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Government of the People's Republic of Bangladesh

Ministry of Irrigation, Water Development and Flood Control  
Flood Plan Coordination Organization

BANGLADESH ACTION PLAN FOR FLOOD CONTROL

(24)

# COMPARTMENTALIZATION PILOT PROJECT (FAP 20)



BN-562  
A-700(1)

## SIRAJGANJ CPP INTERIM REPORT

### ANNEX 1: NEEDS ASSESSMENT SURVEY MAIN VOLUME

(FINAL DRAFT)

June 1993



Euroconsult/Lahmeyer International/Bangladesh Engineering & Technological  
Services/House of Consultants

under assignment to

DIRECTORAAT GENERAAL INTERNATIONALE SAMENWERKING  
Government of the Netherlands

and

KREDITANSTALT FÜR WIEDERAUFBAU  
Federal Republic of Germany

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## ANNEX 1 : NEEDS ASSESSMENT SURVEY:

## MAIN VOLUME

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## **1 INTRODUCTION**

### **1.1 General introduction**

One of the major aims of FAP 20 is facilitate sustainable development through water management. Previous studies, done before and after FAP started, highlighted that to achieve this aim, one has to involve the people of the area in all phases of the project. This starts with planning and design. Participation in operation and maintenance can only be expected to the extent that the project addresses the needs of the local population.

Thus, to enable sustainable development, FAP 20 has put much emphasis on people's participation. The needs assessment survey has been the tool developed specifically to identify the needs of the different interest groups in the area.

### **1.2 Objectives of the report**

The objective of this report is to communicate the findings of the needs assessment survey of Sirajganj CPP to all concerned. As in Tangail CPP, the amount of information collected during the fieldwork was considerable. In Tangail the format chosen for the report (a chapter per sub-compartment with sections on farming, fishing, women and landless) covered all the data collected. The sheer quantity of data made cross sectorial comparison difficult.

To facilitate accessibility and cross sectorial comparison, this report makes use of summary tables. For each sub-compartment the information from the four interest groups about the present situation, the problems identified, the solutions proposed and possible conflicts, have been summarized. Environmental issues have been extracted from this and have been presented in a separate column.

At the end of the pilot project the information compiled in this report can be used as qualitative and descriptive baseline information. At that time it will help to evaluate the impact and viability of the compartmentalization concept.

### **1.3 Organisation of the report**

The data collected during the fieldwork has been summarized per interest group in a table giving the key findings per village surveyed. This table is then supplemented with a section giving some more details. This sectorial data from village level has been compiled in the APPENDICES to this report. The APPENDICES are only available on request and in limited numbers.

The detailed sectorial data from the needs assessment survey has been summarize per sub-compartment in this document MAIN VOLUME. This volume contains a chapter on the study area and the FAP 20 survey framework (Chapter 2), followed by a summary of the methodology used (Chapter 3). Finally the bulk of the report is the sub-compartmental summary tables (Sirajganj CPP; Chapter 4, Sirajganj Adjacent area; Chapter 5), followed by a report on meetings with the Union Parishad members and local elite (Chapter 6).

A map, showing the area covered by the survey and a map summarizing the main interventions and their locations as suggested by the needs assessment, concludes this report.





## 2 FAP 20 STUDY AREA AND SURVEY FRAMEWORK

### 2.1 Study area

The needs assessment covers two basically different geographic areas. The first one is the **area inside the main borders** of the CPP project. This is the area that is expected to benefit from the project (for details on the borders see the maps at the end of the report as well as the description in the SIRAJGANJ INTERIM REPORT). However, in spite of all-out efforts to prevent this from happening, it is likely that at least some in this area will be negatively influenced, for instance through land acquisition, loss of boat transport facilities or access to common capture fisheries resources.

The second area to be influenced by the CPP project, and therefore to be covered by the needs assessment is the **area adjacent to the project boundary** but hydrologically or socio-economically linked to it. The impact in some parts of this area could be negative. As the BRE is not under CPP, the area between the BRE and the Jamuna river is not covered by FAP 20 but by FAP 1.

The area that will be most effected by Sirajganj CPP is that to the North of the project. The river entering the project divides this area in a small North-Eastern, and a large North-Western area. The area to the West of the project might be slightly affected. This area is, for the purpose of the needs assessment, assumed to be one mauza wide. The area to the South of the project, ie the new *Bogra* road, is assumed not to be effected by the project at all, except possibly a few villages in the middle along the channel flowing to the South.

### 2.2 Survey framework

The involvement of FAP 20 in a compartment starts with a **reconnaissance survey**. This survey is conducted by a few members of the CPP Team, takes a few days and aims at getting a general picture of the area. This survey was done in October-November 1991.

This survey is followed by a **preliminary survey** of the whole compartment. All disciplines in the CPP Team are involved in this survey. The aim is to get a multi-disciplinary overview of the situation, mainly based on secondary data, and to tentatively decide on the sub-compartmental boundaries. The team members report their findings in Working Papers. This information is the starting point for the baseline survey. The preliminary surveys were carried out between September 1992 and February 1993.

Next comes that **baseline survey**. Some parts of this survey are done by members of the CPP Team while other parts are conducted by specialized local firms. The results of the baseline survey will be used in two ways. First of all the results feed into the design phase of the compartment. Secondly the information gathered is used in monitoring and ultimately in the post-project evaluation. The fieldwork for the household baseline survey was done between January and April 1993.

On the basis of the outcome of the baseline survey a **monitoring programme** is designed which measures key indicators on a regular basis throughout the project lifetime.

Finally the experimental nature of the project calls for in-depth **special studies** to supplement the broad surveys. The reason is that there are areas, relevant to



compartmentalization, where existing practices are clearly in-effective, as well as areas about which little is known and/or where there are few if any solutions. The baseline information is used to up-date the tentative list of special studies drawn up during the inception phase. The studies will be done during the life cycle of the project.

For a summary of the surveys mentioned, see the SIRAJGANJ INTERIM REPORT.

### 2.3 Different components of the baseline survey

The baseline survey comprises the following five surveys, each with specific aims and objectives;

- The **household survey** is designed to provide statistically valid baseline data mainly covering social, economic and agricultural issues. The survey is of the questionnaire type. This data will be used to some extent in the planning process, but the main use of this data will be in the post-project evaluation.
- The **topographic and hydrological surveys** provide vital information for the planning, the mathematical modelling and the post-project evaluation. This survey includes levelling, recording the existing structures, flow pattern, water levels and discharge measurements.
- The focus of the **needs assessment survey** is the interrelation between all the water related facets of life in each sub-compartment. Typical items are history of the area, environment, fisheries, rural industry, hydrological situation, agricultural status etc. Opinions on these issues are collected through extensive interviews with different interest groups. Non-leading questions are at the centre of the survey, which aims at finding out people's opinion on the existing situation and the problems and solutions as they see them. The main use of the information is in planning and design. At the post-project evaluation stage, the data will again prove useful as qualitative, descriptive baseline information.
- The **land-use survey** aims at getting a detailed picture of the way land in the area is used, with particular attention for the agricultural use. Cropping patterns, crop varieties and other inputs used etc. are collected. This information is used in both the planning and in due course the evaluation of the CPP.
- The **irrigation survey** aims at obtaining a complete picture of irrigation sector development. This provides accurate estimates of number and type of minor irrigation equipment, energy source, use of engine, and crops under irrigation.
- Through the **institutional survey** information is gathered at the compartmental level regarding the institutions relevant to water management. The information is gathered using open ended checklist questionnaires. The data is feed into the design and implementation of the institutional development.



### **3 METHODOLOGY OF THE NEEDS ASSESSMENT**

#### **3.1 Objectives of the needs assessment**

The objectives of the needs assessment are, for each sub-compartment;

- 1 To get a broad, inter-disciplinary, descriptive overview of the existing situation.
- 2 To identify the existing water management related situation, particularly the different ways in which water resources are used and the problems caused by flooding and/or drainage congestion.
- 3 To find out people's opinion on the potential solutions, structural and non-structural, to overcome the constraints identified.

#### **3.2 Key elements of the needs assessment**

##### **Characteristics**

The needs assessment is characterized by a two main elements. First of all it seeks to find out the opinion of the local people (rather than that of officials, local or international specialists). Secondly it is focused on water management, in the broadest sense of the word.

The stress on getting the perception of the people who live in the area is borne out of dissatisfaction with traditional planning which over-emphasized the input from (outside) experts. Here the assumption is that outside expert may have in-depth knowledge of a particular subject, but often lack the kind of integrated locality specific knowledge that the people of the area have. The needs assessment acknowledges the importance of such local knowledge and is designed to bring such knowledge into the planning process.

Evaluation of previous FCD/I projects have indicated the need to look beyond the monsoon at integrated water management. This includes qualitative and quantitative use of water, including early, late and deep flooding, rainfall, drought, and ground water for agriculture, fisheries, transport, sanitation and domestic as well as industrial purposes. The needs assessment applies the findings of those studies by focusing on water, but without any other bias.

##### **Principles**

The first principle is that representativeness and accuracy is achieved via triangulation and iteration. Triangulation is systematically combining research methods, team composition and varying sites/respondents to get a complete picture. Iteration is accomplished by semi-structured interviewing which helps maintain flexibility in questioning and hypothesis building.

The second principle is that the work is done by an inter-disciplinary team. This has many obvious advantages over a team of people of only one discipline. Apart from the normal advantages, the needs assessment seeks to stimulate sharing of information and insights between the different disciplines. This is particularly relevant where unexpected,

and therefore questionable, information becomes available. An inter-disciplinary team might help direct further data gathering, verification and if necessary in-depth research.

Finally flexibility majors in the needs assessment. Depending on the information collected questions or their sequence can easily be changed and new questions added.

### **Required characteristics of team members**

Conducting a needs assessment requires the right kind of professional. The following characteristics are considered essential;

- willing to learn,
- committed to people,
- cooperative attitude,
- professionally skilled and
- healthy and hard working.

Experience in both Tangail and Sirajganj suggest that both fresh graduates and very experienced professionals have problems applying the needs assessment methodology. Fresh graduates usually lack the field and practical experience to ask relevant questions and cross check information via iteration. On the other hand, very experienced professionals usually have much experience in the traditional top-down approach in which they share their expertise with others. For them it is difficult to adjust to the process of listening to, and learning from the people.

Though exceptions can always be found, it is our experience that in general professionals with approximately 10 years experience are most likely to be suitable team members.

### **Team composition**

Controlled flooding and controlled drainage are at the core of compartmentalization, Therefore the needs assessment team included a Civil Engineer. In the case of Sirajganj the two Sub-Divisional Engineers from the CPP Project Team shared the responsibility for conducting the hydrological part of the needs assessment survey.

Within the rural area the farm households are distinct from the non-farm households. The former are likely to obtain most of the long-term and direct benefits from compartmentalization. The non-farm households are likely to only receive temporary and secondary benefits. Therefore both groups are treated as distinct populations, with their own domain. An Agronomist on the team interviews farmers while the male Sociologist relates to the landless, artisans etc.

Fishermen communities, as well as subsistence fishermen may be negatively affected by water management that focuses on agriculture. Therefore the Fisheries specialist on the team collects information on this side of life in the floodplain.

Water, in all its aspects, is important to women. They bear most of the responsibility for raising children and keeping all household members health and going. Furthermore women are most vulnerable during floods. Therefore the needs assessment team includes a female Sociologist who interviewed women of all categories to find out their views on water and its management.



The need to sustain the environment is now widely recognized. All team members gave particular attention to this in relation to their own field of specialization. An Environmentalist later compiled a summary table based on the findings of the other specialist. Because of the concentration of environmental issues in the city, the environmentalist did his own fieldwork for Sirajganj town.

## Training

The needs assessment team has been given a two day training course before starting the survey. To focus the information gathering during the survey, participants spend time clarifying their understanding of objectives of the FAP as a whole, and of FAP 20 in particular. Each specialist then refined the checklist that was used in Tangail.

## Practical matters

The survey team made use of the detailed knowledge gathered about the locality as collected during the land-use survey, to advise on where to start and which villages to cover. The land-use survey data allowed selection of those villages that are representative for those in each sub-compartment.

The survey schedule, on average, took two days field work per sub-compartment. These vary in size from 600 - 1500 ha, with a population of 5,000 - 15,000 people (except Tangail and Sirajganj towns with over 100,000 people). Report writing was done after the fieldwork and during a morning or afternoon following completion of the field work.

## Interviews

Group interviews of randomly selected individuals, but all from the same interest groups, were the core of the needs assessment. Such groups were useful to get information on a variety of subjects, get an idea of the consensus about the information and the range of variation in areas such as yields. Group interviews were particularly useful to avoid the interviewer having to "question" information supplied as group members often argued amongst themselves.

Care was be taken to interview people from different classes/occupations, even within the same interest group (marginal and large farmers etc.). Interviews include some, but few, key respondents. They were be mainly approached to find out general information about the locality and long term trends.

Whenever interviews of a group of people indicated that a sensitive area is touched upon (such as why a *khal* was closed by someone without the consent of others), then individuals were interviewed after the group interview.

In all interviews care was taken that the people of that particular interest group can voice their own opinion. When local elite or students would "volunteer" to speak for others, such interpreters were tactfully asked to allow everyone to speak for him/herself. If this had no result then the interview was cut short.

Interviews were normally held in locations where people felt at home. Interviews started with an introduction, including the interviewer mentioning his/her name, that he/she had come from the BWDB, that the BWDB is about to start a programme in the area and that the BWDB wants to know the opinion of people from all walks of life about the existing

water related situation, the main problems and potential solutions. The interviewer asked the respondents whether they could spare the time. Normally the interviewer used "apni", not "tumi", asked permission to write responses down and thanked the respondent at the end.

Much stress was laid on the principle that no "leading" questions could be asked. Only probing questions (who, what, where, when, why and how?) were allowed. There were two main reasons for this. The first is that leading questions distort the interview. The second reason is that in the Bengali culture villagers would see the interviewers ("educated officials from the city") as (much) higher in status than themselves. In response, they would give the kind of answers that they think would please the interviewer. By not asking leading questions, such a biased response was (partly) prevented.

### **Team interaction**

Team interaction was stimulated to cross check data and to achieve inter-disciplinary cross fertilization. To facilitate this, the team members spent time much together. An effort was made to ensure that staff would remain with the team through-out the period of the needs assessment.

### **Report writing**

Ultimately the success of the needs assessment depends on the completion of a meaningful report, ie a source of comprehensive and reliable information allowing better design, planning and decision making.

In the Tangail needs assessment (MDSC) each specialist drafted his or her own section. This resulted in lengthy reports in which some of the inter-linkages between the disciplines were lost. In Sirajganj the team had a meeting where each specialist reported back on his/her findings after which a short but comprehensive report was drafted. This format proved to be more suitable because it allowed easy access to the key findings. However, this was achieved at the expense of the details.

### **Practical arrangements and planning**

In Sirajganj a total of 12 sub-compartments were surveyed by the needs assessment team (25 in Tangail CPP). Of these 9 are inside the CPP boundaries and 3 outside.

Field work on average took 2 full working days per sub-compartment. The team did most fieldwork from early morning till about two o'clock. A vehicle was assigned to the team for travel to and from the sub-compartments and between villages. Movements within villages was done on foot. The services of the office secretary in Tangail were at the disposal of the team.

The Sirajganj CPP Executive Engineer was the Team Leader of the team. Due to other priorities he could not accompany the team very often. The two Sub-Divisional Engineers took care of the hydrological side of the needs assessment. The male Sociologist was selected deputy Team Leader. He made all of the practical arrangements to conduct the needs assessment. Discussion meetings, summarization of the field findings and report writing was supervised by the female Sociologist-cum-Women in Development Specialist.



The expatriate Sociologist was available to back-up the team during the first few weeks and the Consultants Team Sociologist after that.

### Checklists used

The checklist used in Tangail were extensively revised to avoid overlap, to concentrate on qualitative data rather than quantitative data and to focus more directly on the water related situation.

It should be pointed out that the stress on asking non-leading questions in the needs assessment to some extent conflicts with the use of checklists. The lists were therefore only used to probe further once a general topic (drought, sedimentation, capture fisheries etc.) had been mentioned by those interviewed. If a particular topic did not come up in the interview, it was not brought up by the team members.

### HYDROLOGY

- 1 Rainfall flooding:  
 Locations normally flooded by rainfall  
 Locations where early/late rainfall causes damage to crops  
 Depth, duration and usual time of rainfall floods  
 Suggested improvements  
Drought:  
 Locations with drought in the monsoon  
 Locations with drought in the dry season  
 Suggested improvements
- 2 River flooding:  
 Location flooded by river (including name of the river)  
 Depth, duration and silt/sand content river water  
 Locations flooded by both rainfall and river flooding  
 Flows during BRE breach (year, time)  
 Extent of damage to crops, public and private property  
 Suggested improvement
- 3 Sedimentation:  
 Locations affected by sedimentation  
 Type of sediment (sand/silt, positive, negative)  
 Sources of sedimentation  
 Suggested improvements
- 4 Drainage:  
 Locations facing water congestion  
 Depth, duration and period of drainage congestion  
 Describe drainage channel net-work and condition  
 History of siltation and re-excavation  
 Suggested improvements
- 5 Navigation:  
 How important is navigation?

Main routes (from-to)  
Number, type of boats and types of cargo (people, types of goods)  
Suggested improvements

- 6 Existing structures:  
Identify all structures affecting the area  
Are/were structures useful (now, in the past)  
Who operates structures  
Suggested improvements
- 7 Erosion:  
Location of erosion spots  
Erosion history  
Suggested improvements

## AGRICULTURE

### Crops

- 1 Existing water situation in different seasons
- 2 Effects of existing water situation on agriculture
- 3 Farmers way of minimizing loss and distributing risk
- 4 Trends in water situation over last 10 years
- 5 Suggestions as to improvements
- 6 "Ideal" situation
- 7 Existing water user groups, their problems, solutions
- 8 Other agriculture related problems, solutions (credit, inputs, output)
- 9 Adverse impact of input use on soil and water

### Livestock

- 10 Draft animals use, needs and suggested improvements
- 11 Cattle population trend
- 12 Livestock feed situation
- 13 Grazing facilities
- 14 Medicare facilities
- 15 Credit situation
- 16 Suggested improvements

### Poultry

- 17 Trend in poultry numbers
- 18 Poultry feed situation
- 19 Poultry disease and medicare facilities
- 20 Credit situation
- 21 Suggested improvements

## FISHERIES

### General

- 1 Existing fisheries situation



- 2 Trends (at least 10 years) in capture and culture fisheries
- 3 Problems in capture and culture fisheries
- 4 Suggested improvements

#### Details

- 5 Existing water bodies, type (perennial, seasonal), status (private, kash, leased)
- 6 Extent of subsistence (capture) fisheries
- 7 History of previous waterbodies (silting up, source cut-off etc.)
- 8 Fish migration routes from river to floodplain (period/spawning time)
- 9 Fish predation, fish diseases (period; damage caused).

#### Social and institutional aspects

- 10 Location, number of professional and occasional fishermen households
- 11 History, religion, socio-economic conditions of fishermen households
- 12 Fishermen cooperative societies, NGO activities
- 13 Institutional facilities, Loan facility from Bank for fishermen.
- 14 Social conflicts regarding fisheries (history)
- 15 Water quality (general, pesticides, fertilizer)

### **NON-FARM ACTIVITIES**

#### General

- 1 Major non-farm activities in the village
- 2 Existing water related situation and trend (at least last 10 years)
- 3 Main problems (if possible by occupational class)
- 4 Suggested solutions

#### Social and Institutional Aspects

- 5 Existing water related social conflicts and their history
- 6 Inventory of existing water management committees
- 7 Community leaders respected for their wisdom
- 8 Community leaders respected for their power

#### Details

- 9 Wage rate (with and with-out food) by types of labour (agricultural/skilled/unskilled) and season busy-lean period, (migration)
- 10 Literacy rate and present enrolment
- 11 Governmental and NGO/autonomous bodies societies/activities
- 12 Access to governmental facilities (Union Council Office, Post Office, F.P. Clinic, Health Clinic/Centres etc.)
- 13 Transport and communication facilities, particularly navigation (seasonal use of transport)
- 14 Markets, hats & bazaars in the area with marketing days (attendance)

### **WOMEN**

#### General

- 1 Major female activities in the village
- 2 Existing water related situation (drinking, washing, bathing, floods) and trends (at least last 10 years)

- 3 Main problems (if possible by occupational class)
- 4 Suggested solutions

#### Social and Institutional Aspects

- 5 Existing water related social conflicts and their history
- 6 Inventory of existing water management committees
- 7 Community leaders respected for their wisdom
- 8 Community leaders respected for their power

#### Details

- 9 Wage rate and earnings of women
- 10 Impact of floods per class (health, communication, type of flooding etc.)
- 11 Sources of fuel and percentage use (periods of scarcity)
- 12 Extent of homestead gardening
- 13 Sources of drinking water
- 14 Health (sanitation), diseases (time and source)
- 15 Health related environment at working place (pregnancy/fertility)
- 16 Ratio female/male daily wage
- 17 Professional skills now under used
- 18 Knowledge of food values
- 19 Main social problems (dowry, divorce, discrimination etc.)

### **3.3 Evaluation**

After conducting the needs assessment survey in Tangail and then in Sirajganj, the following conclusions can be drawn about this type of needs assessment;

- 1 The method is very useful to get the view of different interest groups about the existing water management situation, its problems and the solutions as they see them.
- 2 The method is also useful because it introduces the professionals from the different disciplines to the knowledge of the people, and of other disciplines.
- 3 The needs assessment survey in Sirajganj CPP took 2 months, ie half of the time taken in Tangail CPP. The main reason is that Sirajganj is hydrologically more homogeneous, resulting in fewer sub-compartments and therefore fewer field visits.
- 4 The time schedule was even tighter than in Tangail CPP (2 days field work, and only half a day report writing, so two cycles per week). The results of this tight schedule were that not all topics raised in the interviews could be covered in-depth, discussion among the different disciplines were limited and follow-up had to be postponed till after the completion of the Interim Report. One cycle per week combined with other activities would improve the quality of the work considerably.
- 5 The reporting format used for Sirajganj, summary tables and short sections with details, has resulted in a much more concise final report (only 20% of the volume of the Tangail report). The summarization in table form has made the information readily accessible, but at the cost of details. Given the purpose of the needs



assessment, ie feeding local opinion into design and planning, the Sirajganj format is considered superior to the Tangail format.

- 6 Following the Survey in Tangail we concluded; "It is very important to conduct the whole survey using the same (trained) people." For a number of reasons none of the people trained in Tangail actually took part in the Sirajganj survey. Thus in Sirajganj all the team members were new to the method. As the methodology differs considerably from the traditional approach, it is considered necessary to have a team of people who are well trained, who have experience in the methodology and are in a position to conduct an un-biased survey. This requires a commitment at project and higher level to this approach.
- 7 As in the Tangail survey the inclusion of a female Sociologist is considered to be important. Women show a broad as well as a detailed, female-specific understanding of water and its control. Assessing their view is therefore considered worthwhile.

**The majority of detailed suggestions made by the people of Sirajganj CPP during the needs assessment have been included in the planning (see Chapter 4, Sections 4.2 and 4.3 of the SIRAJGANJ CPP INTERIM REPORT). This applies in particular to the stress that they put on the need to make the BRE secure and the need for "deep set and wide" sluiceways to allow water in and out of the area as per the needs of the people in the area and fish migration, especially during the beginning of the flood season.**







## 4.3 Sub-compartment 3

## SUMMARY OF VIEWS EXPRESSED PER INTEREST GROUP, OF WATER RELATED PROBLEMS AND SOLUTIONS

	HYDROLOGY	WOMEN	FISHERMEN	NON-FARM	FARMERS	ENVIRONMENT
SITUATION	<ul style="list-style-type: none"> <li>highly insecure</li> </ul>	<ul style="list-style-type: none"> <li>villagers are very afraid of flood</li> </ul>	<ul style="list-style-type: none"> <li>capture fisheries declined to non-existence</li> <li>50 % villages have no pond and no culture fishery</li> </ul>	<ul style="list-style-type: none"> <li>very bad and deteriorating</li> </ul>	<ul style="list-style-type: none"> <li>devastating flood situation</li> </ul>	<ul style="list-style-type: none"> <li>conditions are degrading</li> </ul>
PROBLEMS	<ul style="list-style-type: none"> <li>flood by breaching of BRE</li> <li>water congestion</li> <li>sand deposition</li> <li>drought</li> <li>road communication disrupted</li> <li>river erosion</li> <li>occasional flood from <i>Ichamati</i> river</li> </ul>	<ul style="list-style-type: none"> <li>flood</li> <li>immigration from neighbouring villages</li> <li>child disease</li> <li>female disease</li> <li>lower wages</li> <li>road communication</li> <li>unemployment</li> </ul>	<ul style="list-style-type: none"> <li>migration route closed</li> <li>water channel and water bodies already silted up</li> <li>destruction of hatchlings and brood fish</li> </ul>	<ul style="list-style-type: none"> <li>river bank erosion and BRE breaching</li> <li>crop damage</li> <li>in-migration</li> <li>unemployment</li> <li>very poor road communication</li> <li>drinking water and diarrhoea</li> <li>water congestions</li> </ul>	<ul style="list-style-type: none"> <li>sands deposition</li> <li>declining soil fertility</li> <li>1st and 2nd kharif crop damage</li> <li>high mortality rate of livestock and poultry</li> <li>high input price</li> </ul>	<ul style="list-style-type: none"> <li>flood</li> <li>water congestion</li> <li>river erosion</li> <li>sand deposition</li> <li>diarrhoea</li> <li>high mortality of livestock and poultry</li> </ul>
SOLUTIONS	<ul style="list-style-type: none"> <li>strong BRE</li> <li>village roads should be strengthened as embankment</li> <li>bridge cum sluice on <i>Veouamara-Itali</i> road</li> <li>embankment with controlled openings</li> </ul>	<ul style="list-style-type: none"> <li>to take immediate measures against bank erosion by building groyne and other possible means</li> <li>health care</li> <li>road from <i>Chormara</i> bus stand to <i>Shimla</i></li> <li>sluice gate at <i>Chormara</i></li> <li>bridge on <i>Ichamati</i> channel</li> </ul>	<ul style="list-style-type: none"> <li>groynes to stable BRE</li> <li>sluice in the entry point of <i>Ichamati</i>, <i>Doibhanga khal</i> and <i>Bolighugri khal</i> of <i>Bangla bazaar Gunnathpur</i></li> <li>stop operation of sawer net, current net, fine mashari net</li> </ul>	<ul style="list-style-type: none"> <li>groyne at <i>Shimla</i></li> <li>strong embankment with wider sluice gates</li> <li>road bridge, culvert, construction at <i>Veouamara</i> and <i>Dattabari</i></li> <li>income generating activities</li> </ul>	<ul style="list-style-type: none"> <li>groyne</li> <li>controlled flooding</li> <li>medical for livestock poultry</li> <li>lower input price</li> <li>better communication</li> </ul>	<ul style="list-style-type: none"> <li>groynes and other possible means</li> <li>immediate measure against bank erosion</li> <li>bridge cum sluice</li> <li>improve existing Govt. health care system</li> <li>medicare for livestock and poultry</li> </ul>
CONFLICTS	<ul style="list-style-type: none"> <li>none</li> </ul>	<ul style="list-style-type: none"> <li>none</li> </ul>	<ul style="list-style-type: none"> <li>none</li> </ul>	<ul style="list-style-type: none"> <li>conflicts regarding drainage problem with SC 3 and 4</li> </ul>	<ul style="list-style-type: none"> <li>none</li> </ul>	<ul style="list-style-type: none"> <li>none</li> </ul>



## 4.4 Sub-compartment 4

SUMMARY OF VIEWS EXPRESSED PER INTEREST GROUP, OF WATER RELATED PROBLEMS AND SOLUTIONS

	HYDROLOGY	WOMEN	FISHERMEN	NON-FARM	FARMERS	ENVIRONMENT
SITUATION	<ul style="list-style-type: none"> <li>flood affected area</li> </ul>	<ul style="list-style-type: none"> <li>poor</li> </ul>	<ul style="list-style-type: none"> <li>capture fisheries almost non-existence</li> <li>culture fisheries not significant</li> </ul>	<ul style="list-style-type: none"> <li>bad</li> </ul>	<ul style="list-style-type: none"> <li>since 1984 flood every year excluding 1992</li> </ul>	<ul style="list-style-type: none"> <li>conditions are not good</li> </ul>
PROBLEMS	<ul style="list-style-type: none"> <li>flood from <i>Jamuna</i> and <i>Ichamati</i></li> <li>water congestion</li> <li>drought</li> </ul>	<ul style="list-style-type: none"> <li>flood by BRE</li> <li>disease</li> <li>female disease</li> <li>unemployment</li> <li>lack of skill and capital</li> <li>lower wage</li> </ul>	<ul style="list-style-type: none"> <li>migration route closed</li> <li>water channel silted up</li> <li>hatchling catching in the <i>Jamuna</i></li> <li>extensive fish disease</li> </ul>	<ul style="list-style-type: none"> <li>only flood like 1988 is a problem</li> <li>unemployment</li> <li>high prices and food crisis</li> <li>crop damage</li> </ul>	<ul style="list-style-type: none"> <li>water congestion</li> <li>1st and 2nd kharif damage</li> <li>declining livestock</li> <li>white ants problematic for paddy fields</li> <li>high fertilizer price</li> </ul>	<ul style="list-style-type: none"> <li>flood from <i>Jamuna</i> and <i>Ichamati</i></li> <li>water congestion</li> <li>drought</li> <li>extensive fish disease</li> <li>crop damage</li> <li>diseases</li> </ul>
SOLUTIONS	<ul style="list-style-type: none"> <li>strong BRE allowing controlled flooding</li> <li>embankment along river <i>Ichamati</i></li> <li>re-excavation of khal</li> <li>road to be improved as embankment</li> </ul>	<ul style="list-style-type: none"> <li>groynes</li> <li>to build bridge at <i>Hasna</i> near <i>Bagbati</i></li> <li>strong embankment at <i>Bashnibhanga</i></li> <li>health care</li> <li>employment</li> <li>marketing for their products</li> <li>skill training</li> </ul>	<ul style="list-style-type: none"> <li>sluice gates at <i>Char Mur</i> and North to <i>Kazipur</i> at the entry point</li> <li><i>Ichamati</i> river from the <i>Jamuna</i></li> <li>re-excavation <i>Ichamati</i> river and another <i>khal</i> from <i>Saympur</i> to <i>Gaingla</i> beel</li> <li>prevent hatchling catching</li> <li>control disease</li> </ul>	<ul style="list-style-type: none"> <li>groyne at <i>Simla</i></li> <li>re-excavation of <i>Painal Gati khal</i></li> <li>bridge at <i>Naoda Thoria</i></li> </ul>	<ul style="list-style-type: none"> <li>controlled flooding</li> <li>local channel to be re-excavated</li> <li>lower input prices</li> <li>improved medicare for cattle and poultry</li> </ul>	<ul style="list-style-type: none"> <li>controlled flooding</li> <li>land re-excavation</li> <li>medicare for cattle and poultry</li> <li>control disease</li> <li>health care</li> </ul>
CONFLICTS	<ul style="list-style-type: none"> <li>none</li> </ul>	<ul style="list-style-type: none"> <li>none</li> </ul>	<ul style="list-style-type: none"> <li>none</li> </ul>	<ul style="list-style-type: none"> <li>conflicts about re-excavation of beel <i>Pakuria</i></li> </ul>	<ul style="list-style-type: none"> <li>none</li> </ul>	<ul style="list-style-type: none"> <li>none</li> </ul>

## 4.5 Sub-compartment 5

SUMMARY OF VIEWS EXPRESSED PER INTEREST GROUP, OF WATER RELATED PROBLEMS AND SOLUTIONS

	HYDROLOGY	WOMEN	FISHERMEN	NON-FARM	FARMERS	ENVIRONMENT
SITUATION	<ul style="list-style-type: none"> <li>● flood affected</li> </ul>	<ul style="list-style-type: none"> <li>● socio-economically insecure</li> </ul>	<ul style="list-style-type: none"> <li>● capture fishery almost non-existing</li> <li>● culture fishery bad to almost non-existing</li> </ul>	<ul style="list-style-type: none"> <li>● bad</li> </ul>	<ul style="list-style-type: none"> <li>● floods every year excluding 1985/1986/1992</li> </ul>	<ul style="list-style-type: none"> <li>● overall situation is bad</li> </ul>
PROBLEMS	<ul style="list-style-type: none"> <li>● acute flood problem</li> <li>● water congestion</li> <li>● sand deposition</li> <li>● drought</li> </ul>	<ul style="list-style-type: none"> <li>● flood</li> <li>● breaching of BRE</li> <li>● dry wells</li> <li>● child diseases</li> <li>● female diseases</li> <li>● unemployment</li> <li>● lack of credit</li> <li>● unused skill</li> </ul>	<ul style="list-style-type: none"> <li>● migration route closed</li> <li>● water bodies silted up</li> <li>● extensive fish diseases</li> <li>● hatchling catching</li> </ul>	<ul style="list-style-type: none"> <li>● crop damage</li> <li>● sand deposition</li> <li>● unemployment and flood crises</li> <li>● roads houses and education disruption due to BRE breaching</li> </ul>	<ul style="list-style-type: none"> <li>● water congestion</li> <li>● sands deposit and declining fertility</li> <li>● damage of 1st and 2nd kharif crop</li> <li>● lack of draft animals</li> <li>● poor medicare cattle and poultry</li> <li>● credit shortage</li> <li>● high input price</li> </ul>	<ul style="list-style-type: none"> <li>● flood from BRE breaching</li> <li>● water congestion</li> <li>● sand deposition</li> <li>● drought and declining fertility</li> <li>● dry wells</li> <li>● water bodies silted up</li> <li>● extensive fish disease</li> <li>● poor medicare for cattle and poultry</li> </ul>
SOLUTIONS	<ul style="list-style-type: none"> <li>● village roads should be strengthened as embankment</li> <li>● strong BRE with controlled openings and groynes</li> <li>● ventage of <i>Saluavita</i> should be increased</li> <li>● khal re-excavation</li> </ul>	<ul style="list-style-type: none"> <li>● control frequent and untimely flooding</li> <li>● groyne at <i>Simla</i> and <i>Bhatpiari</i> as early as possible</li> <li>● river re-excavation</li> <li>● health care</li> <li>● employment</li> <li>● credit facilities</li> <li>● control corruption at clinic and hospital</li> </ul>	<ul style="list-style-type: none"> <li>● provide big and deeply placed sluice gate at the entry point of <i>Daibhangha</i> and <i>Ichamati</i> river on the BRE</li> <li>● control diseases</li> <li>● stop hatchling catching</li> </ul>	<ul style="list-style-type: none"> <li>● permanent embankment with sluice gates</li> <li>● groynes</li> </ul>	<ul style="list-style-type: none"> <li>● stable BRE</li> <li>● groyne at <i>Simla</i></li> <li>● excavation of internal khals</li> <li>● lower prices of fertilizer and fuel</li> <li>● credit facilities to be extended</li> </ul>	<ul style="list-style-type: none"> <li>● control flood with groyne</li> <li>● river re-excavation</li> <li>● control diseases</li> </ul>
CONFLICTS	<ul style="list-style-type: none"> <li>● none</li> </ul>	<ul style="list-style-type: none"> <li>● none</li> </ul>	<ul style="list-style-type: none"> <li>● none</li> </ul>	<ul style="list-style-type: none"> <li>● conflicts on opinion</li> </ul>	<ul style="list-style-type: none"> <li>● none</li> </ul>	<ul style="list-style-type: none"> <li>● none</li> </ul>

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## 4.6 Sub-compartment 6

SUMMARY OF VIEWS EXPRESSED PER INTEREST GROUP, OF WATER RELATED PROBLEMS AND SOLUTIONS

	HYDROLOGY	WOMEN	FISHERMEN	NON-FARM	FARMERS	ENVIRONMENT
SITUATION	<ul style="list-style-type: none"> <li>bad because of breaching right embankment of <i>Jamuna</i></li> </ul>	<ul style="list-style-type: none"> <li>poor</li> </ul>	<ul style="list-style-type: none"> <li>capture fisheries decreased to almost non-existence</li> <li>culture fisheries non-existence</li> </ul>	<ul style="list-style-type: none"> <li>bad</li> </ul>	<ul style="list-style-type: none"> <li>BRE breaches 1984-1991</li> <li>flood free year 1992</li> </ul>	<ul style="list-style-type: none"> <li>situation is not good</li> </ul>
PROBLEMS	<ul style="list-style-type: none"> <li>flood from <i>Jamuna</i> and the <i>Ichamati</i></li> <li>water congestion</li> <li>drought</li> </ul>	<ul style="list-style-type: none"> <li>poverty</li> <li>flood</li> <li>lack of tubewell and usable water</li> <li>lack of health care</li> <li>children disease</li> <li>female disease</li> </ul>	<ul style="list-style-type: none"> <li>migration route closed</li> <li>river bed and other water bodies silted</li> <li>extensive fish disease</li> <li>few cultivable water bodies</li> </ul>	<ul style="list-style-type: none"> <li>unexpected flooding due to BRE breaching</li> <li>crop damage</li> <li>communication disrupted</li> <li>unemployment</li> <li>high price of food</li> </ul>	<ul style="list-style-type: none"> <li>water congestion</li> <li>Aman loss up to 100 %</li> <li>sugarcane loss up to 25 %</li> <li>declining livestock population</li> <li>disrupted road communication</li> <li>high inputs price</li> </ul>	<ul style="list-style-type: none"> <li>flood</li> <li>lack of tubewell and useable water</li> <li>river bed silted</li> <li>water congestion</li> <li>declining livestock</li> <li>child and female diseases</li> <li>extensive fish disease</li> <li>crop damage</li> </ul>
SOLUTIONS	<ul style="list-style-type: none"> <li>strong BRE</li> <li>village road should be converted as embankment</li> <li><i>Ichamati</i> river and all khals re-excavation</li> <li>embankment along <i>Ichamati</i> river</li> </ul>	<ul style="list-style-type: none"> <li>employment</li> <li>strengthen BRE</li> <li>to arrange more tubewells and usable water</li> <li>health care</li> <li>to control flood water</li> </ul>	<ul style="list-style-type: none"> <li>provide BRE with properly placed sluice gate</li> <li>excavation water bodies where necessary</li> <li>control fish disease</li> <li>help culture fisheries as needed</li> </ul>	<ul style="list-style-type: none"> <li>strong embankment with sluice gates</li> <li>groyne</li> <li>road culvert/bridge construction and repairing</li> </ul>	<ul style="list-style-type: none"> <li>groynes and stable BRE</li> <li>excavation of local khals</li> <li>construction of culvert bridge</li> <li>improved road communication</li> <li>medicare for livestock and poultry</li> <li>lower input prices</li> </ul>	<ul style="list-style-type: none"> <li>strengthen BRE</li> <li>arrange drinking water</li> <li>excavation of water bodies</li> <li>medicare for livestock and poultry</li> <li>health care</li> <li>control fish disease</li> </ul>
CONFLICTS	<ul style="list-style-type: none"> <li>none</li> </ul>	<ul style="list-style-type: none"> <li>none</li> </ul>	<ul style="list-style-type: none"> <li>none</li> </ul>	<ul style="list-style-type: none"> <li>none</li> </ul>	<ul style="list-style-type: none"> <li>none</li> </ul>	<ul style="list-style-type: none"> <li>none</li> </ul>

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## 4.7 Sub-compartment 7

## SUMMARY OF VIEWS EXPRESSED PER INTEREST GROUP, OF WATER RELATED PROBLEMS AND SOLUTIONS

	HYDROLOGY	WOMEN	FISHERMEN	NON-FARM	FARMERS	ENVIRONMENT
SITUATION	<ul style="list-style-type: none"> <li>depends on BRE</li> </ul>	<ul style="list-style-type: none"> <li>poor</li> </ul>	<ul style="list-style-type: none"> <li>capture fisheries declining to almost non-existence</li> <li>culture fisheries bad</li> </ul>	<ul style="list-style-type: none"> <li>bad</li> </ul>	<ul style="list-style-type: none"> <li>50% villages are four years flood free</li> <li>50% villages are 1 year flood free</li> </ul>	<ul style="list-style-type: none"> <li>situation is not good</li> </ul>
PROBLEMS	<ul style="list-style-type: none"> <li>flood from the Jamuna</li> <li>water congestion</li> <li>sand deposition</li> <li>drought</li> </ul>	<ul style="list-style-type: none"> <li>flood</li> <li>lack of drinking and usable water</li> <li>diseases</li> <li>unemployment</li> <li>un-used skill</li> </ul>	<ul style="list-style-type: none"> <li>migration route closed</li> <li>extensive fish diseases</li> </ul>	<ul style="list-style-type: none"> <li>flood</li> <li>sand deposition and crop damages due to breaches of BRE</li> <li>unemployment</li> <li>disruption of road communication</li> <li>shop, houses, weaving factory affected</li> </ul>	<ul style="list-style-type: none"> <li>T Aman loss 100%</li> <li>drought</li> <li>water congestion</li> <li>sands deposit</li> <li>declining soil fertility</li> <li>high input price of fertilizer and fuel</li> <li>credit constraint</li> </ul>	<ul style="list-style-type: none"> <li>flood from Jamuna</li> <li>sands deposition</li> <li>drought</li> <li>water congestion</li> <li>declining soil fertility</li> <li>lack of drinking water</li> <li>diseases and corruption of hospital people</li> <li>extensive fish disease</li> </ul>
SOLUTIONS	<ul style="list-style-type: none"> <li>strong BRE with series of groynes</li> <li>all existing khals and Ichamati river are to be re-excavated</li> <li>water supply to crop land from river</li> </ul>	<ul style="list-style-type: none"> <li>strong embankment</li> <li>employment</li> <li>to arrange drinking and usable water</li> <li>health care</li> <li>skill training</li> <li>to stop corruption at local clinic</li> </ul>	<ul style="list-style-type: none"> <li>provide big and properly placed sluice gate in the BRE</li> <li>fish from diseases</li> </ul>	<ul style="list-style-type: none"> <li>stable BRE</li> <li>groyne</li> </ul>	<ul style="list-style-type: none"> <li>strengthening BRE with sluices for supplementary irrigation</li> <li>sluice and culvert on internal khal and roads</li> <li>lower input prices</li> <li>expansion of credit facilities</li> <li>Saluavita sluice to be expanded</li> </ul>	<ul style="list-style-type: none"> <li>stable BRE</li> <li>re-excavation of khals</li> <li>water supply from river to cropland</li> <li>arrange drinking water</li> <li>health care</li> <li>control fish disease</li> </ul>
CONFLICTS	<ul style="list-style-type: none"> <li>none</li> </ul>	<ul style="list-style-type: none"> <li>none</li> </ul>	<ul style="list-style-type: none"> <li>none</li> </ul>	<ul style="list-style-type: none"> <li>none</li> </ul>	<ul style="list-style-type: none"> <li>none</li> </ul>	<ul style="list-style-type: none"> <li>none</li> </ul>

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## 4.8 Sub-compartment 8

SUMMARY OF VIEWS EXPRESSED PER INTEREST GROUP, OF WATER RELATED PROBLEMS AND SOLUTIONS

	HYDROLOGY	WOMEN	FISHERMEN	NON-FARM	FARMERS	ENVIRONMENT
SITUATION	<ul style="list-style-type: none"> <li>insecure</li> </ul>	<ul style="list-style-type: none"> <li>insecure</li> </ul>	<ul style="list-style-type: none"> <li>capture fisheries declining from very bad to almost non-existent</li> <li>culture fisheries bad</li> </ul>	<ul style="list-style-type: none"> <li>bad to moderate</li> </ul>	<ul style="list-style-type: none"> <li>insecure crop environment</li> </ul>	<ul style="list-style-type: none"> <li>conditions are deteriorating</li> </ul>
PROBLEMS	<ul style="list-style-type: none"> <li>flood due to breaching of the BRE</li> <li>flood from the river the <i>Ichamati</i></li> <li>sand deposit</li> <li>water congestion</li> <li>drought</li> </ul>	<ul style="list-style-type: none"> <li>flood</li> <li>lack of drinking water and usable water</li> <li>lack of fuel and homestead land</li> <li>unemployment</li> <li>diseases</li> <li>under utilisation of skills</li> </ul>	<ul style="list-style-type: none"> <li>migration route closed</li> <li>hatchling catching in the <i>Jamuna</i></li> <li>extensive fish disease</li> </ul>	<ul style="list-style-type: none"> <li>flooding due to breaches of BRE</li> <li>crop damage</li> <li>unemployment</li> <li>road communication disturbed</li> </ul>	<ul style="list-style-type: none"> <li>crop damage in monsoon due to BRE breaches</li> <li>localised drainage congestion</li> <li>livestock and poultry mortality high</li> <li>road communication disrupted</li> </ul>	<ul style="list-style-type: none"> <li>flood from <i>Jamuna</i></li> <li>water congestion</li> <li>crop damage due to BRE breach</li> <li>lack of drinking water</li> <li>lack of fuel</li> <li>extensive fish diseases</li> <li>drought</li> </ul>
SOLUTIONS	<ul style="list-style-type: none"> <li>strong BRE with controlled openings</li> <li>embankment along left bank of <i>Ichamati</i> river</li> <li>re-excavation of the <i>Ichamati</i> and all it's <i>khals</i></li> </ul>	<ul style="list-style-type: none"> <li>controlled flooding</li> <li>health care</li> <li>to arrange drinking and usable water</li> <li>employment</li> </ul>	<ul style="list-style-type: none"> <li>provided BRE with big and properly positioned sluice gate which should be kept open in <i>Ashar/Sraban</i></li> <li>catching hatchling to be stopped</li> <li>fish disease to be checked</li> </ul>	<ul style="list-style-type: none"> <li>strong BRE with sluice gates and groynes</li> <li>road communication and repairing with bridges</li> <li>khal re-excavation</li> </ul>	<ul style="list-style-type: none"> <li>strengthen BRE</li> <li>excavation of localised channels</li> <li>provide road culverts</li> <li>lower input prices</li> <li>extension of credit</li> </ul>	<ul style="list-style-type: none"> <li>control flooding</li> <li>khal re-excavation</li> <li>strengthen BRE</li> <li>arrange drinking water</li> <li>health care</li> </ul>
CONFLICTS	<ul style="list-style-type: none"> <li>none</li> </ul>	<ul style="list-style-type: none"> <li>none</li> </ul>	<ul style="list-style-type: none"> <li>none</li> </ul>	<ul style="list-style-type: none"> <li>none</li> </ul>	<ul style="list-style-type: none"> <li>none</li> </ul>	<ul style="list-style-type: none"> <li>none</li> </ul>

## 4.9 Sub-compartment 9

SUMMARY OF VIEWS EXPRESSED PER INTEREST GROUP, OF WATER RELATED PROBLEMS AND SOLUTIONS

	HYDROLOGY	WOMEN	FISHERMEN	NON-FARM	FARMERS	ENVIRONMENT
SITUATION	<ul style="list-style-type: none"> <li>● insecurity because of risk of BRE breach</li> <li>● drainage congestion due to local rainfall</li> </ul>	<ul style="list-style-type: none"> <li>● bad</li> </ul>	<ul style="list-style-type: none"> <li>● bad</li> </ul>	<ul style="list-style-type: none"> <li>● bad</li> </ul>	<ul style="list-style-type: none"> <li>● bad</li> <li>● extensive for a town</li> </ul>	<ul style="list-style-type: none"> <li>● bad</li> </ul>
PROBLEMS	<ul style="list-style-type: none"> <li>● drainage congestion</li> <li>● polluted water</li> </ul>	<ul style="list-style-type: none"> <li>● sudden flood</li> <li>● water congestion</li> <li>● lack of drinking water</li> <li>● lack of latrines</li> <li>● diseases</li> <li>● dowry</li> </ul>	<ul style="list-style-type: none"> <li>● Sirajganj was an important fish market but now supply is low</li> </ul>	<ul style="list-style-type: none"> <li>● water congestion</li> <li>● sudden flood</li> <li>● unemployment</li> <li>● un-hygienic conditions</li> </ul>	<ul style="list-style-type: none"> <li>● water congestion</li> <li>● fear for flooding due to BRE breach</li> </ul>	<ul style="list-style-type: none"> <li>● water logging</li> <li>● backwater flood via <i>Rahmatganj khal</i></li> <li>● municipal drain</li> <li>● drinking water scarcity</li> <li>● industrial pollution</li> <li>● bad sanitation</li> <li>● diseases</li> </ul>
SOLUTIONS	<ul style="list-style-type: none"> <li>● strong BRE</li> <li>● re-excavate <i>Kata khal</i></li> <li>● remove drainage obstacles</li> </ul>	<ul style="list-style-type: none"> <li>● develop town drainage system</li> <li>● strong BRE</li> <li>● controlled flooding</li> </ul>	<ul style="list-style-type: none"> <li>● improve capture fisheries by making large sluiceways in BRE</li> <li>● improve culture fisheries by securing BRE</li> </ul>	<ul style="list-style-type: none"> <li>● controlled flooding</li> <li>● improved drainage</li> <li>● employment creation</li> </ul>	<ul style="list-style-type: none"> <li>● re-excavate <i>Khata khali khal</i></li> <li>● placing of culverts/bridges at several places</li> </ul>	<ul style="list-style-type: none"> <li>● improve drainage by regulator and culvert</li> <li>● repair old and construct new drain</li> <li>● relocate industries</li> <li>● provide sanitary latrines</li> <li>● improve medical facilities</li> </ul>
CONFLICTS	<ul style="list-style-type: none"> <li>● none</li> </ul>	<ul style="list-style-type: none"> <li>● none</li> </ul>	<ul style="list-style-type: none"> <li>● none</li> </ul>	<ul style="list-style-type: none"> <li>● none</li> </ul>	<ul style="list-style-type: none"> <li>● none</li> </ul>	<ul style="list-style-type: none"> <li>● none</li> </ul>



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#### 4.10 Summary needs assessment survey Sirajganj CPP

The findings of the survey can be summarised as follows:

##### Hydrology

The project area has experienced floods since 1984 through bank erosion of the *Jamuna* as well as breaching of the BRE. The results are disastrous for all concerned, but particularly for those living close to the breach; whole villages may be washed away. Such floods result in much loss to both public and private property, and cause extensive disruption to life.

One of the lasting results of such sudden flooding is partial and at times total silting up of the beds of internal channels and rivers. This, combined with the flooding, in turn results in water logging during the monsoon and post monsoon period. At the end of the dry season the silted up channels no longer carry any water, thus aggravating the drought prone situation.

At times the river *Ichamati* overflows, and people have expressed concern about this. There is widespread agreement among the people in the area about the need to secure the BRE. Many have said that they believe that groynes are the solution to stop the river *Jamuna* eroding the BRE. They say strengthening the BRE should be done by using good soil (not sand), making the embankment wide enough, by starting the work on time and applying proper compaction. Many have suggested that the BRE should be provided with regulators to allow water in and out as per the local requirement.

Some have suggested that existing roads have to be improved to allow year round road communication and a certain level of flood protection. Drainage structures, re-excavation of channels and rivers, regulators and bridges have been requested at specific places.

##### Farmers

The present insecurity of the BRE is the main concern of farmers. The floods caused by such breaches (inside and outside the project area) has caused significant damages to kharif I and II crops. Farmers stated that other effects are the high mortality rate of livestock and poultry due to shortage of straw and grazing land and lack of medicare facilities and high percolation rate of water due to sand deposits following breaches.

Farmers suggested stabilizing the BRE by constructing a series of groynes (which they consider indispensable to stabilize the BRE), providing sluices on the BRE for controlled flooding (except the farmers in low lying areas who were opposed to this), re-excavation of the *Ichamati* and all internal channels, development and construction of internal roads with necessary culverts and regulators and construction of an embankment at some places on the left bank of the *Ichamati*.

The *Ichamati* left embankment may adversely affect the people living on the other side of the river *Ichamati*. Another problem is that time and again existing embankments have failed and farmer's lack of confidence in the executing agencies. Many people suggested that it is important to make the BRE more secure before other developments are taken up.

##### Fisheries

Ever since the construction of the BRE, which had (has) only a few sluices, capture fisheries declined significantly. More recently (beginning in 1984) when the openings of the sluices and the connecting channels got choked up due to siltation caused by floods, the migration routes of the hatchlings got closed and their grazing field has been reduced considerably. This has resulted in the almost total extinction of capture fisheries. Whatever hatchlings enter the project area in flood years are caught and removed by fishermen because of fish shortage.

Since the 1988 flood, fish disease has created an alarming situation for beel and pond fish. Culture fisheries is very limited. The main reasons are that there are few ponds and those that do exist, dry up early because of high infiltration rate. Fishermen suggested that deep and wide sluices should be constructed on the BRE at all the entry points of the *Jamuna* branches to allow migration of hatchlings. They also suggested re-excavation of all internal channels with the provision of deep ditches at certain places on the channel beds to allow grazing and protection of the hatchlings.

### Women

Since 1984 bank erosion of the *Jamuna* and breaching of the BRE have posed a serious threat to the women in the area. According to many women the insecurity caused by sudden breaching of the BRE and the resulting floods aggravate the already bad, existing situation.

Women have mentioned the following flood related problems in particular: increase in rural unemployment, reduction of labour wages, chronic food crisis, lack of drinking water, high prices of agricultural produce and consumers goods, destruction of village roads, houses, market places and educational institutions, illiteracy, suppression of rural women (dowry, divorce, polygamy), inaccessibility of government agencies, post flood epidemics, female and child diseases, lack of medicare facilities, lack of support of UP authorities, increasing in-migration and landlessness.

To overcome these problems the women have suggested to take measures against erosion of the BRE. Many women have said they think groynes are the only way to protect the BRE. They have also suggested building regulators to allow for controlled flooding of the area. Tubewell, improved roads, medical care and other government services have also been suggested.

### Non-farming

Bank erosion of the *Jamuna* and breaching of the BRE have seriously worsened the situation of the non-farming people in the area. According to many the insecurity caused by sudden breaching of the BRE and the resulting floods aggravate the already bad, existing situation.

Lack of employment opportunities in agriculture and services are a major constraint for the non-farming households. For this to improve many have suggested to strengthen the BRE, protect it with groynes and build sluiceways to allow controlled flooding. Furthermore road improvement and building of culverts and bridges has been suggested as a way to improve the existing situation.

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## 5 SIRAJGANJ ADJACENT AREA

## 5.1 Sub-compartment NE-area

SUMMARY OF VIEWS EXPRESSED PER INTEREST GROUP, OF WATER RELATED PROBLEMS AND SOLUTIONS

	HYDROLOGY	WOMEN	FISHERMEN	NON-FARM	FARMERS
SITUATION	<ul style="list-style-type: none"> <li>insecure</li> </ul>	<ul style="list-style-type: none"> <li>insecure</li> </ul>	<ul style="list-style-type: none"> <li>capture fisheries declining and now almost non-existing</li> <li>culture fisheries bad</li> <li>moderate</li> </ul>	<ul style="list-style-type: none"> <li>during flooding bad</li> </ul>	<ul style="list-style-type: none"> <li>insecure crop environment</li> <li>cropping adjusted to regular breaching since 1984</li> </ul>
PROBLEMS	<ul style="list-style-type: none"> <li>river erosion</li> <li>breaching of BRE</li> <li>sedimentation</li> </ul>	<ul style="list-style-type: none"> <li>lack of clean/pure water for domestic purposes</li> <li>fuel shortage</li> <li>water related illnesses</li> <li>lack of employment opportunity for men during floods</li> </ul>	<ul style="list-style-type: none"> <li>migration routes blocked</li> <li>few waterbodies</li> <li>few ponds</li> </ul>	<ul style="list-style-type: none"> <li>landlessness through river erosion</li> <li>flooding through BRE breaches</li> </ul>	<ul style="list-style-type: none"> <li>crop damage in monsoon mainly because of breaches</li> <li>localized drainage congestion</li> <li>land loss due to continual retirement of BRE</li> </ul>
SOLUTIONS	<ul style="list-style-type: none"> <li>build groynes</li> <li>strengthen BRE</li> </ul>	<ul style="list-style-type: none"> <li>build groynes</li> <li>control floods</li> <li>allow water entry and drainage when needed</li> </ul>	<ul style="list-style-type: none"> <li>hatchling to be provided entry through the BRE</li> <li>BRE should be protected</li> <li>to build culture fisheries</li> </ul>	<ul style="list-style-type: none"> <li>build groynes</li> <li>strengthen BRE by making it straight, wide enough and by compacting the earth<sup>1</sup></li> </ul>	<ul style="list-style-type: none"> <li>build groynes</li> </ul>
CONFLICTS	<ul style="list-style-type: none"> <li>none</li> </ul>	<ul style="list-style-type: none"> <li>none</li> </ul>	<ul style="list-style-type: none"> <li>none</li> </ul>	<ul style="list-style-type: none"> <li>drainage route</li> <li>usefulness of retired embankment</li> </ul>	<ul style="list-style-type: none"> <li>none</li> </ul>



<sup>1</sup> Most people have said that their first preference is groynes, and the second preference securing the BRE by a good quality retired embankment. If the BRE cannot be secured, some people said they prefer the BRE be dismantled as they think this would take the pressure of erosion, and will restore the capture fisheries situation that existed before the BRE was built.

## 5.2 Sub-compartment NW-area

## SUMMARY OF VIEWS EXPRESSED PER INTEREST GROUP, OF WATER RELATED PROBLEMS AND SOLUTIONS

	HYDROLOGY	WOMEN	FISHERMEN	NON-FARM	FARMERS
SITUATION	<ul style="list-style-type: none"> <li>insecure</li> </ul>	<ul style="list-style-type: none"> <li>not so insecure</li> </ul>	<ul style="list-style-type: none"> <li>capture fisheries very bad - bad</li> <li>culture fisheries very bad</li> </ul>	<ul style="list-style-type: none"> <li>bad and deteriorating</li> </ul>	<ul style="list-style-type: none"> <li>highly insecure for Kharif-II crop</li> <li>insecure for Kharif I</li> </ul>
PROBLEMS	<ul style="list-style-type: none"> <li>flood due to breaching BRE</li> <li>river Ichamati sometimes causes rainfed flooding</li> <li>occasional drought</li> </ul>	<ul style="list-style-type: none"> <li>flood due to breaching BRE</li> <li>flood related diseases</li> <li>no fish</li> <li>usable water for domestic crop</li> <li>drinking water</li> <li>unemployment</li> </ul>	<ul style="list-style-type: none"> <li>migration routes closed</li> <li>in 2/3 of villages no ponds</li> </ul>	<ul style="list-style-type: none"> <li>crop damage and sand deposit due to breaches</li> </ul>	<ul style="list-style-type: none"> <li>Kharif II crop damage</li> <li>sand deposit and declining soil fertility</li> <li>infrastructure damage</li> </ul>
SOLUTIONS	<ul style="list-style-type: none"> <li>strong BRE and building a series of groynes</li> <li>embankment along left side of Ichamati</li> <li>re-excavation of existing khals</li> <li>supplementary irrigation</li> </ul>	<ul style="list-style-type: none"> <li>groynes</li> <li>arrange water for drinking and other domestic purposes</li> <li>employment opportunities</li> <li>allow water entry and drainage as per need</li> </ul>	<ul style="list-style-type: none"> <li>sluiceways for fish migration</li> <li>support for culture fisheries</li> </ul>	<ul style="list-style-type: none"> <li>strong BRE</li> <li>groynes</li> <li>culverts/bridges</li> </ul>	<ul style="list-style-type: none"> <li>make BRE strong</li> <li>supplementary irrigation</li> <li>improve road communication, construct bridge</li> <li>lower input prices</li> </ul>
CONFLICTS	<ul style="list-style-type: none"> <li>none</li> </ul>	<ul style="list-style-type: none"> <li>some want complete closure of BRE, others want regulators</li> </ul>	<ul style="list-style-type: none"> <li>professional fishermen against powerful villagers</li> </ul>	<ul style="list-style-type: none"> <li>drainage route</li> </ul>	<ul style="list-style-type: none"> <li>none</li> </ul>



## 5.3 Sub-compartment W-area

SUMMARY OF VIEWS EXPRESSED PER INTEREST GROUP, OF WATER RELATED PROBLEMS AND SOLUTIONS

	HYDROLOGY	WOMEN	FISHERMEN	NON-FARM	FARMERS
SITUATION	<ul style="list-style-type: none"> <li>partially insecure</li> </ul>	<ul style="list-style-type: none"> <li>insecure and poor</li> </ul>	<ul style="list-style-type: none"> <li>capture fisheries declining to almost non-existent</li> <li>culture fisheries almost non-existent</li> </ul>	<ul style="list-style-type: none"> <li>bad situations</li> </ul>	<ul style="list-style-type: none"> <li>insecure</li> <li>flood</li> <li>erosions</li> <li>drought</li> <li>drainage congestion</li> </ul>
PROBLEMS	<ul style="list-style-type: none"> <li>erosion of Ichamati river</li> <li>sand deposits on crop land</li> <li>flood by breaching BRE and sometimes from <i>Ichamati</i></li> <li>water congestion on crop field</li> </ul>	<ul style="list-style-type: none"> <li>floods</li> <li>water related diseases</li> <li>female diseases</li> <li>lack of tubewells and water for domestic work</li> <li>lack of latrines and fuel</li> <li>unemployment</li> </ul>	<ul style="list-style-type: none"> <li>migration routes closed</li> <li>hatchlings catching in the <i>Januna</i></li> <li>due to shortage of water flow fish cannot migrate by back flow</li> </ul>	<ul style="list-style-type: none"> <li>unexpected flood</li> <li>water congestion</li> <li>crop damage</li> <li>unemployment</li> <li>road communications disrupted</li> </ul>	<ul style="list-style-type: none"> <li>sand deposit</li> <li>declining soil fertility</li> <li>kharif crop damage</li> <li>high inputs prices</li> <li>limited credit</li> </ul>
SOLUTIONS	<ul style="list-style-type: none"> <li>embankment on both side with re-excavation of <i>Ichamati</i> river</li> <li>BRE is to be secured</li> <li>drainage khal is to be re-excavated</li> </ul>	<ul style="list-style-type: none"> <li>flood as per their requirement</li> <li>health care</li> <li>employment</li> <li>credit and marketing facilities for their products</li> </ul>	<ul style="list-style-type: none"> <li>dismantle BRE or keep open all the entry point of internal water channel system from the <i>Januna</i> or provide sluice gate in the BRE</li> </ul>	<ul style="list-style-type: none"> <li>strengthen BRE with groynes and sluice gates</li> <li>re-excavation of <i>Ichamati khal</i></li> <li>bridges, culvert</li> </ul>	<ul style="list-style-type: none"> <li>strengthen BRE</li> <li>excavation of the <i>Ichamati</i></li> <li>drainage</li> <li>supplementary irrigation</li> <li>lower input price</li> <li>improved credit facilities</li> </ul>
CONFLICTS	<ul style="list-style-type: none"> <li>none</li> </ul>	<ul style="list-style-type: none"> <li>none</li> </ul>	<ul style="list-style-type: none"> <li>none</li> </ul>	<ul style="list-style-type: none"> <li>none</li> </ul>	<ul style="list-style-type: none"> <li>none</li> </ul>

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#### 5.4 Summary needs assessment survey Sirajganj CPP adjacent area

The findings of the needs assessment in the Sirajganj adjacent area can be summarised as follows:

##### Hydrology

The area, particularly adjacent to the BRE, has experienced floods since 1984 through bank erosion of the *Jamuna* as well as breaching of the BRE. The results are water congestion, sand deposits in villages adjoining the BRE, declining soil fertility, drought, partial and total silting up of the beds of internal *khalis* and channels including the *Ichamati* river.

The people in the area suggested stabilizing the BRE, construction of a series of groynes (which they consider necessary to stabilize the BRE), providing sluices on the BRE for controlled flooding (supplementary irrigation), re-excavation of the *Ichamati* and all internal channels, development and construction of internal roads with necessary culverts and regulators. Some people suggested an embankment on both sides of the river *Ichamati*.

##### Farmers

Farming is greatly influenced by the risk of the BRE breaching. This results in significant damage to 1st and 2nd kharif crops, high mortality rate of livestock and poultry due to shortage of straw and grazing land. The main concern of the farmers is to make the BRE secure. Most farmers want supplementary irrigation through sluices in the BRE, improved drainage through re-excavation on *khalis* and better road communication facilities.

##### Fisheries

The construction of the BRE, which had (has) only a few sluices, resulted in a drastic decline in capture fisheries. Since 1984 the openings of the sluices got choked up due to siltation. This, together with the partial or total siltation of all the internal channels, river beds and perineal water bodies (due to floods), resulted in the migration routes of the hatchlings getting closed. Furthermore the grazing field for fish has been reduced considerably. This has resulted in the almost total extinction of capture fisheries.

Culture fisheries is very limited, too. The main reasons are that there are few ponds and those that do exist, dry up early because of high infiltration rate. Fishermen suggested that sluices should be constructed on the BRE at all the entry points to allow migration of hatchlings. They also suggested re-excavation of all internal channels to allow hatchling migration and grazing ground for fish, and development of culture fisheries.

##### Women

Bank erosion of the *Jamuna* and breaching of the BRE have posed a serious threat to the women of the adjacent area. The following problems are linked with the devastating floods of the project area; increasing rate of rural unemployment due to absence of work during floods, reduction of labour wages, lack of drinking water, high prices of agricultural produce and consumers goods, destruction of private and public property and female and child diseases. The women of the area suggested to strengthen the BRE by building groynes, and to build sufficient gates to allow controlled flooding. In addition they suggested construction and development of village roads, including bridges and culverts.

##### Non-farming

The non-farming men expressed view very similar to those recorded from the women. They put more stress however on the need to re-excavate silted up channels and build more culverts and bridges.

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## 6 MEETINGS WITH UNION PARISHAD MEMBERS AND LOCAL ELITE

### REPORT ON BHADRAGHAT UNION PARISHAD MEETING

#### 1 Details

The overall situation of *Bhadrachhat* Union is one of drought/scarcity of water, as well as sudden flooding such as in the year 1962, 1968 and 1988.

Due to the above mentioned situation they are facing different type of problems. Road and navigation communication are often disrupted. Due to breaching of the BRE, sand/silt filled the channels and the entry point of the local channel have silted up and became almost dry. The farmers are forced to use underground water. Crops are damaged by drought and sudden flood. Livestock and poultry mortality rates are high.

They face fish non-availability and fish disease as the migration routes are closed and the water bodies, channels and low pockets etc. are silted up. Water is polluted and people become un- or under employed. Women, men and children are suffering from different type of diseases due to flood and drought. They have mentioned the following suggestions as the solution of their problems;

- To re-excavate the *Fuljone/Ichamati*, *Chandroghona* and *Mukbelai Katakhal* khal with deep and wide sluices at the entry points.
- A sluice gate at *Sariatkandi* is essential and they also requested to construct a bridge on *Nolka Kazipur* road at the *Mukbelai Katakhal* khal.
- The river has come very close to 'Lutfai High School' so protective work is needed.
- At the initial stage of discussion they wanted a sluice instead of a bridge (No-3) but later on they have rejected the sluice because they prefer navigation facilities as this is the only local navigation route.
- To solve the unemployment problem for women and men they proposed to make cottage industry and to establish a livestock and poultry farm.
- They have given the names of three *khakh pikur* to be re-excavated, which will create employment opportunity as well as fish culture.
- They wanted training regarding prevention of disease and water sanitation and establish a clinic/hospital in their Union.

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## REPORT ON SUBGACHA UNION PARISHAD MEETING

### Details

The Chairman, members, local elites, teachers, professor and hundreds of villagers explained their situation and problems as follows;

This Union faces the threat of erosion and a BRE breach followed by flood. This creates landlessness, unemployment, siltation of internal water channels and water bodies, resulting in extinction of fish, and crop loss. When there is no breach they face drought, scarcity of homestead land, usable water, etc. There is also a problem regarding irrigation with underground water as the water level is going down (the land is sandy) and underground water brings iron to the land creating loss of fertility.

They suggested the following solutions;

- To provide a groyne at *Banglabazar* to protect against erosion (there is no other means to do it as the land is sandy up to *Ghandail*.)
- Re-excavation of *Ichamati* branch with deep ditches at certain intervals with deep and wide sluices on the BRE. They want surface water irrigation facilities and capture fisheries.
- The canal from the river up to the BRE (ie outside the project) should have high bank to get rid of siltation and problems with maintenance, which can be done by local bodies.
- The road from the BRE to *Ghati Subgacha* should be developed with a culvert.
- An integrated farm, including fishery, dairy, poultry and vegetables has to be developed on *kash* land in the Union.
- There is a sluice gate at *Char Subgacha*, but its sill level is high, reducing its usefulness. The gate has not worked during the last two years because the wooden parts were damaged and because of a conflict about its operation. Now the wood has been replaced but because of the high sill level there is doubt whether the gate will work properly.
- People are concerned about the timing of water inflow, and have suggested that a regulator be constructed on the now retired embankment to relieve water congestion between the old and the new embankment.
- A professor said the following, and others supported him: "Retired embankment is no good for us. We never get a good or permanent solution, rather we incurred loss. Building retired embankments is a way for corrupted persons to earn unworthy money".
- There is a conflict with the operation time of the existing sluice gate at *Char Subgacha*. When the people of high land want water the low lying areas don't want it. The authorised committee headed by the Chairman solved this problem by opening and closing the sluice the gate with very short intervals, which resulted in no good for either group. As a result this sluice has been non-functioning for the last two years.

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## REPORT ON PANGASHI UNION PARISHAD MEETING

### Details

This area has been affected by flood since 1984 to 1991 except 1986.

At present their problems are scarcity of water when floods do not occur and too much water during the flooding. As a result they face drought, channels are silted up, there is no capture nor culture fisheries, crops, livestock and poultry are damaged. Soil fertility is decreasing due to use of underground water by deep and shallow tubewells for irrigation. After a flood, villagers suffer from diarrhoea, dysentery, infections and fever. Apart from these disease, child disease, female diseases and scabies prevail. They have mentioned that as people become poor by the flood and drought, women are facing different kind of social oppression such as polygamy. Many people also face un- and under-employed by the flood.

People wanted the following solutions of the above mentioned problem:

- Re-excavation of *Ichamati* river from *Nolka* ferry to the entry point of the *Jamuna* with a deep and wide sluice gate at *Sariakandi*. It will provide surface water for irrigation which will increase soil fertility and crop production.
- Re-excavation of a channel that originated from *Ichamati* at *Brahmagacha* connected to the *Ichamati* at *Bakultala ghat* (*Arongdaha* village) on the way supplying *Boikundhapur*, *Jolagati* etc. with water. This channel crosses the old *Bogra* road and other roads at certain point of its course. Villagers expect that if this is implement, then about 1 lakh metric ton of paddy will be produced in this area.
- The road from *Bhadraghat* to *Pangashi* via *Kalinja* should be improve.
- They requested to create employment opportunities for the unemployed women and men by establishing cottage industry and factories.
- To provide health lesson and to the women and men, making them aware about the bad effect of dowry and illegal divorce.

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## REPORT ON BRAMMAGACHIA UNION PARISHAD MEETING

### Details

The Chairman, Members, local elite, teachers lawyers and many villagers expressed their present situation and suggestions as follows;

The total area is facing shortage of water when there is no flood. Flood occur due to the breach in the BRE. The internal water channel system is mostly silted up, specially the mouth of the internal water channels became high. A sudden breach thus creates floods, resulting in devastation.

The *Ichamati* river is the principal river and it had a continuous flow throughout the year before the 1988 flood. Now it has silted up in various areas resulting in a low flow capacity. The flow now erodes the local bazaar. The area is becoming a fish-less zone whereas before construction of the BRE it was a fish surplus area. The underground water level is going down and it is also expensive at the same time as underground water brings iron on to the land, decreasing land fertility. Shortage of water also creates problem in homestead use, cultivation, for fishermen etc. Thus the total ecological imbalance destroys the natural harmony of the area.

Those present suggested the following solutions:

- "Re-excavation of the *Ichamati* river, *Chandraghona* river, *Baromashi khal (Kangati)*, *Hamladanga khal*, (from *Ichamati* river to *Hamladanga beel*). *Char Brammagacha khal*, *Nalgora khal* (from *Ichamati* river up to *Nalka* via a number of beels in this area). This will restore the water flow and we can get surface irrigation, fisheries resources, water for homestead use and finally bringing back our natural harmony.
- Provide sluice gates at the intake point of all the internal water channels that we asked to re-excavate. Sluice gates will provide facility of water entry in our area, and if we get water upto 15th of *Sraban* to inundate our crop land, this will result in the increased fertility of land and also give a grazing field for fish. The proposed solution will create a positive effect in every sector on which we depend for our livelihood.
- Finally we like to request all of you to provide controlled flooding and by no means elimination of flood.
- We have a specific problem, ie erosion of the bazaar. Our proposal is to change the course of *Ichamati* by a small groyne 300m upstream from the bazaar, or by afforestation or by loop cutting.
- We have heard that you are going to construct an embankment on the left side of the *Ichamati*. We are dead against this because it is completely lethal to us. It sounds to us as our death sentence, and we will never accept it."

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## REPORT ON BAHULI UNION PARISHAD MEETING

### Details

Those present at the meeting said they were facing floods from the *Jamuna* and *Ichamati* and also from excessive rainfall. Flood occur from the *Jamuna* when there is a breach in the BRE and also by back flow up the *Ichamati* river. Water congestion also creates a flood situation and all these types of flood and water congestion result in the loss of crops and siltation of the water channels. Homesteads were flood affected in the years '74, '84, '87, '88 and 1991. Floods are always followed by diseases, female disease, unemployment etc. The Chairman, members, local elite and villagers expressed their water related situation water as mentioned above. They think that the main problem is siltation of water channels and less current in the channels (because the area is low). They also pointed out some local problems which are not directly water related.

They suggested the following solutions:

- Re-excavation of *Daibhangha* and *Ichamati* river with sluice gates at the intake point.
- Make an embankment on the left side of the *Ichamati* river.
- Re-excavation of canal from *Brammakhola* to *Jinaigari* via *Bahuli*.
- Develop the road from *Bhadraghat* to *Alampur* high school with necessary culverts.
- Develop the road from *Shialkole* to *Changacha*.
- Excavate canals from *Alokdia*, *Dip Pur*, *Kalidasgari*, *Chubbisha* etc. to remove water congestion from the said area.
- Re-excavate the canal from *Bugdumur* to *Bhadraghat* via *Chandpul*.
- Re-excavate 6 khash ponds (10 acre) for culture fishery.

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## REPORT ON RATANKANDI UNION PARISHAD MEETING

### Details

The situation is insecure because of the BRE breaching, followed by flood and bank erosion. Flood and erosion results in landlessness, destruction of homesteads, loss of crops, loss of culture fisheries, diseases, unemployment etc. The Chairman, members and local people told us their frightening experience following a flood. They believe that because of bank erosion the BRE breaches. They say that the solution is a groyne. They know that the water channels became silted up, so these cannot allow enough water in the channel, so overflow occurs beside the bank erosion.

They have proposed following solutions:

- Build a groyne at *Sondlibazar/Hungrahata (Kazipur)*.
- Re-excavation of a canal from *beel Nalchungi* to the *Ichamati* branch at *Gozaria*.
- Re-excavation of *Chilgacha khal*.
- Re-excavation of *Ichamati branch*.
- Re-excavation of canal from *Maduabari* to *Porabari*.

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## REPORT ON SHIALKOLE UNION PARISHAD MEETING

### Details

The Chairman, members, present villagers expressed their concern as follows;

"We are facing floodS when there is a breach in the BRE or by back flow. We face drought when there is no flood. The internal water channel system became silted up and with a small in-flow these channels over flow and we incurred losses of crop. We do not get fish because the migration route is closed by the BRE. During the building of BRE the government ensured us that there would be sluice gate every one mile. Later we did not get them. There are one or two sluice gates on the BRE which are placed at a high position which is worthless for us."

Those present have suggested for the following solutions:

- "Re-excavate the *Chandra* river system from the *Jamuna* upto *Nalka* and provide deep and wide sluices at intake points on the BRE and at the outfall point at *Nalka* which will protect back flow. Then we get irrigation and good fishery and no flood will occur.
- Re-excavate *Bemali khal (Kata khal)* with sluice at intake and outfall.
- Remove water congestion from *Veoumara* and *Rupurbari*.
- Improvement of road from *Veoumara* to *Subgacha union parishad* via *Itali* and *Bahuka* with bridges at *Itali*, and make a bridge on *Suria Nandi* crossing.
- Development the road from *Ratankandi* to *Sanamukhi* with necessary culverts.
- Development the road from *Koratia (Shimanta bazaar)* to *Ekdala*.
- We think it is painful that many people come to ask us so many things, but ultimately we see no results."

## REPORT ON CHIANGACHIA UNION PARISHAD MEETING

### Details

Chairman, members, local elites and villagers expressed their situation as follows;

"We faced crop loss before the construction of the BRE. After the BRE we were getting two crops in a year. Breaching started in 1974, and then at random from 1984 onwards. Breaching creates a sudden flood and destroys our crops, homesteads etc are lost, thus creating landless, loss of livestock, loss of culture fisheries. Diseases occur during floods and floods also destroys cottage industry. Following a breach all internal water channels become silted up and the drainage capability of the channels becomes almost nil. There is no water entry point at the BRE which creates drought and scarcity of usable water for domestic purposes, and there is no fisheries. Fish is also destroyed by extensive disease."

"To stop erosion, retired embankment were build several times which resulted in the loss of cultivated land and yet we ultimately faced erosion after one or two year. Thus these another retired embankment was tried, resulting in more loss and no safety. Retired embankment were never provide with a sluice to allow water."

Those present also suggested the following solutions:

- "Provide a groyne at *Shimla bazaar* which will ensure the stability of the BRE as we have seen this at *Zia More* or *Ranigram*."
- The positive effects of a groyne are so many that they cannot possibly be contained in a note book!"
- Re-excavate *Daibhanga khal* and *Ichamati*, provide a sluice at the intake point on the BRE.
- *Bhatpiari* to C&B road should be developed, which will act as a flood shelter if there is a breach (due to lack of groyne) and also as a second defense embankment which will protect 100% of *Khokshahari*, 80% of *Baghati*, 60% of *Ratankandi* and 60% of *Changacha*. A sluice gate at *Degreepara* is necessary in case the effected people try to destroy the second embankment. If necessary, this secondary protection can be protected by police action and local people.
- Rehabilitation of erosion affected people on *klash* land of *Changacha* union and provide employment for them by handicrafts industry.
- Re-excavate 3 *klash* pond at *Tukra Changacha* (500 ft x 100 ft) and 400 ft x 90 ft and one at *Bhurburia* (1 acre) for culture fishery.
- Create handicraft industry (weaving, wood and bamboo work etc.)
- Dairy and poultry farm would be helpful."

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## REPORT ON KHIOKSHABARI UNION PARISHAD MEETING

### Details

The Chairman, members and local elite stated their situation and problems as follows:

"The people of this area are facing floods and bank erosion due to BRE breaching which started in 1974 and from 1984 became more frequent. Erosion and breaches are deadly problem. Erosion creates landlessness and floods destroy crops, homesteads and road communication, results in loss in culture fisheries and disease for men, women and children. Women face additional oppression (divorce, dowry, polygamy etc.) following the social dislocation caused by floods. Because of breaches the natural water channels and low pockets became silted up, resulting in less capacity for water flow and this results in flooding."

Those present suggested the following solutions:

- "Stabilize the BRE by constructing a series of groynes from *Sirajganj* to *Kazipur*.
- Make an embankment from *Ranigram* groyne 'T' head to the *Shailabari* groyne 'T' head to save the people in-between this area, and a lot of cultivable land will be recovered.
- Re-excavate *Chandragona khal* with a sluice gate at the intake point and one at the outfall.
- Make a road from *Gunargati* to R&H road at *Fakirtalar*.
- Make a road from *Khokshabari union parishad Charpara Mosque*.
- Make a road from *Pachil* school to the CARE road with a control structure.
- Re-excavate the *khal* from *Khokshabari beel* to *Chandra* river.
- Re-excavate the *khal* from *Shahangacha* to *Bahuli* via *Brammangati*.
- Develop culture fishery at *Fakirtala* in *khush* water body.
- Make a bridge at *Dippur* on the old *Bogra* road.

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## STRUCTURAL SOLUTIONS AS PER NEEDS ASSESSMENT SURVEY

The needs as expressed in the separate interest group meetings have been summarized in the map **MAIN INTERVENTIONS AND LOCATIONS AS SUGGESTED BY NEEDS ASSESSMENT**

### Sub-Compartment #1

- 1/1 *Choremara* to *Subgacha* road to be improved as embankment
- 1/2 Deep and wide flashing and drainage sluice on BRE at the entry point of the *Suraya* river (*Ichamoti*) at *Banglabazar*
- 1/3 One culvert in front of the village *Choremara* on the East-West WAPDA road
- 1/4 One culvert on the road from *Banglabazar* to *Baikhola*
- 1/5 Bridge on the *Bahuka Veomara* road at *Itali*
- 1/6 Groyne at *Shimla* or *Khudbandi* on *Banglabazar* or *Junkail*
- 1/7 To increase opening of the existing culvert on the road near the land of *Sirajul Islam Talukder*

### Sub-Compartment #2

- 2/1 Village road of *Char Bahuka* to be improved as embankment
- 2/2 Improvement of *Banglabazar-Veomara* road as embankment
- 2/3 Re-excavation of the *Ichamati* branch
- 2/4 *Sukdehpur - Saratal* road to be improved as embankment
- 2/5 Re-excavation of *Sukdehpur khal*
- 2/6 To improve *Chilgacha* village road near *Chilgacha* School with a culvert
- 2/7 *Chilgacha* village khal to be re-excavated
- 2/8 To construct two bridges on the *Suraya* river at *Char Bahuka/Bahuka*
- 2/9 To increase opening of the existing culvert on the road near *Jalal Talukder's* residence

### Sub-Compartment #3

- 3/1 Re-excavation of *Ichamati* channel starting from *Par Shimla*
- 3/2 Re-excavation of *Pachchim Dattabari khal*
- 3/3 To provide deep and wide sluice gate at *Gannatpur/Par Shimla* on BRE
- 3/4 Bridge on the road near the mosque of *Dattabari*
- 3/5 Sluice gate at *Chormara* on BRE



**Sub-Compartment #4**

- 4/1 To improve *Baghati-Beel Pakuria* road as embankment
- 4/2 Re-excavation of *Baghati/Kangati khal*
- 4/3 Re-excavation of *Ichamoti Branch khal* (North of *Harina*)
- 4/4 Embankment along the *Ichamati* river (Left)
- 4/5 Re-excavation of East-West *khal* at *Haripur* (could not be traced in the map)
- 4/6 Village road at *Chak Mohanbari* to be improved as an embankment
- 4/7 Re-excavation of *Ichamati* and *Kangati khal* from *Gangla Beel*
- 4/8 Re-excavation of *Painalgati khal* on the east *Beel Pakuria* village (could not be traced in the map)
- 4/9 Bridge at *Hasna* near *Baghati Bazar*
- 4/10 Construct a Culvert/Bridge at *Nasoda Harina* (could not be traced)
- 4/11 Water entry points at *Baghati* near cattle market

**Sub-Compartment #5**

- 5/1 Improve *Ghorachara* village road
- 5/2 Re-excavation of *Ghorachara khal*
- 5/3 Vantage of *Saluavita* sluice to be invariably extended or replaced by a bridge
- 5/4 Re-excavation *khal* at *Aminpur*
- 5/5 Re-excavation of *Daivanga khal*
- 5/6 Re-excavation of *Ichamati* branch from *Degreeer para* to *Daivanga*
- 5/7 Deep and wide sluice as the intake of *Daivanga* on BRE at *Bhatpiary/Pach Thakuri*
- 5/8 Road repairing and improvement from *Baira* to *Bhatpiary*
- 5/9 Wide and deep sluice gate on BRE at *Naoda - Sailabari*
- 5/10 Road repairing at *Gupirpara*

**Sub-Compartment #6**

- 6/1 Village road from *Changacha* to Old *Bogra* road through *Khaga* to be improved
- 6/2 Re-excavation of water channel from *Tukra Changacha* to *Brahmakhola*
- 6/3 Re-excavation of the *Ichamati* main river
- 6/4 Re-excavation of *Adapachat Beel khal*

- 6/5 Bridge on the *Rangaliagati* road  
6/6 New *khal* on western road side of *chak Phulkocha* to be dug to drain out water  
6/7 A new culvert to be constructed on *Alampur khal (Islampur Old Bogra road)*  
6/8 Present small bridge on *Bagdumir* to be replaced by a big bridge  
6/9 A new bridge on *chak Phulkocha* road closed to the existing culvert

#### **Sub-Compartment #7**

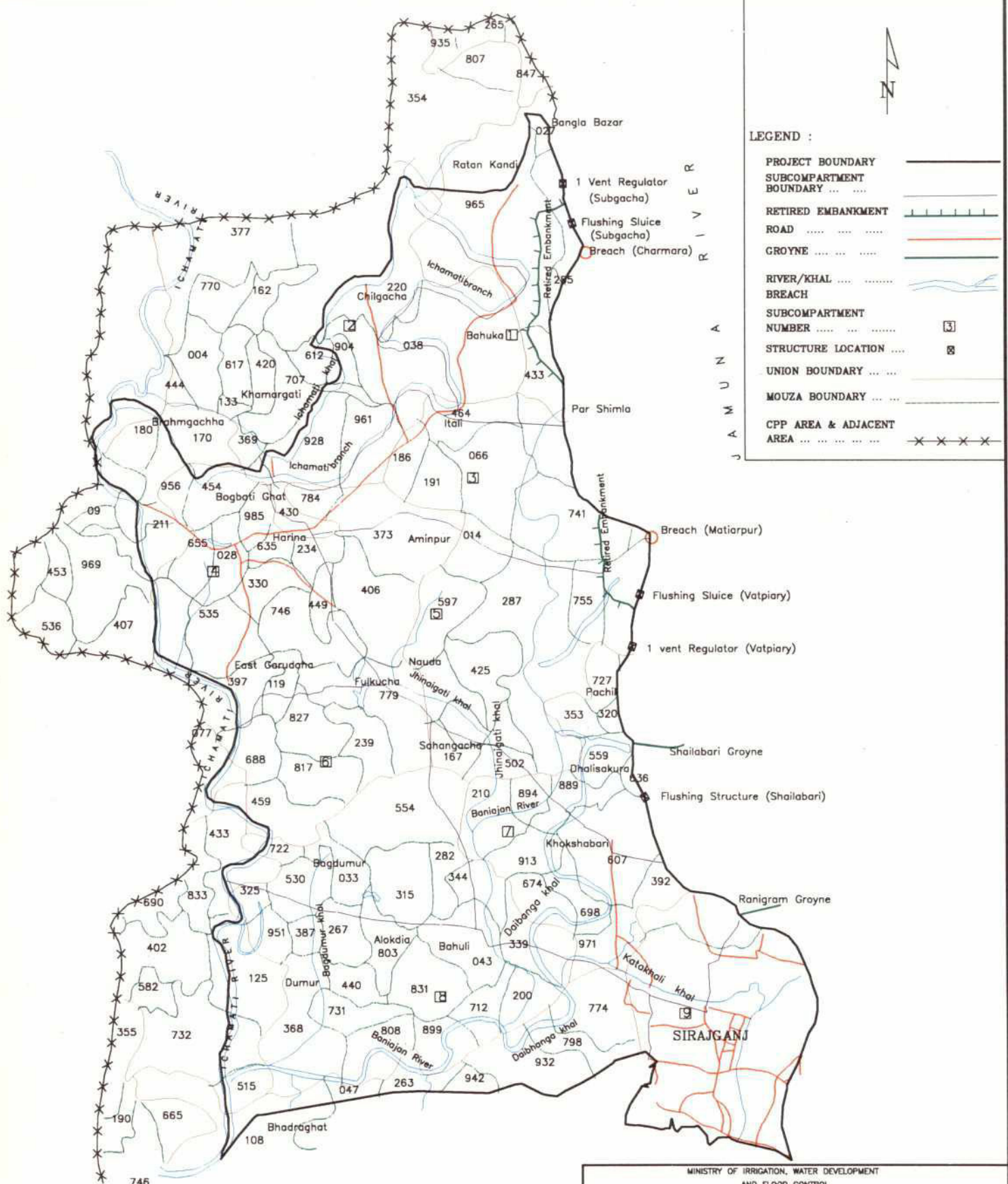
- 7/1 Re-excavation of *Kushahata khal*  
7/2 Deep and wide sluice gate at *Khokshabari* on BRE  
7/3 Existing sluice on *Ekdala khal* to be made operative and the same *khal* to be re-excavated  
7/4 Re-excavation of *Shukibari khal (Bhurvuria)*  
7/5 Construction of a wide and deep sluice on BRE at a place 50 yards worth of *Ranigram Purba para* Youth Co-operative Society  
7/6 Road construction from *Saluavita* to *Baniagate*

#### **Sub-Compartment #8**

- 8/1 Drainage *khal* at *Phulbaria* to be re-excavated  
8/2 North side borrowpit of new *Bogra* road to be converted into main drain  
8/3 Re-excavate *Katakhali khal* with wide an deep sluice at the intake point on BRE  
8/4 Re-excavation of *Ichamati* river  
8/5 Re-excavation drainage river upto *Nalka*  
8/6 New bridge on new *Bogra* road near *Phulbaria*  
8/7 Two culverts on the road of Upazila Parishad at *Telkupi*  
8/8 Re-excavate *Chandpal khal*  
8/9 One bridge/hydraulic structure on *Daivanga* river north of *Beel Gazaria*  
8/10 Repairing and improvement of all surveyed village roads  
8/11 Deep and wide sluices on all intake points of rivers and channels on BRE  
8/12 Stabilize BRE from *Shariakandi Kazipur Sirajganj*



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LEGEND :

PROJECT BOUNDARY	—
SUBCOMPARTMENT BOUNDARY	---
RETIRED EMBANKMENT	—x—x—x—
ROAD	—
GROYNE	—x—x—x—
RIVER/KHAL	~~~~~
BREACH	—
SUBCOMPARTMENT NUMBER	[ ]
STRUCTURE LOCATION	⊗
UNION BOUNDARY	- - - -
MOUZA BOUNDARY	.....
CPP AREA & ADJACENT AREA	—x—x—x—

MINISTRY OF IRRIGATION, WATER DEVELOPMENT  
AND FLOOD CONTROL  
BANGLADESH WATER DEVELOPMENT BOARD  
FLOOD PLAN COORDINATION ORGANISATION

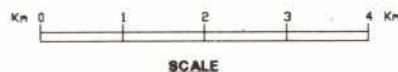
COMPARTMENTALIZATION PILOT PROJECT  
SIRAJGANJ (FAP 20)

UNION AND MOUZA LOCATIONS (PROJECT AND ADJACENT AREAS)

Consultant: Euroconsult, Lohmeyer Int., Beta Ltd., HCL

Figure No. 1

C  
FAP20  
P



SCALE





