	Par Ramrampur	33915050	Lukajura Mora River SP	DIWC	620	None	B	Rubber dam
	Dewangonj	33915080	Gamaria-Tilakpur Embankment SP	FM	651	None	B	
	Dangdhara	33915010	Tinthopa Beel and Kauniar Char River SP	FMDIWC	1,058	None	C	
	Hatibhanga & Par Ramrampur	33915041	Pakra Chara Beel - Porabhita Embankment SP	FMDIWC	711	None	C	
	Chikajani & Chukaibari	33915072	Kajla Para - Horindhara and Horindhara Embankment SP	FM	710	None	C	
	Dangdhara	33915020	Harua Bari - Piarer Chara Beel SP	FMDIWC	539	None	D	Further examination to be required
	Bahadurabad	33915060	Jhalor Char - Sardar Para Embankment SP	FMDI	622	None	D	Further examination to be required
Islampur	Noapara	33929060	Kajla-Koritar Embankment SP	FM	705	Flood Controlling Embankment	A	
	Belgachha.	33929030	Ghutail-Shorabtha-Jarultala Embankment SP	FM	243	None	B	
	Gaibandha	33929100	Shialdaha Khal SP	WC	316	None	B	
	Chinaduli & Islampur	33929040	Baliadaha Khal and Bamna Beel, Panchabahala S/P	DIWC	1,121	None	C	
	Palabandha	33929080	Batikamari Beel SP	FMDIWC	827	None	C	
	Goalerchar	33929090	Goalerchar SP	FMDI	567	None	C	
	Char Putimari & Shyampur of Melandaha	33929130	Degreeerchar and Amdanga - Kazaikata - Uttar Baluchar SP	FMDIWC	884	None	C	
	Sapdhari	33929070	Akandapara Beel SP	FM	360	None	D	Further examination to be required
	Kulkandi & Patharsi	33929010	Katakhali Khal, Baka-Hoholia-Deli Khal SP	DIWC	1,580	Flood Controlling Embankment outside the SP Area	L	Benefited area more than 1,000 ha
	Char Goalini & Gaibandha	33929120	Uttar Goalini, Dattapara-Dosani Khal Embankment SP	FMDIWC	1,245	None	L	Benefited area more than 1,000 ha

Table 5.4.1 Verified Subprojects with Prioritization in Jamalpur District (2/3)

Upazila	Proposed Union	SP_ID	Title	Type	Gross Area (ha)	BWDB Project	Implementation as SP for SSWRD	
							Priority	Remarks
Jamalpur Sadar	Ghoradhap	33936120	Nolikhali - Borobila SP	FMDIWC	792	None	A	
	Kendua	33936150	Satkura Khal SP	DI	230	None	B	
	Meshta	33936160	Sadarbari Khal SP	DIWC	564	None	B	
	Digpaith	33936040	Aira - Tarar Bhita Beel SP	FMDIWC	246	None	C	
	Shahbajpur	33936060	Banar Shashakhali Khal SP	DI	800	None	C	
	Ranagachha	33936100	Banar Khal SP	DI	724	None	C	
	Banschara	33936111	Airakuri - Jhaldhara - Zigatola Beel SP	FMDIWC	346	None	C	
	Banschara	33936112	Shankhola Khal SP	FM	208	None	C	
	Lakshmirchar	33936090	Sutir Khal SP	DIWC	631	Embankment from Char Guzarla to Char Jathalhapur	D	Further examination to be required
	Tulshirchar	33936130	Chalta - Puber Beel SP	FMDI	100	Manikerchar Embankment Project	D	Further examination to be required
	Narundi	33936143	Dhiakhola - Mirapur Beel SP	DIWC	426	None	D	Further examination to be required
	Digpaith, Shahbajpur & Titpalla	33936030	Bongshai Mora River, Maguri - Paiska Beel, Bamonji Beel SP	FMDIWC	2,647	None	L	Benefited area more than 1,000 ha
	Sripur	33936070	Nasna - Shalika Khal SP	DIWC	1,366	None	L	Benefited area more than 1,000 ha
	Sharifpur	33936080	Banar Khal SP	DIWC	1,428	None	L	Benefited area more than 1,000 ha
	Itail	33936141	Bokhari Beel, Doubail - Hugli Beel SP	FMDIWC	1,902	BWDB sluice gate	L	Benefited area more than 1,000 ha
	Digpaith & Rashidpur	33936190	Gaila Khal, Soniakhal SP	FMDI	1,223	None	L	Benefited area more than 1,000 ha
Meshta	33936170	Please Refer to SP33985050 of Sarishabari/Jamalpur						
Meshta	33936180	Please Refer to SP33985060 of Sarishabari/Jamalpur						
Madargonj	Char Pakerdaha	33958010	Kayali Kandi - Char Gobindo SP	FMDI	1,069	None	A	
	Gunaritala & Karaichhara	33958020	Char Nagar - Bhang Bari - Bhelamari Embankment SP	FM	999	None	B	
	Adarbhita & Siduli	33958060	Bharabatakar - Char Dhudia, Char Madangopal - Char Dhudhiagacha Embankment SP	FM	1,092	1 km embankment at south of proposed regulator	D	Further examination to be required
	Adarbhita & Balijuri & Jorekhali	33958080	Koira Golabari Ghat - Dakatia, Khorka Beel, Khil Kati - Char Golabari, Jorekhali - Baroipara Embankment SP	FM	1,787	None	L	Benefited area more than 1,000 ha
Melandah	Nayanagar	33961910	Dhamala Beel SP	FM	159	None	A	
	Fulkocha	33961050	Guija-Baida Khal SP	DI	421	None	B	
	Adra	33961041	Napithkhali-Challa khali, SP	FMDI	846	None	C	
	Fulkocha & Ghosherpara	33961060	Chinashoka-Moragangi Khal, Ghosherpara SP	FMDI	1,019	None	C	
	Char Banipakuri	33961110	Kalihari Beel SP	FMDIWC	525	None	C	
	Mahmudpur	33961010	Imampur Baniabari, Mahmudpur-Khabulia, Takimari-Makhla Khal Embankment SP	FMDI	699	None	D	Further examination to be required
	Jhaugara	33961080	Roumari Khal SP	FMDI	134	None	D	Further examination to be required
	Nayanagar	33961100	Chatla Bell SP	FM	149	None	D	Further examination to be required
	Durmut & Kulia & Nangla	33961044	Hutijan Beel-Sitani Beel, Boidakhali, Madardaha Khal SP	DI	2,427	None	L	Benefited area more than 1,000 ha

Table 5.4.1 Verified Subprojects with Prioritization in Jamalpur District (3/3)

Upazila	Proposed Union	SP_ID	Title	Type	Gross Area (ha)	BWDB Project	Implementation as SP for SSWRD	
							Priority	Remarks
Sarishabari	Dowail	33985110	Chaparkona Purbachar Rothkhola SP	FM	182	Embankment along the right bank of the Jhenai River	A	
	Mahadan	33985080	Baila Beel Khal SP	DIWC	962	None	B	
Sarishabari & Jamalpur Sadar	Bhatara & Mesta	33985517	Fularpar-Fulbaria Embankment, Chatal Beel SP	FMDIWC	744	None	B	
Sarishabari	Sarishabari Pourashava	33985070	Kamrabad-Konabari SP	FM	226	Embankment along the bank of the Jhenai River	C	
	Aona	33985090	Ponchashi-Kabaribari Embankment SP	FM	929	Flood Control Embankment	C	
	Pogaldigha	33985230	Takuria-Malipara Beel SP	FM	728	None	C	
Sarishabari & Jamalpur Sadar	Bhatara & Mesta	33985618	Hollikhal, Shaplenja Beel SP	DIWC	933	None	C	
Sarishabari	Satpoa	33985010	Satpoa Embankment SP	FM	293	Embankment to the southeast of the SP	D	Further examination to be required
	Kamrabad	33985040	Kamrabad-Konabari SP	FM	928	Flood Control Embankment	D	Further examination to be required
	Pingna	33985100	Pingnabazar-Kabulibari Embankment SP	FM	186	Embankment to the northeast, transferred to LGED in 1994	D	Further examination to be required

Table 5.4.2 Verified Subprojects with Prioritization in Kishoreganj District (1/4)

Upazila	Union Proposed	SP_ID	Title	Type	Gross Area (ha)	BWDB Project	Implementation as SP for SSWRD	
							Priority	Remarks
Austagram	Khoyerpur Abdullahpur	34802120	Moraghooper Khal SP	WC	300	None	A	
	Kastail	34802030	Pedula - Zia Khal SP	DIWC	677	None	B	
	Austagram Sadar	34802041	Pathairbanda - Narsing Purbabad - Barahaor Khal SP	WC	540	None	B	
	Deoghar	34802010	Noli Khal SP	WC	550	Modkhola-Bhairagir Char Sub-Project	C	
	Deoghar	34802020	Boro Khal SP	WC	136	Modkhola-Bhairagir Char Sub-Project	C	
	Austagram Sadar	34802042	Beelbolli Beel SP	DIWC	699	None	C	
	Banglapara	34802050	Goja Khal and Jora - Charer Beel SP	FMWC	240	None	C	
	Kalma	34802060	Patirdia Khal SP	WC	134	None	D	Further examination to be required
	Kalma	34802070	Tofa Beel SP	FMWC	200	None	D	Further examination to be required
	Khoyerpur Abdullahpur	34802080	Pashkona - Saibeela Khal SP	FMWC	851	None	D	Further examination to be required
	Khoyerpur Abdullahpur	34802090	Cheenanager Khal SP	WC	179	None	D	Further examination to be required
	Adampur	34802100	Boitakhali Khal SP	WC	514	None	D	Further examination to be required
	Purba Austagram	34802111	Ekurdia - Borokhal - Badaghat Khal SP	WC	417	None	D	Further examination to be required
Purba Austagram	34802112	Kalikurer Bak Khal SP	WC	166	None	D	Further examination to be required	
Bajitpur	Dighirpar	34806130	Naldir - Chandair Beel SP	DIWC	496	Humaipur Haor Project	A	
	Gazir Char	34806060	Ghagotia Khal SP	WC	217	None	B	
	Dilalpur	34806070	Nagner Khal SP	WC	333	None	B	
	Humaipur	34806100	Baruner Khal SP	WC	282	Humaipur Haor Project	C	
	Pirijpur	34806010	Rupar Khal SP	DI	81	None	C	
	Halimpur	34806020	Boiddonodir Khal SP	DIWC	168	None	C	
	Hilachia & Sararchar	34806031	Tejkhali Khal, Agarpur Khal SP	WC	958	None	C	
	Maijchar	34806090	Boro Khal SP	FMDIWC	301	Humaipur Haor Project	C	
	Hilachia	34806050	Guja Beel SP	WC	205	None	D	Further examination to be required
	Baliardi	34806080	Barudia Khal SP	WC	106	None	D	Further examination to be required
Dighirpar & Koilag	34806120	Chamakpur Beel - Pourashava Khal, Khadangir Khal SP	DIWC	741	None	D	Further examination to be required	
Bhairab	Gazaria	34811050	Tatal Char Khal SP	DI	200	None	A	
	Aganagar	34811040	Nalir Khal SP	DIWC	117	None	B	
	Kalikaprasad	34811010	Kalikaprasad Khal SP	FMDIWC	260	None	B	
	Sadekpur	34811070	Bajmadorer Beel SP	DIWC	126	None	C	
	Shimulkandi	34811030	Kodalkati Khal SP	WC	501	None	C	
	Shibpur	34811020	Bhatikrishnanagar Khal and Beel SP	DIWC	230	None	D	Further examination to be required
	Srinagar	34811060	Horar Khal and Beel SP	FMDIWC	277	None	D	Further examination to be required

Table 5.4.2 Verified Subprojects with Prioritization in Kishoreganj District (2/4)

Upazila	Union Proposed	SP_ID	Title	Type	Gross Area (ha)	BWDB Project	Implementation as SP for SSWRD	
							Priority	Remarks
Hossainpur	Araibaria	34827030	Hossainpur Drainage Canal SP	FM & DI	304	None	A	
	Sahedal	34827050	Rohimpur - Chapra Beel SP	DIWC	427	None	B	
	Sahedal	34827040	Narasunda River (Kawna - Rampur - Char Pumdj) SP	DIWC	584	None	C	
	Gobindapur & Pumdj	34827060	Jhulupuri Khal, Borai Khali Khal SP	DIWC	2,736	None	L	Benefited area more than 1,000 ha
	Araibaria & Jinari & Sidhla	34827090	Char Bishnathpur - Char Jamail Mosque, Hazipur Bazar - Porabaria - Char Bishnathpur Embankment SP	FM	1,461	BWDB embankment at the South boundary	L	Benefited area more than 1,000 ha
	Gobindapur	34827070	Please Refer to SP34849010 of Sadar/Kishoreganj					
	Gobindapur	34827080	Please Refer to SP36172050 of Nandail/Mymensingh					
Itna	Raituti	34833021	Suair-Pachassia SP	FMDI	624	None	A	
	Mriga	34833120	Bamon Digha SP	FMDIWC	502	None	B	
	Joysiddhi	34833130	Nali-Azur Beel SP	FMDIWC	556	None	B	
	Raituti	34833010	Hulia Khal SP	FMDIWC	321	None	D	
	Elongjuri	34833080	Kaktangur SP	FMDIWC	416	None	C	
	Badla	34833022	Shizly Khal SP	FMDI	636	None	C	
	Badla	34833050	Saluar Khal SP	DIWC	649	None	C	
	Elongjuri	34833070	Naluya-Mukti Beel SP	FMDIWC	385	None	C	
	Itna	34833090	Geol Khal SP	FMDIWC	249	None	C	
	Joysiddhi	34833140	Dudbon - Duair Beel SP	FMDIWC	856	None	C	
	Dhanpur	34833100	Katakhal SP	FMDIWC	359	None	D	
	Itna	34833060	Bonpur-Mirakandi SP	FMWC	319	None	D	Further examination to be required
	Mriga	34833110	Jhorkandi-Ujan Rajibpur - Vera Mohan SP	FMDIWC	333	None	D	Further examination to be required
	Dhanpur	34833150	Bishnupur SP	FMDIWC	313	None	D	Further examination to be required
Baribari & Chauqanga	34833040	Baribari, Moara-Kamalbhog Embankment SP	FMDI	1,679	None	L	Benefited area more than 1,000 ha	
Karimganj	Gundhar	34842150	Singua River (Fazil Khali to Chulli) SP	DIWC	623	None	A	
	Noabad	34842070	Kumuria - Hugli Beel SP	DIWC	628	None	B	
	Kadir Jangal	34842030	Aamayna Bari - Pachahara Beel SP	DIWC	837	None	B	
	Dehunda	34842110	Khamar Dehunda Boro Beel SP	DIWC	143	None	B	
	Guzadia	34842010	Kala Huliya Beel SP	DIWC	132	None	C	
	Baragharia	34842080	Joka - Gudhar Khal SP	DIWC	824	None	C	
	Niamatpur	34842120	Narasunda river (Sakhua Bridge to Nakasindi) SP	FMDI	855	None	C	
	Niamatpur & Sutar Para	34842130	Rohabaid - Charitolla Beel, Rajani Khal SP	FMDIWC	1,106	None	C	
	Sutar Para	34842160	Pangay Beel SP	FMDIWC	329	None	C	
	Guzadia	34842020	Singroil Beel SP	FMDIWC	251	None	D	Further examination to be required
	Jafrabad	34842040	Narasunda river (Subandi to Jafrabad Nayapara), Baqaria Khal SP	FMDIWC	841	None	D	Further examination to be required
	Karimganj	34842090	Mogli - Bairdoli - Tinkuri - Peruya - Talla Beel SP	DIWC	429	None	D	Further examination to be required
	Dehunda	34842100	Sakhua Khal SP	FMDI	329	None	D	Further examination to be required
Joyka & Noabad	34842061	Please refer to SP34876050 of Nikli/Kishoreganj						

Table 5.4.2 Verified Subprojects with Prioritization in Kishoreganj District (3/4)

Upazila	Union Proposed	SP_ID	Title	Type	Gross Area (ha)	BWDB Project	Implementation as SP for SSWRD	
							Priority	Remarks
Katiadi	Jalalpur	34845020	Arial Khan River Embankment SP	FM	655	None	A	
	Lohajuri	34845030	Char Kaunia Khal - Latia Badh Khal SP	FM	570	None	B	
	Mosua	34845010	Sorbomongal - Meratola Khal and Betal Doba Khal SP	DI	1,033	Ramdi - Digambordi Embankment Project	C	
	Banagram	34845060	Naogaon - Viti Para SP	FM	616	None	D	Further examination to be required
	Shahasram Dhuldia	34845070	Phulbaria D. C. Road - Singua River Embankment SP	FM	386	None	D	Further examination to be required
	Kargaon	34845080	Jokerpur RHW Road - Haria Bari (Pachuli Para) Embankment SP	FM	258	None	D	Further examination to be required
	Achmita & Chandpur & Mumurdia	34845043	Topai Khal, Manik Khali Khal, Topai - Magura Khal SP	DIWC	3,461	None	L	Benefited area more than 1,000 ha
Kishoreganj Sadar	Baulai	34849070	Dhubajora - Paniumra - Phul Mogra - Bor Mogra - Machua Beel SP	DIWC	952	None	A	
	Dana Patuli & Korsha Kariail	34849060	Khaikhodia Khal SP	DIWC	705	None	B	
	Latibabad	34849021	Makua - Vashker Khali, Hutzra Ghati and Borai Ghati Khal SP	DI	440	None	C	
	Rashidabad & Gobindapur	34849010	Barai Khali Khal, Panan Beel SP	FMDI WC	1,852	Barai Khali Khal Sub-Project. There exist one regulator on BWDB embankment.	L	Benefited area more than 1,000 ha
	Mahinanda & Maji Khapan & Musulli	34849022	Anar - Vashker Khila - Kaliakuri Khal, Dhurua Khal SP	DIWC	2,832	Betal - Sukajuri Embankment SP	L	Benefited area more than 1,000 ha
	Binnati & Chauddasata	34849030	Haidolia - Joyonti Khal SP	DI	2,216	Re-excavation of Singua River project. There exist one 2-vent damaged regulator at the downstream.	L	Benefited area more than 1,000 ha
	Jasodal & Maria	34849040	Maria - Narsunda Khal SP	DI	2,110	None	L	Benefited area more than 1,000 ha
	Korshakarail	34849050	Nagdora Khal SP	WC	1,284	None	L	Benefited area more than 1,000 ha
Kular Char	Ramdi	34854020	Kalkara Beel SP	DI	184	None	A	
	Faridpur	34854050	Faridpur-Akanbaid Khal, Ali Nagar East Faridpur Embankment SP	FMDI	615	Katkhal Sluice Gate	C	
	Goboria Abdullahpur	34854010	Joaria Beel SP	DIWC	189	None	D	Further examination to be required
	Chaysuti	34854070	Tia Kata Bridge - Lalpur Embankment SP	FM	240	None	D	Further examination to be required
	Chaysuti & Osmanpur	34854090	Tia Kata Bridge - Kapasati Embankment, Dudh Katar Khal SP	FMDI	417	None	D	Further examination to be required
	Chaysuti & Salua	34854040	Ganak Khali Khal, Jutir Khal - Napit Khali Khal SP	DIWC	2,223	BWDB sluice gate at downstream	L	Benefited area more than 1,000 ha
Mithamain	Boirati	34859050	Char Khat Khal - Baher Char Village extending up to Taleb Ali's House Embankment SP	FM	902	None	A	
	Gopedighi	34859020	Ghorbhangha River SP	WC	729	None	B	
	Gopedighi	34859010	Gofra Khal - Bekhuya Khal SP	WC	168	None	D	Further examination to be required
	Mithamain Sadar	34859030	Jail Bhangha Khal SP	FMDI	457	None	D	Further examination to be required
	KhatKhal	34859040	Kaisar Village - Mora Nadi via Khat Kha Embankment SP	FM	515	None	D	Further examination to be required
	Dhaki	34859060	Pathorkandi SP	FM	674	None	D	Further examination to be required
	Ghagra	34859070	Siahara - Maliker Dargah Embankment and Chamakpur - Bhara Flood Wall SP	FM	956	None	D	Further examination to be required
	Keorjore	34859080	Pathorkandi - Kanchampur Bazar - Raniganj Embankment and Maliker Dargah - Keorjore Bazar Flood Wall SP	FM	1,371	None	L	Benefited area more than 1,000 ha

Table 5.4.2 Verified Subprojects with Prioritization in Kishoreganj District (4/4)

Upazila	Union Proposed	SP_ID	Title	Type	Gross Area (ha)	BWDB Project	Implementation as SP for SSWRD	
							Priority	Remarks
Nikli	Singpur	34876160	Mirkhali Khal SP	FM	353	None	A	
	Nikli	34876070	Sojoni Khal and Roda Khal SP	WC	371	None	B	
	Nikli	34876140	Horchoki Beel SP	WC	384	None	B	
	Chattiarchar & Nikli	34876080	Doparpar - Shapmari Khal, Borolia Khal SP	WC	926	None	C	
	Karpasha	34876020	Shaharmul Imam Khal SP	WC	197	None	C	
	Karpasha	34876030	Mojlishpur Kata Khal SP	WC	64	None	C	
	Singpur	34876060	Jailbhanga - Ghagani Khal SP	DIWC	1,008	None	C	
	Chattiarchar	34876100	Cheenardir Khal SP	DIWC	247	None	C	
	Singpur	34876150	Lalpur Khal SP	FM	441	None	C	
	Dampara	34876040	Bannar Khal SP	DIWC	546	None	D	Further examination to be required Large navigation gates
	Chattiarchar	34876130	Chipalya Khal SP	FM	200	None	D	Further examination to be required
	Gurai & Jaraitola	34876120	Beri Khal, Roar Beel SP	DIWC	1,430	None	L	Benefited area more than 1,000 ha
Nikli & Karingganj	Dampara, Karpasha, Joyka & Noabad	34876050	Narsunda Khal, Baniajan Khal, Jola - Katarcha - Kanjia Beel, Bhatishwar Kha SP	DIWC	4,127	None	L	Benefited area more than 1,000 ha
Pakundia	Egarasindur	34879050	Holholia Khal SP	FMDIWC	793	Molkhola - Boiragir Char Embankment Project	A	
	Charfaradi & Pakundia	34879020	Narsunda Khal, Anwar Khali - Molongsha - Jugir Gang Khal SP	DIWC	876	Embankment, Regulator	B	
	Charfaradi	34879040	Borsha Gati Khal SP	DIWC	811	None	C	
	Chandipasha	34879060	Biharir Khal SP	DIWC	261	None	C	
	Jangalia	34879010	Noluadoba - Boddho Doba Khal SP	DIWC	561	Embankment and regulator	D	Further examination to be required
	Narandi	34879070	Salonkajoka Beel SP	DIWC	124	None	D	Further examination to be required
	Narandi	34879080	Purabaria Khal - Choto Ajoldi Khal SP	DIWC	257	None	D	Further examination to be required
	Hosendi & Patuaghanga	34879092	Nobagia, Patuabhanga Embankment SP	FM	561	None	D	Further examination to be required
Burudia	34879101	Nobagya Beel, Singua Khal, Nola Beel SP	DIWC	611	None	D	Further examination to be required	
Tarail	Dhala	34892040	Sekandar Nagar SP	FMDIWC	642	None	A	
	Tarail Sachail	34892020	Kaiknar Beel SP	FMDIWC	414	None	C	
	Taljanga	34892010	Bethail River SP	DIWC	540	None	D	Further examination to be required, Intercept major river
	Rauti	34892030	Daudpur SP	FMDIWC	670	None	D	Further examination to be required
	Digdair	34892060	Juarial Khal, Kobadia Khal SP	FMDIWC	586	None	D	Further examination to be required
	Damiha	34892070	Baruk - Becha - Boro Beel SP	FMDIWC	454	None	D	Further examination to be required
	Jawar	34892080	Makran Beel SP	FMDIWC	623	None	D	Further examination to be required

Table 5.4.3 Verified Subprojects with Prioritization in Mymensingh District (1/5)

Upazila	Union Proposed	SP_ID	Title	Type	Gross Area (ha)	BWDB Project	Implementation as SP for SSWRD	
							Priority	Remarks
Bhaluka	Uthura	36113100	Bajajora Khal SP	WC	536	None	A	
	Kachina	36113030	Shalda Khal SP	WC	419	None	B	
	Bhaluka & Bharadoba	36113061	Chullar Khal - Afainya/Harar Khal SP	DIWC	940	Existing 5-vent regulator	C	
	Birunia	36113080	Langolhata Khal SP	DIWC	896	BWDB Embankment	C	
	Meduary	36113040	Nijhura Khal SP	FMDI	550	None	D	Further examination to be required
	Rajai	36113090	Urahati SP	FM	220	Andijuri Pilot Project (Both LGED and BWDB's Projects exist there)	D	Further examination to be required
	Dakatia & Uthura & Khaila	36113020	Neora Khal - Bogajan Khal SP	DIWC	4,953	None	L	Benefited area more than 1,000 ha
	Habirbari & Mallikbari	36113051	Lauti Khal SP	DIWC	1,693	Existing regulator	L	Benefited area more than 1,000 ha
	Dhitpur	36113070	Please refer to SP 36194140 of Trishal/Mymensingh					
Dhobaaura	Dakshin Majipara	36116030	Shashi Khal SP	DIWC	292	None	A	
	Ghoshgaon	36116020	Ghoshgaon-Bhuiyanpara SP	DIWC	1,135	None	B	
	Baghber	36116010	Tarai Khal SP	DIWC	757	None	C	
	Guatola	36116060	Gogra Beel SP	FMDIWC	126	None	D	Further examination to be required
	Dhobaaura	36116040	Tarai - Satra Khali SP	FMDIWC	5,708	None	L	Benefited area more than 1,000 ha
	Gamaritola & Porakandulia	36116050	Mora Nitai Khal SP	DIWC	1,503	None	L	Benefited area more than 1,000 ha
Fulbaria	Balian	36120010	Kalmina Khal SP	FMDI	567	None	A	
	Bakta	36120100	Baza Beel Khal SP	DIWC	157	None	B	
	Fulbaria	36120110	Naligang Khal SP	FMDIWC	217	Re-excavation of Ishail Beel Khal	B	
	Radhakani	36120140	Boga-ora Khal SP	FMDIWC	393	None	B	
	Naogaon	36120030	Foliar Khal SP	FMDI	783	None	C	
	Enayetpur	36120050	Thanar Khal SP	FMWC	729	None	C	
	Achim Patuli	36120070	Doradia SP	DIWC	860	None	C	
	Kaladaha	36120080	Ghazakuri Khal SP	FMDI	846	None	C	
	Bakta	36120090	Salnar Khal SP	DIWC	605	None	C	
	Deokhola	36120120	Kalibazail-Laxmipur SP	DI	1,137	None	C	
	Fulbaria, Radhakani	36120130	Chhagalchira Khal - Radher Khal SP	FMDIWC	796	Re-excavation of Ishail Beel Khal	C	
	Rangamati	36120040	Bara Beel SP	FMDI	589	Bara Beel FCD	D	Further examination to be required
	Kushmail & Pulijana	36120022	Digambori Khal - Hizla Khal SP	FMDIWC	1,545	None	L	Benefited area more than 1,000 ha
Bhabanipur	36120060	Sharashati Khal SP	DIWC	1,240	None	L	Benefited area more than 1,000 ha	
Gaffargaon	Rasulpur	36122010	Bangalil Khal - Chat Beel Khal SP	FMDIWC	629	None	A	
	Masakhali	36122060	Ubakuri Khal SP	DI	237	None	B	
	Gaffargaon	36122070	Bhatiar Beel SP	FMDIWC	1,067	None	B	
	Jessor	36122020	Kura Beel Khal SP	FMDIWC	232	None	C	
	Barabaria	36122030	Charipara Khal SP	FMDI	483	None	C	
	Masakhali	36122050	Kuti Beel Khal and Adbander Khal SP	DI	325	None	C	
	Char Algi	36122110	Char Algi SP	FMDI	1,198	Char Algi Flood Embankment	C	
	Raona	36122130	Julnar Khal SP	DI	439	None	C	

Table 5.4.3 Verified Subprojects with Prioritization in Mymensingh District (2/5)

Upazila	Union Proposed	SP_ID	Title	Type	Gross Area (ha)	BWDB Project	Implementation as SP for SSWRD	
							Priority	Remarks
Gaffargaon	Saltia	36122040	Rouha CAD SP	CAD	412	None	D	Further examination to be required
	Paithal	36122080	Dubail - Doulpara - Barai SP	FMDIWC	918	Upper Sila FCD Project	D	Further examination to be required
	Nigari	36122090	Dholair Khal SP	FMDI	217	Dholair FCD Project	D	Further examination to be required
	Tengaba	36122100	Boumara - Khaluner Khal SP	FMDIWC	2,472	None	L	Benefited area more than 1,000 ha
	Datter Bazar & Langair & Panchbag & Usthi	36122121	Damini Khal - Bauleswar River Siuli - Simakhali Khal SP	FMDIWC	5,938	Bauleswar Drainage SP Simakhali Khal Project	L	Benefited area more than 1,000 ha
Gouripur	Mailakanda	36123020	Bogadia Khal SP	DI	691	None	A	
	Achintapur	36123040	Suria River SP	DIWC	464	None	B	
	Dowhakhola	36123062	Angrail-Beel Kalia-Shalpa Dowhakhola-Kaladia Khal	FMDI	1,163	None	B	
	Sidhla	36123010	Bora Beel -Sidhlong Beel Khal SP	FMDI	668	None	C	
	Bokainagar	36123070	Maizga Khal SP	FMDIWC	513	None	C	
	Gouripur	36123030	Lanka Khal SP	FMDI	2,079	None	L	Benefited area more than 1,000 ha
	Ramgopalpur	36123061	Mirkhali-Balloa Khal SP	DI	1,285	None	L	Benefited area more than 1,000 ha
	Maoha	36123050	Please Refer to SP 37247130 of Kendua/Netrakona					
Bhangnamari	36123090	Please Refer to SP 36131020 of Ishwarganj/Mymensingh						
Gouripur & Ishwarganj	Sahanati & Sohagi	36123080	Doyka Khal, Daya - Dalia Beel SP	DIWC	1,230	None	L	Benefited area more than 1,000 ha
Haluaghat	Bildora	36124090	Kala Anda - Jam Beel SP	FMDI	1,129	Auti to Futkai Ferryghat Embankment	A	
	Jugli	36124020	Tukiar Khal SP	WC	811	None	B	
	Dhara	36124050	Silka Khal SP	DI	703	None	B	
	Dhurail	36124040	Mora Kangsha SP	DIWC	1,147	None	C	
	Swadeshi	36124070	Swaseshi - Baushi SP	DI	523	Konapara-Futkai Embankment	C	
	Sakuai	36124080	Balijuri-Sakuail Embankment SP	FMDI	767	Batta-Otipara Embankment	C	
	Gazir Bhita	36124110	Shimulkuchi - Borak Ghoshgaon SP	WC	683	None	C	
	Bhubankura	36124010	Karaitala - Kumargati SP	WC	645	None	D	Further examination to be required
	Kaichapur	36124030	Boro Khal SP	DIWC	736	None	D	Further examination to be required
	Narail	36124120	Narail Rubber Dam SP	DIWC	951	None	D	Further examination to be required
	Amtoil	36124060	Kodiala - Nagla Khal SP	FMDI	1,666	Bahisimul-Sarchapur left Kangsha Embankment	L	Benefited area more than 1,000 ha
Haluaghat	36124100	Kuchandhara Khal SP	WC	1,229	None	L	Benefited area more than 1,000 ha	
Iswarganj	Atharabari	36131110	Dholai Beel - Kachamatia River Khal SP	DI	171	None	A	
	Sohagi	36131080	Doran Barabagh Khal SP	FMDI	522	None	B	
	Sarisha	36131100	Baugola - Dhalai Beel Khal, Bhangnamari SP	DI	821	None	B	
	Tarundia	36131030	Zia Khal SP	DI	772	None	C	
	Uchakhila	36131041	Bot Tol Beel SP	DIWC	633	None	C	
	Barahit	36131042	Shamara - Sakrail Beel Khal SP	DIWC	454	None	C	
	Iswarganj	36131070	Sinduk Khal SP	DI	384	None	C	
Atharabari	36131120	Dholeswari Khal SP	DI	515	None	C		

Table 5.4.3 Verified Subprojects with Prioritization in Mymensingh District (3/5)

Upazila	Union Proposed	SP_ID	Title	Type	Gross Area (ha)	BWDB Project	Implementation as SP for SSWRD	
							Prio rity	Remarks
Iswarganj	Magtola & Majjbag	36131051	Maga Khal - Katta - Dubdil - Hingua Beel SP	DIWC	1,357	None	L	Benefited area more than 1,000 ha
	Jatia & Majjbag	36131061	Bagjuri Khal - Kumuria Beel SP	DIWC	1,432	None	L	Benefited area more than 1,000 ha
	Sohagi	36131090	Please Refer to SP36123080 of Gouripur/Mymensingh					
Iswarganj & Gouripur	Rajibpur & Uchakhila & Bhangnamari	36131020	Char-Noapara - Char-Algis Embankment SP	FMDI	1,974	Embankment from Napiter Algi to Chandrapara	L	Benefited area more than 1,000 ha
Mymensingh Sadar	Dapunia	36152050	Kasma Beeler Khal SP	DI	172	None	A	
	Kushtia	36152010	Dari Kustia SP	DI	217	None	B	
	Borarchar	36152030	Char Ragabpur Embankment SP	FM	456	Flood Control Drainage Project	B	
	Kushtia	36152020	Ganginar Khal SP	DIWC	544	None	C	
	Ghagra	36152060	Indrajan Khal SP	DIWC	688	None	C	
	Paranganj	36152040	Sonadia SP	DIWC	219	None	D	Further examination to be required
	Sirta	36152080	Sirta SP	FMDI	952	Large scale flood control project by BWDB	D	Further examination to be required
	Char Ishwardia	36152090	Char Iswardia Embankment SP	FM	779	None	D	Further examination to be required
	Akua & Baera & Bhabakhali & Khagdahar	36152073	Akua Khal - Sailmari Khal - Pagaria River- Matium Khal SP	DIWC	4,621	None	L	Benefited area more than 1,000 ha
Char Nilakshia	36152100	Sree Khali SP	FMDIWC	1,531	None	L	Benefited area more than 1,000 ha	
Mukttagachha	Baragram	36165030	Tekhala - Nowdhara - Katajora Khal SP	DIWC	986	None	A	
	Daogaon	36165020	Khaila Beel SP	DIWC	615	Embankment & sluice gate (inoperative)	B	
	Kheruajani	36165050	Singra Khal SP	DI	839	None	B	
	Dulla	36165045	Kuripara Kuhur Khali Khal SP	DI	372	None	C	
	Ghoga	36165010	Haora Khal SP	DIWC	619	None	C	
	Kheruajani	36165060	Kejakuri Khal SP	DIWC	628	None	C	
	Basati & Kashimpur & Mankon	36165043	Baijana Khal, Kochua - Dholar Khal & Baijana Khal, Baril Beel & Aimon River SP	DIWC	3,549	Begunbari sluice gate	L	Benefited area more than 1,000 ha
Kumarghata & Tarati	36165071	Katakhali Khal - Gouri Khal SP	FMDI	1,286	Begunbari sluice gate	L	Benefited area more than 1,000 ha	
Nandail	Gangail	36172091	Betai River SP	DI	660	Embankment from Galtipara to Sundail via Nasratpur Bridge	A	
	Singrail	36172080	Bhedapuri - Narsunda Khal SP	DI	988	Baroikhali Sluice Gate to Dhakipara Embankment Project	B	
	Chandipasha	36172092	Dholeswari River SP	FMDI	513	Re-excavation of Dholeswari River	B	
	Pourashava	36172130	Borbori Beel SP	DIWC	218	None	B	
	Betagair	36172010	Char Lakshmidia to Char Uttar Bandh SP	FMDIWC	807	Ujanpara - Komorbhanga Embankment SP	C	
	Kharua	36172030	Komola Narendrapur Khal SP	DIWC	819	None	C	
	Sherpur	36172040	Brahman Khali Khal SP	DIWC	933	None	C	
	Achargaon	36172070	Noldighir Khal SP	DI	216	None	C	
	Rajgati	36172100	Rairar Khal SP	DI	890	Sukajuri Embankment Project	C	
	Achargaon	36172120	Tongi Khal SP	DI	719	None	C	
Moazzempur	36172020	Chengua Khal SP	FMDIWC	1,216	Re-excavation of Kath Mojha Khal	L	Benefited area more than 1,000 ha	

Table 5.4.3 Verified Subprojects with Prioritization in Mymensingh District (4/5)

Upazila	Union Proposed	SP_ID	Title	Type	Gross Area (ha)	BWDB Project	Implementation as SP for SSWRD	
							Priority	Remarks
Nandail	Nandail	36172060	Bolda - Gangina Beel SP	FMDIW C	1,604	Re-excavation of Khal Connecting Gozaria Beel to Jhalua Bridge	L	Benefited area more than 1,000 ha
	Musulli	36172110	Please Refer to SP34849022 of Sadar Kishoreganj					
Nandail & Hossainpur	Jahangirpur & Gobindapur	36172050	Tamni Beel - Kopaler Beel - Moral Beel, Bogar Khal SP	DIWC	1,467	Re-excavation of Rohila Khali River	L	Benefited area more than 1,000 ha
Phulpur	Bishka	36181170	Mesera Embankment SP	FM	690	None	A	
	Dhakua	36181120	Tukanda - Kathuri Embankment SP	FM	498	Excavation of Dhalai River	B	
	Kamargaon	36181130	Kamargaon - Kalika Ferryghat Embankment SP	FM	678	None	B	
	Galagaon	36181140	Dharakandi Khal SP	DI	519	None	B	
	Kakni	36181080	Pungai Bastala Khal SP	FMDIW C	948	None	C	
	Balikhani	36181090	Balikhani Khal SP	DIWC	300	None	C	
	Banihala	36181110	Digarkanda - Banihola Embankment SP	FM	594	Gazipara to Dieranadi Khal re-excavation and construction of embankment	C	
	Kamaria	36181152	Khoiyapuri Khal - Datter Khal SP	DI	516	None	C	
	Tarakanda	36181180	C&B Bridge - Dhalil Kanda Embankment SP	FM	476	Tarakanda-Rangsh a Nadi Embankment	C	
	Rahimgonj	36181050	Payari Rahimgonj Road - Beltali Bazar Embankment SP	FM	781	None	D	Further examination to be required
	Singheswar	36181060	Nishuniakanda Regulator SP	FM	745	Embankment from Kotura Kanda Alimuddin's House to Fazlul Haque's House	D	Further examination to be required
	Chandhara	36181010	Malijhee River SP	FM	1,261	None	L	Benefited area more than 1,000 ha
	Bhaitakandi, ambhadrapur & Payari	36181030	Kharia River, Rambhadrapur Eidgah Math - Beltali Embankment SP	FM	2,513	None	L	Benefited area more than 1,000 ha
	Phulpur	36181070	Fatehpur - Thakur Bakhai Embankment SP	FMWC	1,635	Kaziakanda to Moishraanda Embankment cum Road	L	Benefited area more than 1,000 ha
	Balia & Baola & Rupasi	36181102	Solonga - Boroikandia, Boroikandi - Medha, Due - Ghumgaon Embankment SP	FM	1,765	Dampara scheme Embankment from Basati to Ghumgaon	L	Benefited area more than 1,000 ha
Rampur	36181160	Bara - Bisundar - Burburia Beel SP	DIWC	1,420	None	L	Benefited area more than 1,000 ha	

Table 5.4.3 Verified Subprojects with Prioritization in Mymensingh District (5/5)

Upazila	Union Proposed	SP_ID	Title	Type	Gross Area (ha)	BWDB Project	Implementation as SP for SSWRD	
							Priority	Remarks
Trishal	Mokshapur	36194060	Medoari River Embankment SP	FMDI	851	None	A	
	Mathbari	36194040	Dubura Chara Beel SP	DIWC	376	None	B	
	Balipara	36194110	Dobadanga Khal SP	DIWC	555	None	B	
	Mathbari	36194050	Bolon - Dawhail - Kechuri - Gerakuri Beel SP	DIWC	721	None	C	
	Kanihari	36194090	Budhir Khal SP	DIWC	433	None	C	
	Mathbari	36194030	Murai Beel SP	DIWC	116	None	D	Further examination to be required
	Trishal	36194150	Dhalir Beel - Dari Beel SP	FMDIW C	339	None	D	Further examination to be required
	Dhanikhola	36194012	Nageshwari River SP	DI	1,484	None	L	Benefited area more than 1,000 ha
	Bailar, Kthal & Rampur	36194070	Dharar Khal, Kanthal, Katakali Khal - Higura Khal SP	DI	3,098	Sluice gate at downstream of Buka beel	L	Benefited area more than 1,000 ha
	Harirampur & Sakhua	36194131	South Kanda - Chater Ghat Embankment & Laittar Khal, Bairar Khal SP	FMDIW C	2,132	None	L	Benefited area more than 1,000 ha
Rampur	36194100	Please Refer to 36194070 of Trishal Mymensingh						
Trishal & Bhaluka	Amirabari & Dhitpur	36194140	Amirabari - Gopalpur, Shimulia Khal SP	DIWC	1,180	None	C	

Table 5.4.4 Verified Subprojects with Prioritization in Netrokona District (1/4)

Upazila	Union Proposed	SP_ID	Title	Type	Gross Area (ha)	BWDB Project	Implementation as SP for SSWRD	
							Prio rity	Remarks
Alpara	Sarmaisa	37204010	Pagla Beel SP	FMDI WC	532	None	A	
	Sonai	37204020	Monsurpur Embankment SP	FMDI	211	None	B	
	Sonai	37204030	Kawakhali Embankment SP	FMDI	365	None	B	
	Loneswar	37204040	Loneswar Embankment SP	FMDI WC	455	Not Functioning	C	
	Sukhari	37204070	Karimkhali Khal and Tarachapur-Gajra Embankment SP	FMDI	362	None	C	
	Baniajan	37204080	Baniajan Embankment SP	FM	388	None	C	
	Duaz	37204050	Ichamoti - Nurundi Khal SP	FMDI WC	919	None	D	Further examination to be required
Duaz	37204060	Nasir Khali Khal SP	FMDI WC	289	None	D	Further examination to be required	
Barhatta	Asma	37209090	Asma - Bagmara - Ujangaon - Rauha Beel SP	DI	690	Suigar Bundh Beel	A	
	Bausi	37209030	Dauki beel - Noa beel - Hara beel SP	DI	912	Suigar Bundh Beel	C	
	Roypur	37209010	Fakirabazar - Tegharia Bazar Embankment SP	FM	1,112	None	D	Further examination to be required
	Bausi	37209020	Kewrasi - Chandpur SP	FM	304	Suigar Bundh Beel	D	Further examination to be required
	Shahata	37209060	Gopalpur - Machihala SP	CAD	421	None	D	Further examination to be required for low lift pump O&M by beneficiaries
	Singdha	37209081	Singdha chowrastha bazar - Chandrapur, Alokdia - Dharan Bridge, Singdha primary school - Bhatipara bridge Embankment SP	FM	590	None	D	Further examination to be required
	Chhiram	37209050	Gangajuri - Shengram - Raoha beel - Chiram bazar khal - Kaunai river - Dubakhali - Chengram - Moshkali Haor Area SP	DIW C	1,285	Suigar Bundh Beel	L	Benefited area more than 1,000 ha
	Barhatta	37209070	Please Refer to SP 37263010 of Mohanganj/Netrakona					
Durgapur	Gaokandia	37218050	Someswani river embankment SP	FM	743	None	A	
	Durgapur Sadar.	37218021	Chandiaghona Mayanagar - Minkifande amol - Farangpara SP	WC	785	None	B	
	Kakairgara	37218070	Balach River (Bayra-Ura to Dakshin Lakshmipur) and Kolonja - Dewtokon via Gondaber Embankment SP	FMW C	781	River protection by BWDB	C	
	Kullagora	37218010	Bongal Khal SP	FM	630	None	C	
	Birishre	37218030	Nalia Khal- Kharogaon River SP	DIW C	512	Someswari Bank Protection	D	Further examination to be required
	Bakaljora & Birishre	37218060	Norikhali - Khabor, Lahirhi khal SP	DIW C	2,189	Someswari Bank Protection	L	Benefited area more than 1,000 ha
	Chandigarh	37218023	Kamarkhali river embankment SP	FM	1,254	None	L	Benefited area more than 1,000 ha
Durgapur & Kaimalanda	Chandigarh & Lengura	37218022	Atraikhali, Kowbari river embankment SP	FM	3,124	None	L	Benefited area more than 1,000 ha
Khatiajuri	Chakua	37238010	Surania-Dalimati (Chowtara) embankment SP	FM	289	Submersible embankment constructed by WDB & LGED	A	
	Mendipur	37238020	Dulni-Ziakora Khal SP	DIW C	706	BWDB embankment to the northwest of the project area	B	
	Mendipur	37238030	Dhopundha Khal SP	DIW C	468	None	C	
	Mendipur	37238040	Ramchandra Ghonar Khal SP	DIW C	339	None	C	

Table 5.4.4 Verified Subprojects with Prioritization in Netrokona District (2/4)

Upazila	Union Proposed	SP_ID	Title	Type	Gross Area (ha)	BWDB Project	Implementation as SP for SSWRD	
							Prio rity	Remarks
Khaliajuri	Mendipur	37238051	Purba Jagannathpur SP	FM	79	BWDB embankment to the southwest of the project area	D	Further examination to be required
	Mendipur	37238052	Birbillah Bandh SP	FM	72	None	D	Further examination to be required
	Khaliajuri	37238060	Pangasia-Lakkipasha SP	DIWC	619	Proposed sluice gate but not yet approved.	D	Further examination to be required
	Khaliajuri	37238070	Baloi Khal SP	DIWC	529	Embankment, Regulator	D	Further examination to be required
	Khaliajuri	37238080	Chinamara-Bijoypur SP	DIWC	517	None	D	Further examination to be required
	Krishnapur	37238091	Ghorabhanga beel, Chapta Beel, Chandrakuna beel , Digha beel, Chatal beel, Gangia beel SP	DIWC	568	FC embankment outside the north boundary of the project area along the right bank of Surma River	D	Further examination to be required
	Krishnapur	37238092	Sonkatir Beel, Gatua Beel, Gangabadar Beel, Kura Beel, Khatua Beel, Gangni Beel, Hason Bhanga Beel, Ugli Beel, Chatla Beel SP	DIWC	678	FC embankment outside the north boundary of the project area along the right bank of Surma River	D	Further examination to be required
	Krishnapur	37238093	Jupa Beel, Jagaddair Beel, Chatla Beel SP	DIWC	585	FC embankment outside the north boundary of the project area along the left bank of Surma River	D	Further examination to be required
	Nagar	37238102	Chala River, Kunna Beel, Lamba Beel, Gautta Beel, Koia Beel SP	DIWC	708	None	D	Further examination to be required
	Nagar	37238103	Koia Beel, Kamaira Beel, Bora Beel, Upa Beel, Kadirpur Beel, Putia Beel SP	DIWC	851	None	D	Further examination to be required
	Nagar	37238104	Sibpur Beel, Boro Beel SP	DIWC	430	None	D	Further examination to be required
	Gazipur	37238110	Panch Hat Embankment SP	FMDIWC	662	None	D	Further examination to be required
Nagar	37238101	Chala River, Ginari Beel, Mior Beel, Ujan Beel SP	DIWC	1,237	2 km long FC Embankment along the left bank of ChalaRiver	L	Benefited area more than 1,000 ha	
Kalmakanda	Nazirpur	37240050	Bakla - Ulukanda-Koir River SP	DI	949	None	A	
	Kailati	37240090	Pukuria-Shampur khal SP	FMWC	805	Someswari Embankment	B	
	Kalmakanda Sadar	37240070	Kalihala river embankment SP	FMWC	766	Kalihala Right Embankment	C	
	Kailati	37240100	Bhogai river excavation SP	FMWC	962	None	C	
	Bara Kharpan	37240110	Jatrabari khal -Jangia beel closure subproject	FMWC	853	None	C	
	Bara Kharpan	37240120	Rica bazar - Bariundha bazar embankment subproject	FM	546	BWDB Regulator	C	
	Pogla	37240131	Gumai - Sholi River, Bakla - Ubdakhale River Embankment SP	FMWC	1,112	None	C	
	Lengura	37240020	Ganeshware river embankment SP	FMWC	690	None	D	Further examination to be required
	Kharnai	37240030	Mongolleshwari - Galachara embankment SP	FM	405	None	D	Further examination to be required
	Rangchhati	37240040	Teratopa - Jhorjhira Embankment and Mehadeu River-Kalihala River - Dayer Bazar North Embankment SP	FMWC	358	Mahadeo River Embankment BWDB Regulator	D	Further examination to be required
	Nazirpur	37240060	Ulukanda River - Ulakanda - Panchakatha Dead River - Ulakanda - Shibnagar Khal SP	DIWC	555	None	D	Further examination to be required
	Kalmakanda Sadar	37240080	Roghurampur - Bishorpasha embankment SP	FMWC	1,311	Kalihala Right Embankment	L	Benefited area more than 1,000 ha
Lengura	37240010	Please Refer to SP37218022 of Durgapur/Netrakona						

Table 5.4.4 Verified Subprojects with Prioritization in Netrokona District (3/4)

Upazila	Union Proposed	SP_ID	Title	Type	Gross Area (ha)	BWDB Project	Implementation as SP for SSWRD	
							Priority	Remarks
Kendua	Noapara	37247231	Bahrail Beel SP	DI	165	None	A	
	Garadoba	37247110	Sutikhali & Dhayel Khal SP	DIWC	332	None	B	
	Balaishimul	37247160	Jawla, Shouljan & Kichuria Beel SP	FMDI	199	None	B	
	Chirang	37247190	Gorkai Khal SP	DI	703	None	B	
	Muzafferpur	37247210	Sunui Haor Embankment SP	FMDI	361	Sukhajuri-Be tai SP	B	
	Roailbari	37247060	Masuil Beel SP	DI	176	None	C	
	Roailbari	37247070	Chapar Khal and Koch-Koicha Beel SP	DI	342	None	C	
	Paikura	37247080	Shariya, Balia & Shingroil Beel SP	FMDI	720	None	C	
	Noapara	37247232	Baora Beel SP	DI	97	None	C	
	Mashka & Roibar	37247100	Shuchia Beel & Kaithkimar Khal, Nuneswari Beel SP	FMDI	1,119	None	C	
	Asujia	37247140	Chatal Beel SP	FM	387	None	C	
	Balaishimul	37247150	Chowka & Jugni Beel SP	DI	456	None	C	
	Kandiura	37247180	Amasheya Beel SP	FMDI	718	None	C	
	Muzafferpur	37247200	Jalir Haor Embankment SP	FMDI	950	Sukhajuri-Be tai SP	C	
	Noapara	37247170	Ghokra Khal - Dhalibandh Khal SP	FMDI	359	None	D	Further examination to be required
Ganda & Sandikona	37247040	Birandrapuri, Bahi & Balki Beel, Khela beel, Batya Mora River SP	FMDI	1,431	None	L	Benefited area more than 1,000 ha	
Kendua & Gauripur	Asujia & Balaishimul & Dalpa & Ganda & Garadoba & Maoha	37247130	Bhujar Beel, Guddiar Beel, Pateswari River, Nopai Beel, Nopai & Chowpa Beel, Kojani-Sorishati Khal SP	FMDIWC	4,386	None	L	Benefited area more than 1,000 ha
Madan	Madan	37256090	Ganganagar and Kapashatia Khal SP	DIWC	492	FC embankment to the south of the project area along the right bank of Bali River	A	
	Changaon	37256040	Shahpur Chowrabari Changaon SP	FM	394	One regulator at Ratnapur +4 pipe sluice.	B	
	Nayekpur	37256020	Bashuri Molajan SP	FMWC	288	None	B	
	Nayekpur	37256030	Nargilla-Magoria SP	FMWC	569	None	C	
	Kaitail	37256010	Dhiga Beel SP	DIWC	249	One regulator at Boro khal.	C	
	Madan	37256100	Bali-Chelai River SP / Bali Ferry Ghat to Bribarikandi SP	FMDI	744	FC embankment to the south of the project area along the right bank of Bali River	C	
	Gobindasri	37256110	Bauch Kanda SP	FMWC	423	None	C	
	Madan	37256120	Boalia Bora Beel SP	FM	499	None	C	
	Changaon	37256050	Kha Beel SP	WC	382	None	D	Further examination to be required
	Tiasree	37256060	Chikni Beel SP	FM	221	None	D	Further examination to be required
	Tiasree	37256070	Badruil Duliujan SP	FMDI	184	None	D	Further examination to be required
	Fatehpur	37256080	Fatehpur Rubber Dam SP	WC	845	None	D	Further examination to be required

Table 5.4.4 Verified Subprojects with Prioritization in Netrokona District (4/4)

Upazila	Union Proposed	SP_ID	Title	Type	Gross Area (ha)	BWDB Project	Implementation as SP for SSWRD	
							Prio rity	Remarks
Mohonganj	Gaglajore	37263060	Katchador Khal SP	WC	780	Haijda Embankment Sub-Project.	A	
	Tentulia	37263070	Kur Beel SP	WC	191	Haijda Embankment Sub-Project.	B	
	Barokashia Birampur	37263030	Madhupur Khal SP	DI	309	Haijda Embankment Sub-Project	C	
	Suair	37263080	Maida Beel SP	DI	230	None	C	
	Suair & Samaj Sahildeo	37263020	Rajkhali - Dhalai River SP	FMDIWC	3,463	None	L	Benefited area more than 1,000 ha
	Baratali Banihari	37263040	Dattakhila River SP	WC	1,775	Haijda Embankment Sub-Project	L	Benefited area more than 1,000 ha
	Gaglajore & Tentulia	37263050	Bethai - Mora Kangsa River SP	WC	2,613	Haijda Embankment Sub-Project.	L	Benefited area more than 1,000 ha
Mohonganj & Barhatta	Barokashia Birampur & Barhatta	37263010	Orai Khal - Shatia Beel - Ghoraugra River, Tunra beel - Swalpa Dauladpur - Bori, Nayapara, Goraund SP	DIWC	3,474	Haijda Embankment Sub-Project Chandrapur Embankment	L	Benefited area more than 1,000 ha
Netrakona Sadar	Maugati	37274020	Kaisnar beel - Bawal Beel SP	DI	239	Kangsha River SP	A	
	Kailati	37274070	Alongir Khal and Embankment SP	FMDI	385	None	B	
	Lakshmiganj	37274120	Ghagra Khali Khal and Embankment SP	FMDI	591	None	B	
	Madanpur	37274130	Saiduly River Embankment SP	FM	251	None	B	
	Rauha	37274030	Mana, Gudia, Digha, Kanta Beel SP	FM	584	None	C	
	Challisha	37274040	Guingajuri Khal and Embankment SP	DIWC	1,022	None	C	
	Dakshin Bishiura	37274050	Aily Beel SP	FMDI	701	None	C	
	Kailati	37274060	Kairkhali Khal SP	DI	359	None	C	
	Kaliara Gabragati	37274010	Bolosh - Satia Khal SP	DIWC	938	None	C	
	Medni	37274100	Krisnakhali - Keronkhola Khal SP	FMWC	817	Kangsha River SP (ADP) and Dupikhali Khal Re-excavation (FFW)	C	
	Thakurakona	37274110	Shishuala Beel, Swair Beel SP	DI	1,061	BWDB Embankment along Kangsha River	C	
Amtala & Singher Bangla	37274090	Rangadair Khal and Beri Beel, Putiakhali Khal - Horikhali Khal SP	FMDIWC	1,635	None	L	Benefited area more than 1,000 ha	
Purbadhala	Bairati	37283100	Chitrong Beel SP	DI	545	None	A	
	Purbadhala	37283070	Holida Beel SP	FMDI	492	None	B	
	Dhalamalgaon	37283120	Dhalamalgaon SP	FMDI	505	Kangsa River Flood Control Project	B	
	Khalishaur	37283080	Rawha beel-Shakunia Beel SP	DI	386	None	C	
	Gohalakan da	37283090	Bhander Beel SP	DI	764	None	C	
	Narandia	37283110	Dullah Khal SP	DI	298	Saralia Sluice Gate	C	
	Ghagra	37283030	Gozza Khal SP	DIWC	138	Dampara Water Management Project	D	Further examination to be required
	Jaria	37283060	Pakla Beel SP	WC	281	None	D	Further examination to be required
	Bishkakuni a	37283130	Kakuria Khal SP	FMDI	382	None	D	Further examination to be required
	Agia & Ghagra	37283050	Balia Sayttati, Balia River SP	FMDIWC	2,067	Dampara Water Management Project	L	Benefited area more than 1,000 ha
	Hogla	37283012	East Bhikunia-Shilaigati SP	FMDI	1,315	Dampara-Jaria Embankment Project	L	Benefited area more than 1,000 ha

Table 5.4.5 Verified Subprojects with Prioritization in Sherpur District (1/2)

Upazila	Union Proposed	SP_ID	Title	Type	Gross Area (ha)	BWDB Project	Implementation as SP for SSWRD	
							Priority	Remarks
Jhenaigati	Malijhikanda	38937050	Dargar khal SP	DI	386	None	A	
	Dhansail	38937020	Kalgusha Khal SP	DI	887	None	C	
	Kangusa	38937010	Kalgusha Rubber Dam Project	WC	623	None	D	Further examination to be required
	Gauripur & Nalkura	38937041	Chowmohani - Amalchuri Khal, Ranjana Khal SP	DIWC	1,793	Embankment by BWDB.	L	Benefited area more than 1,000 ha
Jhenaigati & Sherpur Sadar	Hatibandha & Jhenaigati Sadar & Malijhikanda & Gazirkhamar	38937032	Malishi Nadi Khal, Someswari Khal, Dheki Beel - Khailla Beel, Buriar Beel - Charalia Beel - Kalash Beel SP	DI	3,082	Embankment by BWDB	L	Benefited area more than 1,000 ha
Nakla	Chandrakona	38967080	Mehedidanga Beel SP	DIWC	445	Janokipur Khal Regulator.	A	
	Baneswardi	38967051	Muzarkanda - Aria Kanda Eidgah Embankment SP	FM	53	None	B	
	Char Ashtadhar	38967100	Debuarchar Embankment SP	FM	798	None	B	
	Baneswardi	38967052	Kobutomari - Garapaddi Rampur Road Junction Embankment SP	FM	85	None	C	
	Talki	38967060	Kursa Beel - Kharia Beel SP	DIWC	799	None	C	
	Talki	38967070	Rangarkuri Beel - Kursa Beel SP	DIWC	578	None	C	
	Pathakata	38967090	Burodubi Beel - Godadanga Beel SP	DIWC	861	None	C	
	Ganapaddi & Goudarhar & Nakla & Urpha	38967010	Biharipar Beel - Pekua Beel, Badager Beel - Amankuri Beel - Chikrai Beel, Shubarnokhali Khal SP	DIWC	4,318	None	L	Benefited area more than 1,000 ha
Nalitabari	Nalitabari	38970070	Aliakhali - Shoalmari Embankment SP	FMWC	915	None	A	
	Kakarkandi	38970080	Kakardi Bazar Bridge - Sutia Nadi SP	WC	877	Khal by BWDB but silted up.	B	
	Jogania	38970110	Kapasia SP	WC	538	None	B	
	Ramchandrakura Mondaliapara	38970040	Fulpur (village under the UP) - Mondoliapara Embankment SP	FM	146	None	C	
	Baghber	38970060	Jingira Khal - Dudua Khal Embankment SP	DIWC	459	Chilla Khali System Rehabilitation Project	C	
	Rupnarayanapura	38970090	Moragang Khal SP	DI	773	None	C	
	Jogania	38970101	Sutarbari Khal - Harikhali Khal SP	WC	670	None	C	
	Marichpuran	38970120	Hosikhali Khal SP	DIWC	652	None	C	
	Poragaon	38970010	Chellakhali River (Barkuchi Gudaraghat - Batkuch Namapara Jhararpar) Embankment SP	FM	157	Embankment by BWDB	D	Further examination to be required
	Nunni	38970020	Batkuchi Bazar - Nunni Uttarban - Chellakhali River SP	WC	163	Embankment by BWDB	D	Further examination to be required
	Nayabil	38970030	Dudhkura Khal - Dalukona - Katabari Khal SP	WC	1,314	Chilla Khali System Rehabilitation Project	L	Benefited area more than 1,000 ha
	Kalaspur & Rajnagar	38970051	Shrutkhali Khal (Sagardi - Malijhee River), Srutkhali (Amlatali - Sagardi) SP	DIWC	1,779	Chilla Khali System Rehabilitation Project	L	Benefited area more than 1,000 ha
Sherpur Sadar	Char Mucharia	38988070	Kamarchar Bazar - Tankasar SP	FM	850	Embankment by BWDB	A	
	Char Pakhimari	38988090	Char Mucharia - Dakpara Guchhagram Embankment SP	FM	947	Embankment by BWDB.	B	
	Baliar Char	38988100	Paikartala - Kurmer Char Adarsa Gram Embankment SP	FMDI	778	None	B	
	Char Pakhimari	38988160	Satpakia beel-Das Ani river SP	DI	546	None	B	
	Kamarer Char	38988010	Dhandibidhi-Katakhal SP	DI	888	Brahmaputra River Left Bank Embankment Project	C	
	Char Sherpur	38988020	Goaldanga-Kaladanga SP	DIWC	764	Mrigi River System	C	

Table 5.4.5 Verified Subprojects with Prioritization in Sherpur District (2/2)

Upazila	Union Proposed	SP_ID	Title	Type	Gross Area (ha)	BWDB Project	Implementation as SP for SSWRD		
							Priority	Remarks	
Sherpur Sadar	Dhala	38988060	Singa Beel - Dhala Beel - Biri Beel SP	DI	817	None	C		
	Betmani Ghugrakandi	38988110	Gomaitala Beel - Shobhoner Char Beel SP	DI	207	Embankment by BWDB	C		
	Bhatsala	38988120	Mrigi River (Chhankanda Eidgah - Kotorakanda) SP	DI	781	None	C		
	Betmani Ghugrakandi	38988130	Agrakhali Beel SP	DI	393	Embankment by BWDB	C		
	Kamaria	38988140	Roshekura Beel - Chaira Beel - Chinikari Beel SP	DI	320	None	C		
	Rauha	38988150	Char Ranjagannath - Charkhawa Char Embankment SP	FM	340	None	C		
	Bajitkhila & Pakuria	38988030	Igli Beel - Fuiya Beel - Aurabaura Beel, Gaoya Beel-Dorungi Beel SP	DIWC	2,442	None	L	Benefited area more than 1,000 ha	
	Lasmanpur	38988080	Dhopaghata Bridge - Lasmanpur Ferry Ghat Embankment SP	FM	1,922	None	L	Benefited area more than 1,000 ha	
Gazirkhamar	38988040	Please Refer to SP38937032 of Jhenaigati/Sherpur							
Sreebordi	Bhelua	38990040	Ruparpara to Fulkarchar Khal SP	DIWC	466	None	A		
	Sreebordi	38990030	Chatla Beel, Buchadaha Beel and Boysa Beel Khal SP	DI	845	None	B		
	Singa Baruna	38990010	Karnajhara Rubber Dam SP	WC	757	None	D	Further examination to be required	
	Gosajpur & Kakilakura & Kharia Kazirchar & Tanthathi	38990022	Uttar Shatkakra to Kholishakuri Beel Khal, Bhurkura Beel to Teengharipara Khal, Boysa Beel to Kazirchar Khal, Majli Khal SP	DIWC	4,126	BWDB Khal	L	Benefited area more than 1,000 ha	
	Garjaripa & Kurikahania	38990051	Kudamoni Bridge - Kalidasagar Beel - Kathal khali Khal SP	DIWC	1,213	BWDB Khal	L	Benefited area more than 1,000 ha	

Table 5.4.6 Verified Subprojects with Prioritization in Tangail District (1/4)

Upazila	Union Proposed	SP_ID	Title	Type	Gross Area (ha)	BWDB Project	Implementation as SP for SSWRD	
							Priority	Remarks
Basail	Kanchanpur	39309080	Borokati Beel SP	FMWC	278	None	A	
	Fulki	39309010	Maddhyapara-Nirail SP	FM	406	Embankment	B	
	Kashil	39309040	Kashil-Nagashim Embankment SP	FM	154	3 Km BWDB Embankment	C	
	Basail	39309050	Naikangbari-Dongpara SP	FMDI	471	None	D	Further examination to be required
	Kanchanpur	39309070	Pouli and Shingerdak Embankment SP	FM	174	Embankment	D	Further examination to be required
	Kaoaljani	39309230	Nokil, Hatail, Bharta Beel and Kaoljani Puraton Hat to Gilabari Embankment SP	FMWC	871	None	D	Further examination to be required
	Habla	39309061	Boirpara Sundaribaid Khal SP	FMDI WC	1,385	Embankment	L	Benefited area more than 1,000 ha
Bhuapur	Gobindasi	39319050	Khamerbari-Chithalipara SP	FM	194	Flood Control Embankment and Sluice	A	
	Aloya (Birhati)	39319070	Nikle Beel-Gabaira Beel SP	DI	894	None	B	
	Phulda	39319020	Terilla Beel SP	FMDI	687	None	C	
	Gabsara	39319010	Char Gabsara SP	FMDI WC	561	None	D	Further examination to be required
	Arjuna	39319030	Gobindabari-Balarampur Bhuapur Pourashava SP	FMDI	408	8km long BWDB Embankment	D	Further examination to be required
	Nikrail	39319060	Nikrail SP	FM	319	None	D	Further examination to be required
Delduar	Delduar	39323040	Charpara Beel - Lohajang River SP	DI	444	Embankment by BWDB	A	
	Deoli	39323030	Barair Beel - Dewan Bari Beel - Dhaleswari River SP	DI	288	Embankment by BWDB (Kamar Naogaon Project)	B	
	Delduar	39323100	Bhatkee Beel SP	DI	561	None	B	
	Elasin	39323050	Agelasin - Singaragi Beel - Daleswari River SP	DI	856	Embankment by BWDB	C	
	Fazilhati	39323060	Maishta SP	FM	259	None	C	
	Fazilhati	39323080	Fazilhati Khal SP	DI	517	None	C	
	Pathrail	39323010	Mongothore Beel - Parijatpur Khal SP	WC	166	None	D	Further examination to be required
	Atia	39323020	Atia Mara Nadi (Chala Atia Mosque - Gomjani Village) SP	WC	97	None	D	Further examination to be required
	Dubail	39323070	Baramushta - Badshar Kumb SP	FMDI	108	None	D	Further examination to be required
Lauhati	39323090	Tarutia Bazar - Char Lanhati - Lanhati Union Parishad Embankment SP	FM	371	Embankment by BWDB/LGED	D	Further examination to be required	
Ghatail	Deopara	39328110	Padmakuri Beel-Ranadaha Beel-Kalyan Beel SP	DIWC	562	None	A	
	Deulabari	39328010	Boroitala Khal SP	DIWC	574	None	B	
	Ghatail	39328040	Boithakata Khal SP	DI	62	None	C	
	Anehola	39328070	Dakatia Khal SP	DIWC	903	None	C	
	Digalkandi	39328080	Biara Khal SP	DIWC	950	None	C	
	Loker Para	39328060	Jolapara Khal SP	FMDI WC	354	None	D	Further examination to be required
	Sandhanpur	39328020	Sandhanpur Chiatar Khal SP	DI	1,572	FC embankment along the right bank of Bansi River	L	Benefited area more than 1,000 ha
	Rasulpur	39328031	Doli Beel-Atharochura, Khajnagara-Shinghachala Khal SP	FMDI WC	1,873	None	L	Benefited area more than 1,000 ha
	Jamuria	39328050	Jamuria Flood Management SP	FM	33	None	L	Benefited area less than 50 ha
	Digar, Jamuria & Ghatail	39328091	Futa Nodi-Kuichamara Khal Futamura River/Khal and Bailakhora Khal SP	DIWC	1,482	None	L	Benefited area more than 1,000 ha
	Dhala Para	39328100	Chapra Beel-Nedher Beel-Beel Jalanga SP	FMDI	1,374	None	L	Benefited area more than 1,000 ha

Table 5.4.6 Verified Subprojects with Prioritization in Tangail District (2/4)

Upazila	Union Proposed	SP_ID	Title	Type	Gross Area (ha)	BWDB Project	Implementation as SP for SSWRD	
							Priority	Remarks
Gopalpur	Nagdasimla	39338040	Doga Beel SP	FMDI WC	388	None	A	
	Hemnagar	39338050	Kholishakuri Beel SP	DI	285	Naypara-Sakharia SP	B	
	Mirzapur	39338080	Borashila Beel SP	FMDI	256	None	B	
	Jahoil	39338010	Digder beel-Dhali beel Khal SP	FMDI	269	Naypara-Sakharia SP	C	
	Jhail	39338030	Jhail SP	DI	1,038	Harindhara FC Embankment	C	
	Alamnagar	39338060	Hara-Halencha Beel SP	FMDI WC	519	None	C	
	Jhail	39338020	Jhenai River Erosion Control SP	FMDI	308	Naypara-Sakharia SP	D	Further examination to be required
	Hadira	39338090	Hadira SP	FMDI WC	196	None	D	Further examination to be required
	Dhopakandi	39338070	Dhopakandi SP	DI	1,219	None	L	Benefited area more than 1,000 ha
Kalihati	Kok Dohora	39347101	Charan Beel SP	FMDI WC	724	None	A	
	Narandia	39347030	Narandia Khal SP	DIWC	477	None	B	
	Sahadebpur	39347080	Shahadebpur SP	DI	745	Embankment	B	
	Bir Basunda	39347130	Birbasunda Beel SP	FMDI WC	860	None	B	
	Durgapur	39347010	Louhajong River SP	DI	198	None	C	
	Elengga	39347040	Bhurbhura Beel SP	DIWC	380	Embankment along the bank of Louhajong River	C	
	Bangra	39347060	Bartta Beel SP	DIWC	493	None	C	
	Bangra	39347070	Bhangra Beel SP	DIWC	348	None	C	
	Kok Dohora	39347102	Posna-Bheradoha Beel SP	FMDI WC	618	None	C	
	Bir Basunda	39347120	Kumreshe Beel SP	FMDI	376	None	C	
	Paikara	39347150	Khorsilla-Chhotihati Beel SP	DI	710	None	C	
	Salla	39347020	Daosokiya-Dogangi Beel SP	FMDI	668	None	D	Further examination to be required
	Elengga	39347050	Dhulihata SP	FMDI	271	Embankment along the bank of Louhajong River	D	Further examination to be required
	Paikara	39347090	Jolui Beel SP	FMDI	186	Embankment	D	Further examination to be required
	Balla	39347110	Balla SP	FMDI	252	None	D	Further examination to be required
	Nagbari	39347140	Berhbari SP	DI	448	None	D	Further examination to be required
Balla	39347160	Satbeela Beel SP	FMDI	407	Sluice gate by BWDB	D	Further examination to be required	
Madhupur	Birtara	39357010	Goalia Beel SP	DIWC	162	None	A	
	Musuddi	39357030	Musuddi SP	FMDI	680	None	B	
	Dhopakhali	39357050	Charbhanga Khal SP	FMDI WC	486	None	B	
	Paiska	39357040	Kuichamara Khal SP	DI	584	None	C	
	Alokdia	39357090	Benai Beel SP	FMDI	756	None	C	
	Alokdia	39357100	Dubail Beel SP	FMDI	653	None	C	
	Golabari	39357110	Katakhal Khal SP	DIWC	912	None	C	
	Golabari	39357130	Debipur Khal SP	DIWC	288	None	C	
	Mirzabari	39357060	Roya-Hasil Beel SP	DI	231	Jani Khal Regulator	D	Further examination to be required
Sholakuri	39357070	Sholakuri Rubber Dam SP	DIWC	689	None	D	Further examination to be required, SP locates in the National Park	

Table 5.4.6 Verified Subprojects with Prioritization in Tangail District (3/4)

Upazila	Union Proposed	SP_ID	Title	Type	Gross Area (ha)	BWDB Project	Implementation as SP for SSWRD	
							Priority	Remarks
Madhupur	Dhopakhali	39357140	Jomsherpur Kandipara SP	DI	87		D	Further examination to be required
	Birtara & Dhanbari	39357022	Dhublai Beel Zia Khal SP	DIWC	1,634	None	L	Benefited area more than 1,000 ha
	Arankhola	39357080	Arankhola Rubber Dam SP	DIWC	2,062	None	L	Benefited area more than 1,000 ha, SP in National Park
	Ausnara	39357120	Ausnara Rubber Dam SP	DIWC	1,733	None	L	Benefited area more than 1,000 ha
Mirzapur	Gorai	39366100	Kotalia - Rahimpur Embankment SP	FM	403	None	A	
	Anaitara	39366060	Barinda Bazar - Badebharra Khal SP	DI	209	None	B	
	Uarsi	39366070	Andipara - Ruail Khal SP	DI	548	None	B	
	Jamurki	39366010	Lohajang Khal SP	DI	686	None	C	
	Banail	39366020	Nordana Khal SP	DI	659	Regulator be BDB	C	
	Anaitara	39366140	Barinda Bazar - Atiamahamudpur - Kumulli Beel - Bodebharna - Nadona Khal SP	DI	302	None	C	
	Fatehpur & Mahera	39366030	Fatehpur - Chakleswar Embankment SP	FMDI	583	None	D	Further examination to be required
	Bhatgram	39366050	Bagjan Beel - Bagjan Khal SP	DIWC	451	None	D	Further examination to be required
	Bahuria	39366110	Dostoripara - Haria Embankment SP	FM	668	None	D	Further examination to be required
	Gorai	39366120	Bonkurtala - Chandulia Embankment SP	FM	478	None	D	Further examination to be required
	Ajgana	39366130	Umed Ali Khal SP	DIWC	340	None	D	Further examination to be required
	Tarappur	39366080	Keshab Khali Khal SP	DI	1,234	Kownai - Kara Khali Embankment	L	Benefited area more than 1,000 ha
	Bastail	39366090	Bansinagar Khal SP	DIWC	1,265	None	L	Benefited area more than 1,000 ha
Nagarpur	Salimabad	39376030	Charghurnipara Khal SP	DIWC	166	One regulator at Ghunipara.	A	
	Mokhna	39376090	Nataung - Gohuli Khal SP	DIWC	859	Embankment by BWDB	B	
	Pakutia	39376100	Basta Khola Khal SP	DIWC	515	None	B	
	Salimabad	39376020	Modhudewan Khal SP	WC	209	None	C	
	Dhuburia	39376040	Dhubaria-Balarampur Khal SP	WC	512	None	C	
	Sahabatpur	39376070	Nalsanda-Khamardholla Flood Management SP	FM	521	Bharra-Betwajani Embankment	C	
	Sahabatpur	39376110	Tokadair-Sahabatpur Khal SP	DI	399	None	C	
	Duplair	39376050	Jaupara-Gotabag and Jamuna's Branch River-Nischintpur Embankment SP	FMDI	613	Nagarpur Upazila Embankment	D	Further examination to be required
	Mamudnagar	39376080	Sanchi-Louhajong Khal SP	FMDI WC	860	None	D	Further examination to be required
	Bharra	39376010	Atpara-Choubaria Khal SP	DI	1,345	Embankment	L	Benefited area more than 1,000 ha
	Bekra Algram, Bhadra, Gayhata and Nagarpur	39376063	Goihata-Barapusa Khal, Mora Noai Khal - Gangbihali Sairal Khal, Noai Nadi, Ramchandrapur-Alokdia Khal SP	FMDI WC	3,003	Embankment	L	Benefited area more than 1,000 ha

Table 5.4.6 Verified Subprojects with Prioritization in Tangail District (4/4)

Upazila	Union Proposed	SP_ID	Title	Type	Gross Area (ha)	BWDB Project	Implementation as SP for SSWRD	
							Priority	Remarks
Sakhipur	Jadabpur	39385050	Berbari - Shanasipara Embankment SP	FM	157	None	A	
	Jadabpur	39385070	Bari Khal Embankment SP	WC	220	None	B	
	Hatibandha	39385060	Goalia River SP	FMDI WC	925	None	C	
	Gazaria	39385080	Goalia Jhara Khal SP	DI	1080	None	C	
	Baheratail	39385030	Tonki River SP	FMDI WC	1,134	None	D	Further examination to be required
	Kakrajan	39385010	Madla - Shailsindu River and Galakata Khal SP	DIWC	3,974	None	L	Benefited area more than 1,000 ha
	Gazaria	39385040	Gazaria - Goalia Jhara SP	DIWC	1267	None	L	Benefited area more than 1,000 ha
	Kalia	39385020	Please refer to SP 36113020 of Bhaluka/Mymensingh					
Tangail Sadar	Hugra	39395062	Begundal Khal SP	WC	709	None	A	
	Magra	39395040	Bashalia Khal SP	DI	159	?	B	
	Gharinda	39395100	Gharinda Khal SP	DI	632	None	B	
	Baghil	39395030	Basiria Khal SP	DIWC	245	None	C	
	Dyenna	39395070	Binnafoir Khal SP	DI	503	CPP embankment	C	
	Dyenna	39395080	Shingerghona - Ghotokbari - Boro Beel - Dhara Kutia SP	DI	292	CPP embankment	C	
	Karatia	39395110	Lahajong Khal SP	DI	733	None	C	
	Kakua	39395010	Maisa - Chorpolti Embankment SP	FM	575	Omarpur Khal	D	Further examination to be required, Wide land acquisition required
	Magra	39395020	Bahirshumul Khal SP	WC	734	?	D	Further examination to be required
	Gala	39395050	Ghala (Lahajang) Khal SP	WC	357	None	D	Further examination to be required
	Hugra	39395061	Dhulbari - Kashinagar Khal SP	WC	393	None	D	Further examination to be required
	Hugra	39395063	Goiragacha - Alokdia Khal SP	WC	314	None	D	Further examination to be required
	Porabari	39395090	Char Rakkit Belta Beel, Kendua Beel, Indra Beel Khal SP	WC	169	Korotia - Silimpur Embankment	D	Further examination to be required
Silimpur	39395130	Pakulla Khal SP	FMWC	175	None	D	Further examination to be required	
Katuli	39395120	Katuli - Ditpur - Nandiboyra SP	FMDI	1,203	None	L	Benefited area more than 1,000 ha	