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

COMPARTMENTALIZATION PILOT PROJECT (FAP 20)

TANGAIL CPP INTERIM REPORT

ANNEX 1.3 : MULTI-DISCIPLINARY SUB-COMPARTMENTAL SURVEY
APPENDIX 6 : ADJACENT PART : VOLUME 2 (SC. NO. E6, E7, DHALESWARI FLOODPLAIN)

September 1992

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

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

COMPARTMENTALIZATION PILOT PROJECT (FAP 20)

TANGAIL CPP INTERIM REPORT

ANNEX 1.3 : MULTI-DISCIPLINARY SUB-COMPARTMENTAL SURVEY
APPENDIX 6 : ADJACENT PART : VOLUME 2 (SC. NO. E6, E7, DHALESWARI FLOODPLAIN)

September 1992

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

TANGAIL CPP INTERIM REPORT

ANNEX 1.3 : MULTI-DISCIPLINARY SUB-COMPARTMENTAL SURVEY
APPENDIX 6 : ADJACENT PART : VOLUME 2

TABLE OF CONTENTS

GENERALLY RELEVANT DATA

Rainfall and Drought

Sporadic rainfall begins in April, usually associated with North-Wester storms. Normal monsoon rainfall starts in June, continuing through July and August. Rainfall gradually becomes less and less frequent in September and October. There are variations from this usual pattern: sometimes heavy downpours early in May-June inundate the low lying farm land. Due to poor drainage condition this rainfall damages the standing crops e.g., mature Irri/Boro (sown late) and new B. Aman (*Chamara)* seedlings. This actually happened in 1991.

Once every few years there is heavy late monsoon rainfall in September and October, as was the case in 1991. This aggravates the drainage congestion problem in low lying areas, and T. Aman is damaged. Due to slow drainage, Rabi crops cultivation is delayed thereby delaying the subsequent Irri/Boro, which in turn is caught by the early monsoon flooding. In some low areas no Rabi crops can be cultivated due to unusual delay in the drainage, sometimes unto January and February, and thus non-availability of the land for sowing/planting. However late heavy showers in August-September are helpful for T. Aman in higher farm land. The rainfall in late December 1991 damaged some Rabi crops e.g. mustard, due to spoiled flowers and new planted potato due to compacted earth. But this rainfall was beneficial to wheat, cina and vegetables cultivation due to increased soil moisture.

Once every 3-4 years there is a drought problem. Drought in April, May causes damage to the Irri. These days the effect of drought is partly compensated for through the availability of water from DTW's and STW's, which are widespread in the Tangail CPP area.

However, in the higher farm land Aus and Jute are grown, where there are no irrigation facility available. In drought years there is widespread damage of these crops.

DHALESWARI FLOODPLAIN SUB-COMPARTMENT

DH.1. INTRODUCTION

The *Dhaleswari* flood plain is outside the western boundary of the *Tangail* CPP. The area extends from *Kasinagar* in the North up to *Choubaria* along the western bank of the *Dhaleswari* river and from *Char Fatehpur* up to *Babupur* along the eastern bank of the *Dhaleswari* river in the South. The area comprises both high and low land. The higher land is mostly along the river bank.

DH.2. HYDROLOGICAL SITUATION

Riverflow: Flooding and Drainage

The flood plain is unprotected from the flooding of the river. The northern part is flooded both from the *Dhaleswari* and the *Jamuna* rivers. The Southern part is flooded mainly from the *Dhaleswari* river and its branch, the *Elanjani* river. Rainfall does not cause any flooding in the area since the run-off flows to the river unobstructed. However, there are small pockets where the excess run-off is obstructed by road construction causing local drainage congestion e.g. in *Khanjana*. Providing culverts at appropriate locations will relieve these areas.

Average land level in the flood plain is high comprising about 65% of the area and the rest is medium low to low. River water enters in July by overspilling the banks and spreads through the area by overland flow. There are *khals* in some places, which feed the low areas earlier i.g. *Kanlakhali khal* from the *Dhaleswari* river to the *Elanjani* river in *Khanjana* and *Anohola khal* from the *Jamuna* river to the *Dhaleswari* river. Normal flood does not pose any serious problem. Most of the homesteads are above normal flood level.

The cropping pattern is adopted to the normal flooding pattern. Variation of normal flooding adversely affects crops. In July 1991 there was sudden onrush of flood damaging jute, Aus and Aman seedlings and in September 1991, the late flood damaged Aus and T. Aman. Gradual increase in water level does not cause any problem but crops cannot cope with sudden rise in water level. There is demand for embankments to protect against sudden onrush of flood water. The northern part is mainly flooded by the *Jamuna* river and the southern part by *Dhaleswari*. During high flood years e.g. in 1988, there was considerable loss of property.

The flood plain is not usually affected by drainage congestion. The flood water starts receding in September and by October most of the farm land is available for cultivation. Some low areas drained late due to silted *khals* e.g. *Anohola khal*. These *khals* need to be re-excavated to ensure proper drainage, navigation and water availability for various daily uses in dry season.

The *Anohola khal, Kamlakhali khal* and the *Elanjani* river were re-excavated in 1977-1978. Since then these are silted up again.

Water hyacinth does not pose any problem in the flood plain.

Plenty of boats of all sizes ply in the area all though the monsoon, mostly for freight.

Erosion

People are worried about erosion from the *Jamuna* river in the northern part. Erosion started about 7-8 years back in *Kakua, Rajnagar, Kachua, Moheshpur, Chak Gopal and Barbala*. The river has shifted about 3 miles eastward during this period. The present rate of erosion is reported to be about 1/2 mile per year. Erosion is more severe in the early and late monsoon periods.

Ground Water

Plenty of STWs are operating in the dry season for irrigating Irri paddy. There is scope for more in some areas. DTWs are scarce. Operating cost is high since diesel is costly and electricity has not reached most of the areas. HTWs are usually used for drinking water but their numbers are not adequate. Some people drink water from open-wells also. There is no complain about discharge from the wells except in drought years.

Conclusion

The flood plain is unprotected against flood. As such all the benefits of flood are found in these areas e.g. increase of fertility due to siltation, free navigation, free fish migration and absence of drainage congestion problems. Average land level is rising due to continued siltation. However, sudden rise of flood water damages crops, which is a recurrent phenomena. In high flood years, e.g. in 1987 and 1988, there was considerable loss of property. People have learned to adapt to these condition. There is some demand for protection against such sudden flood by embankments with adequate provision for drainage. But a considerable number of people are also against the idea of embankment construction from their experience of the adverse effects in the nearby *Silimpur - Karatia* project i.e. the *Tangail* CPP area.

Ground water resource is exploited but there is considerable scope for expansion.

DH.3 AGRICULTURE

Cropping Pattern

The area is situated on the *Dhaleswari* Flood Plain and occupies the area at the western part of the sub-compartment No.12 and 13 and at the eastern side of the river *Dhaleswari*. The area is an active flood plain of the river *Dhaleswari*. The levee occupying the river bank are mostly high land and course textured soils like FSL to CFS. Topography is greatly undulating, nearly level and slightly slopy towards the basins.

Among the major crops grown in the area, Aus, Jute, T. Aman are prominent in the *Kharif* seasons. Irri/Boro HYV is grown in some areas but not so extensively as in the internal sub-compartments. Among the Rabi crops, wheat is extensively grown. Major cropping patterns practised in the area are as follows:

Crop Patterns				
Land Type	*Kharif-1*	*Kharif-2*	Rabi	Approx. % of NCA
FO-F1	Aus/Jute	-	Wheat/Millet/China	25%
F1	Aus/Jute	T. Aman	Mustard/Wheat/Pulse/Millet	30%
F2	DTW Aman	-	Mustard/Irri/Boro (HYV)	10%
F1	-	T. Aman	Boro (HYV)	5%
F2-F3	Aus+B.Aman/	-	Wheat/Pulse/Mustard/Potato	25%
F2	B. Aman			
F1	-	-	Pulse + Sugarcane	5%

Sugarcane is mostly grown on the levee soils where soils are mostly sandy. Farmers said they cannot grow other crops on this land except pulse.

Average Crop Yield and Price

Farmers reported the following average yield of their crops. The price of their production varies in the area according to demand. Following farmgate price of their production were reported.

Crops	Av. yield/ha.(MT)	Price/MT
B. Aus		
T. Aman (L)	1.40	6030-6700/-
TDWAman/B. Aman	2.30	6030-6700/-
Aus+B. Aman	1.90	6030-6700/-
Boro (HYV)	4.00	6030-6700/-
Braus (late Boro)	3.25	6030-6700/-
Jute	2.20	4556-5360/-
Wheat	2.30	5360/-
Mustard	1.10	12060/-
		14740/-(Lentil)
Pulse	1.00	8040/-(Khesari)
Potato	10.00	3210/-
China	30.00	5360/-
Sugarcane	1.90	5360/-
Millet	1.90	3480/-

Use of Fertilizers

The use of fertilizers in the area is traditional. The doses of fertilizers usually applied is below the optimal doses. Farmers believe that flooding from the *Dhaleswari* river carries silt on to their fields and that this increases the soil fertility. However application of chemical fertilizers is comparatively higher in wheat and Boro (HYV). At present farmers use fertilizers per ha in their crops in the following doses.

Crops	Urea(kg/ha)	TSP(kg/ha)	MP(kg/ha)
B. Aus	130-150	-	-
T. Aman	150-170	110-130	40-50
TDW Aman/B. Aman	120-140	70-90	-
Boro(HYV)/Braus	230-250	150-180	50-70
Boro (HYV)/Braus	280-300	200-220	70-80
China	120-150	90-110	40-60
Wheat	140-160	110-130	40-50
Mustard	120-150	100-120	40-50
Pulse	120-150	90-110	-
Potato	140-160	100-120	70-90
Sugarcane	160-180	120-130	70-90
China/Millet	120-140	110-130	40-50

Farmers said that they apply fertilizers in different crops as per their own judgement. They do not get any advice from the agricultural workers posted in their area.

Irrigated Crops

There is not much irrigated land in the area. The only irrigated crop is Boro (HYV)/ Braus. Boro (HYV) is grown to a united extent (about 10-15%) due to lack of irrigation facilities. Farmers also do not grow more Boro (HYV), area apprehending damage by early flood. No DTWs were available in the area. The only DTW which was installed 2 years ago in the village *char Fatehpur* by an influential Minister of the area but it is not functioning. The scheme failed due to heavy loss of water by percolation due to the coarse textured soils. All the STWs are run by diesel as there is no electricity in the area. Farmers are interested in electricity supply to extend the area of Boro (HYV) by irrigation. The present available STWs are as follows:

Village	DTWs/STWs (Cusec)	Irrigated Area (ha)
Char Fatehpur	DTW 1 No. (2 cusec)	Non-operating
Kharjana	STW 4 Nos.(1/2 cusec)	20 ha.
Chaubari	STW 20 Nos.(1/2 cusec)	100 ha.
Anahola	STW 4 Nos. (1/2 cusec)	20 ha.
Coat Bari	STW 3 Nos (1/2 cusec)	15 ha.
Chinkhali	STW 8 Nos (1/2 cusec)	40 ha.
	Total :	195 ha.

Farmers reported that they pay 1/3 of their production as the cost of irrigation. Last year they paid @ 37% of their production to the tube well owners as irrigation cost. Farmers demanded DTW in the area to expedite the cultivation of Irri/Boro (HYV).

Share Cropping

The term of share cropping is 50:50 of the crop produced. Owners give no support to the share cropper in rainfed crops. Some owners supply seeds and fertilizers to the share cropper in case of irrigated crops.

Crop Damage

No large scale damage is reported in the F0 and F1 type of land. Occasional damage is reported on this type of land by drought and insects of some Aus and T. Aman crops, giving low yields. Crop damage is reported in the medium low to low land in the village *Fatehpur*. Last year about 60-70% of the Aus and TDW/B. Aman were affected by flood from the river *Dhaleswari*. Jute in the area was also partially damaged.

In village *Kharjana* about 30-40% of the deep water Aman and Aus is affected by flood from the *Dhaleswari* and the *Elanjani* rivers while in the village *Anahola* Aus and B. Aman is damaged by flood from the *Jamuna* and *Dhaleswari* river. Farmers also reported some damage to T. Aman by late flood in this village. Farmers are not sure that they can harvest their crops due to such flood. A group of farmers requested an embankment with sluice gates without any disturbance to fishes as well as proper drainage during flood. But another group opposes embankments on the ground that it will reduce the soil fertility in the area.

Livestock

Livestock in the area graze on fallow land, road sides and river banks. Shortage of livestock feed is reported. Farmers purchase straw as high cost for their cattle in the lean season. The deficiency of straw is mainly due to lack of cultivation of Irri crops in the area.

Santosh, Tangail, Fatehpur livestock centre provide the medicare of the farmers livestock but this is not so satisfactory. Artificial insemination is given from *Fatehpur* and *Tangail* but farmers reported that this is less effective and there are few hybrid cattle. Most of the cattle belong to local varieties. Cow pox, toe and mouth disease, rinderpest etc. are the common disease among the livestock. Mass injection is given in the area when requested by farmers. One dairy farm is under construction by SDS in the village *char Fatehpur.*

Poultry

Poultry in the area is mostly of local varieties. Chickens are the dominating birds among the poultry. Ducks are also available in households near the river and water sources. They mostly live on scavenging. Farm poultry are available in small numbers in some medium to rich farmer households.

Farmers reported that farm fowls are difficult to maintain as they are susceptible to diseases. Ranikhet, Tapeworm, fowl pox are common diseases among poultry. Livestock assistants occasionally give mass injection to the poultry in the area. Farmers pay some incentive for medicare of livestock and poultry.

Own Observation

About 55 to 60% of the area is F0 to F1 type land. There is raised land along the river bank (levee) and gently slopy to gently undulating towards the basins. On this land T. Aman, Aus and Rabi crops are grown extensively. The basin and basin edge belong to F2 and F3 land (about 40-45%). Major crops grown in the *Kharif* seasons are B. Aman and TDW Aman with some B. Aus and Jute. Sugarcane, mixed with lentils, is a common practice on F1 land mostly on light textured soils. Among the Rabi crops, wheat is extensively grown. Scope of irrigation in the area is less, resulting in less cultivation of HYV Boro (Irri). No electricity is available in the area. Farmers put a heavy demand for the supply of electricity in their area to install STWs for HYV Boro cultivation. STWs run by diesel are expensive.

Conclusion

The flood from the *Dhaleswari* and the *Jamuna* affect the area, causing damage to deepwater Aman and Aus in the monsoon. Water congestion in the low lying area delays the growing of Rabi crops and in some areas only a single crop is grown. Lack of irrigation facility in the area is the bottleneck for growing Irri/Boro (HYV). Farmers are interested to grow Irri crops in the area and if the electricity is provided in the area they would instal more STWs for irrigation to Boro (HYV). Fertilizers use in the area is traditional and in most cases less than the optimum requirement. Agricultural extension work is almost absent in the area.

Deficiency in livestock feeds and fodder is a main factor to the decline in livestock. Proper medicare is essential to improve the livestock situation. Farm poultry is not

popular in the area. Almost all the poultry are of local varieties. Farmers give less care in this sector due to their poverty.

DII.4 FISHERIES

Water Bodies

The water bodies under the *Dhaleswari* Flood Plain with their number, type, area, available fish species and catch are shown below in the table:

Sl. No.	Water bodies	Number	Area (Acre)	Type	Available fish species	Annual	Ownership	Remarks
1.	Beel	-	-	-	-	-	-	There isno perineal beel within Dhaleswari Flood Plain but flood plain fishery is there.
2.	Pagars i. Anohola ii. Kharjana	6 4	Approx 2acres	Perineal	Koi,Sing,Magur,Chingri,Taki, Shol,Boal,Calisha,Tengra, Pabda, Buthum, Chanda,Chela, and Baim etc.	110-115mts approx.	Individual	Small perineal waterbodies but good number of naturally stocked fishes are available.
2.	Pond i.Char Fatehpur ii. Alohola	1 2	4acres approx	Cultur-able, culture	Major carps, minor carps, Tilapia punti etc.	Poor	Individual	Pond fish culture is not familiar in the area.

Professional Fishermen

There are no professional fishermen in the area. The professional fishermen surrounding the neighbouring areas go fishing in the seasonally flood plain area, *pagars*, ponds and in the *Dhaleswari* and the *Elanjani* river. They catch fish freely in the rivers and flood plain but fishing in ponds and *pagars* is done by professional fishermen on a hire basis.

Subsistence Fishermen

There are about 4/6 household of subsistence fishermen in the village *Anohola*. They are poor Muslim fishermen and they engage in fishing about six months of the year and are occupied in other profession for the rest of the year. They do not go for capture fishing in the rivers due to lack of fisheries equipment.

Fisheries Practices

Culture fishery is very poor. Capture fishery is done mainly by professional fishermen in the surrounding rivers *(Dhaleswari* and *Elanjani*).

Fishing Periods

Fishing in the area starts on the early monsoon i.e. in the month of May when river waters enter the flood plain through the *khals*. During full monsoon, i.e. in the month of June, July and August, flood plain fishery goes on. In the dry season, i.e. in the month of February and March, fishing is done in *pagars*.

Fishing Methods

During the early monsoon (May) people in the area use traps, nets and this time about 80-90% of fishing is done by this method. Angling in the *khals* is also reported during this period but its intensity is very negligible. During full monsoon (June, July, August) fishing in the flood plain is reported to be done by *Karentjal, Berjal, Kharjal, Dharmajal, Jakhijal* and also by means of Harpoons like *Kouch, Aro, Tenta* etc. About 80-90% of flood plain fishing is done by different kinds of nets only very negligible fishing is done by harpoons. In the dry season fishing in the *pagars* is done by using low lift pumps (LLP). The capture fishery in the rivers is mostly operated by *Berjal, Kharjal* and *Karentjal* by the professional fishermen during the major part of the year.

Flood Plain Fishery

Flood plain fishery is practised for a short period. Since the area has much high land, the flood water remains in the area for a period of 3 months (June/July/August) only and the maximum depth is reported to be 5-6'. The area is situated around *Dhaleswari* and its tributary the *Elanjani*. The flood plain is connected with the rivers by some canals through which water flow is maintained during early and full monsoon.

The village *Char Fatehpur* and its flood plain is connected with the *Dhaleswari* river by means of *Char Fatehpur* canal. The village *Kharjana* and its flood plain is connected with the river *Elanjani* by *Kharjana* canal. The village *Anohola* and its flood plain is connected on its western side with *Jamuna* river and its eastern side by the *Dhaleswari* river the same canal. People in the area that the said *khal* was excavated by private initiative a level some 3-4 years before. The *khal* is beneficial to the public in many ways.

During early monsoon, i.e. the latter part of the month May, water starts entering the flood plain through the *khal*. Along with the water many riverine fish and eggs enter the flood plain in early monsoon. The fish thus entering include, *Boal, Rui, Katla, Tengra, Punti, Pabda, Chingri, Bele, Mola* etc. Villagers catch fish in the *khal* and meet their own fish requirements.

Since the area is high land type the flood plain fishery is of short duration and during post monsoon (September/October) the flood water starts receding. This time most of the fish go into the *pagars*. The rest of the fish go back to the rivers. People in and around the visited area reported that they do not need to buy fish from the market right from early monsoon till the post monsoon (May - September) and whatever fish they catch from the flood plain is sufficient for their own consumption.

Institutional Facilities

No institutional facilities are reported in the area. No appropriate Govt. agencies nor any NGO is available to develop this sector.

Fish Predation and Diseases

During the monsoon, flood plain fishery suffers from fish predation. Many predators like snakes, birds, amphibian and fish themselves are the predators. They include frogs, turtles, snakes, kingfishers, herons, kite, and fish like Taki, Shol, Boal, Foli, Gajar etc.

Fish disease is a serious concern. During the monsoon the flood plain fishes like *Taki, Shol, Gajar, Calisha, Puti* etc. are attacked with *Khota Rog* which is scientifically known as Epizootic Ulcerative Syndrome disease. Small shrimps are reported to be free from this disease. People say that the fish disease is not so severe in case of riverine fish compared to flood plain and *pagars* spieces.

Other Problems

The other problems in the area includes over-fishing and undersize fish catch by using small mesh size nets. The over-fishing, i.e. fishing done by low lift pump during the dry season, is a serious danger for fish production.

Fish Migration

The riverine fish migrate during the early monsoon through the *khals* into the flood plain. The migratory fish include both adult and juvenile fish. Some of the migratory berried female fishes spawn in the flood plain.

Own Observation

The area is of the high land type. The rivers *Dhaleswari* and *Elanjani* were found dried up. It is possible to cross the river *Dhaleswari* by car. We also crossed the river *Elanjani* on foot. The river bed was found under paddy cultivation. In some areas of the river *Dhaleswari* where there is shallow water, small fish were found. Excavated ponds are very rare and pond fish culture is almost absent. The canals *(khals)* connecting the surrounding rivers with the active flood plain were found silted up. Only a few road side ditches were found but they are completely dry. The visited area seems to be deprived of fish during the dry season because there is no water sources available in the area during this season.

Conclusion

There is no perineal *beel* and the excavated ponds and *pagars* are very few. There is public demand to increase water bodies in the area by excavating new ponds, *pagars* and re-excavating the existing road side ditches, derelict ponds and homestead *pagars* to facilitate culture fishery, duck culture and to meet household consumption demand other than drinking.

People urged to re-excavate the existing silted *khals* connecting the flood plain with the surrounding rivers *(Dhaleswari* and *Elanjani)* to facilitate fish migration. They also urged to provide them with other means of surface water facilities to enable them to carry out irrigation for agriculture.

DH.5 ENVIRONMENT - MALE

Biological

Arthopoda

Many destructive insects cause damage to agricultural crops like wheat, pulses, vegetables, jute, Irri/Boro and Aman. These insects include *Mazra, Nanda, Changa, Chang Grasshopper* and many other unidentified insects. The insect *changa* attacks the leaf of jute, *Mazra* attacks the paddy and *Nanda* attacks pulses.

Crustaceans such as shrimps and crabs are present in the water bodies of the area. Both crab and prawn are edible but local people, specially Muslims do not eat crabs. Crabs are eaten by Hindus.

Mollusca

Many snails (big and small) and Bivalves are present in the water bodies. Snails are economically important animal as it is a source of lime and also serves as food for ducks, bird and fishes.

Amphibian

Many amphibian like Toad, Frog, *Hyla* which are terrestrial are reported in the area. Sometime ago toads used to be sold in the local market at the rate of one taka per toad. They used to be exported. But the Govt. has banned this toad export business.

Reptiles

Many reptiles are present but in reduced numbers. The turtle population has significantly decreased due to unknown reasons. Reptiles like snakes (both poisonous and non-poisonous), *Guishap,* Lizards are reported out of which the *Guishap* population is dominant.

Birds

Common varieties of bird are available in the area but their population is reported to be decreasing. People in and around say that the bird population has started declining after the flood of 1988. The available bird in the area includes crow, raven, shalik, boi, heron, kingfisher, doyal, dove and pigeons. People also said that also due to hunting by urban people the bird population in the area is decreasing gradually.

Mammals

Terrestrial Wild Animals

Wild animals like Jungle cats, *Bagdasha,* Jackles etc. are absent in *char Fatehpur* village as the village has no significant homestead forest. But in the village *Alohola* and *Kharjana* homestead forest developed and wild animals live in those homestead forests. People reported that wild life in the area has significantly decreased. The *mongoose* population is reported to be satisfactory and live in the bushes.

Domestic Land Animals

People said that the domestic land animals at present are not enough. Once the area was rich in domestic animal but their population has started declining due to fodder scarcity and cattle disease. Whatever domestic land animals are available in the area include, dry cows, milch cows, sheep, goats etc. People reported that due to scarcity of draft animals they are in problem to plough their land.

Others

Public Sanitation

Pucca latrines are very few (about 2/3) and are owned by well-to-do people in the area. Traditional kacha latrines are present in every home and are used by the women. Open sanitation is also reported and is practised by children and men.

Afforestation

No afforestation programme is reported to be carried out either by Govt. or NGOs. The people their own initiation plant trees in their respective homestead during the rainy season. They are also do kitchen gardening.

Deforestation

Cutting of timber yielding trees and small plants is carried out throughout the year. There are no brick-fields in the area but the brick-field owners of the neighbouring areas (like *Santosh)* purchase trees from the owner through traders. They in turn, process the trees in the form of planks, for use in furniture maning firewood etc.

Human Activities

Agriculture

Agriculture is the main occupation of the people in the area. They produce winter crops as well as Irri/Boro paddy. The people say that agricultural production is not satisfactory in the area due to natural disaster like excessive and untimely rainfall and sudden approval and rise of flood water.

DH.6 ENVIRONMENT - FEMALE

Homestead Forest

In an average 2-3 decimals of homestead lands in each home is covered with homestead forest with different types of trees like, coconut, banana, mango, jack-fruit, promoganate, leamon, papya, battlenut, bamboo-clumb etc. Apart from these most homesteads have vegetable gardens with Berjal, beam, spi-nach, bitter guard, pumpkin etc.

Source of Fuel & Percentage of Use

Of the 60% fuel comes from branches of various trees, while 20% comes from dried leafs, jute sticks and bamboos, and the remaining 20% from cow dung and dried bushes of different pulses as well as straw.

Source of Drinking Water

All most all people drink tube well water. The table stated below indicates the number of different water sources:

Village	No. of Tube Well	No. of Well
Char Fetebpur	2 Nos.	-
DK. Khanjana	5 Nos.	2
Anahola	15-20	7 (3 kacha + 4 *pucca)*

Public Health (Sanitation) Disease (Time & Source)

No pucca latrines are available in *Char Fetehpur*. Women say that all households use kacha pit latrines which are quite unhygienic. Chickens, hens and duck go to those dirty places and come to the house so people get diseased. This type of latrine pollutes the air and leads them to get diarrhoea very frequently.

In *Khanjana* 5-8 households have slab-latrines. Most of the people use pit latrines. Women think these latrines are a breeding place for flies, mosquitoes and other insects. People frequently get diarrhoea, scabies and fever through flies and mosquito. Fever and Diarrhoea occur in *Char Fetehpur* all most through out the year while skin disease occur in the months *Magh* and *Falgoon*.

Women of *Anohola* village were found concerned over health issues. They added that their people hardly get sick. Because people eat plenty of vegetables, this prevents them from getting ill. In case of any severe health problem medicare service are available.

Rat Problems (Extend of Damage) Wild Animal

Wild animals like jackle, *mongoose*, jungle cat, fox, *bagdasha*, rats etc. are found in area. It was reported by women that one fourth of their crops are damaged by rats. They also destroy

Human Habitation

New human habitation growth is a major phenomina in the area. People reported that some people from near *Jamuna* river side are migrating to village char *Fatehpur* due to *Jamuna* river erosion. About 10-15 families have settled in *Char Fatehpur* village over the last three years and they have constructed new houses covering an average area of 20-30 decimal per house. In this way the char *Fatehpur* village is extending along the bank of *Dhaleswari* river.

Pollution

People reported that villagers leave dead animal bodies here and there, throw their garbage in the nearby homestead ditches and practise open sanitation. This causes both air and water pollution.

Own Observation

The visited areas are high land type and the villages are situated along the bank of the *Dhaleswari* and *Elanjani* river. The *Char Fatehpur* village seems to have be sett up over the last 3/4 years and the population density is not as dense as that of *Kharjana* and *Anohola*. The homestead garden in *Char Fatehpur* are almost absent and they have very limited livestock wealth. This area seems to suffer from adequate drinking water facilities as only a limited number of hand pump (3/4) were seen. In the whole visited area people have extreme water scarcity problem during dry season. Only 2/3 ponds are available in the whole area. People find much difficult to bath and to bath their cattle. Women do not get any surface water facilities for carrying out their domestic work like washing of cloths and utensils. No ducks were found in the area as there is no nearby water bodies.

The villages *Kharjana* and *Anohola* seems to have established long ago and their homestead gardens are well developed. The majority of the people are farmers but their livestock assets are very poor. Only a few *pagars* were found in the village *Anohola* but with no trace of water. The road communication system is not well developed. Sanitation is very poor. Scarcity of fuel problem is keenly felt by the poor section.

Conclusion

People in the area are seriously concerned over issues like surface water scarcity, lack of sanitation facilities, scarcity of drinking water, poor cattle population, transportation problems and pollution problems.

There is a public demand to provide them with surface water facilities in the dry season by excavating deep ponds, deep *pagars* and by supplying more hand pumps to facilitate household consumptions (like washing, bathing and duck cultivation) and drinking water. Poor people in the area urged to mitigate their fuel scarcity problems as they have no means to face this problems. People in general requested to develop and transportation. They also urged to help them by supplying necessary inputs for construction of *pucca* latrines to avoid pollution.

household belongings. Fox, jungle cat, *bagdasha* destroy and take away their poultry and bany goats.

DH.7 SOCIO-ECONOMIC SITUATION - MALE

Major Non-Farm Activities

The major non-farm activities in which people the area are involved are Service, Agriculture, Transport and Weaving. About 70% are involved in agricultural work, 15% transport work, 10% service, 2-3% weaving and the rest in misc. activities.

Except service holders and some rickshaw pullers the daily labourers in the area are mainly involved in agricultural work. During the lean season of agriculture they switches to other professions like transportation (rickshaw), weaving, seasonal business etc.

Social and Institutional Aspects

Employment Patterns

Mainly family labour is used in the farm household of the area. During the peak season of agriculture, hiring of some labourers is also found in the area. As the area is agriculture dominated, the daily labourers tend to find their work mainly in that sector. During the lean season of agriculture, some move to other areas to work in agriculture, some switch to transportation and a few to the weaving industry.

Out-migration of labour from the area (from all the surveyed villages) happens regularly, while in-migration of labour has been reported only in one village *(Anohola)* and only to a very united extent.

Wage Rates

The wage rate for the agricultural work in the area are as follows:

Sl.#	Village	Wage - Lean Season/Peak Season				Remarks
		Tk.	Meal	Tk.	Meal	
1.	*Char Fetehpur*	20	-	20	1	
2.	*Khanjana*	15	2	20	2	
3.	*Anohola*	15-20	1	25-30	1	
4.	*Choubaria*	15-20	1	20-25	1	

The Rickshaw pullers in the area can earn Tk.30-35 (excluding the rent of the rickshaw) per day while the workers in the weaving industry earn Tk.40-45 (without meal) per day.

Organized Groups

Except *Khanjana* village other villages in the surveyed area do not have with any Govt./Semi Govt. or NGO activities. Therefore no organized groups are found in the area other than in *Khanjana* village. *Khanjana* village has NGO activities of the Grameen Bank, BURO & SDS. They have their organized groups of both men and women in *Khanjana*. A KSS group of 35 members is found in *Khanjana* village.

Transport and Communication

All the villages in the surveyed area have one major road passing through. But the internal road communication system in the area is however not good. Only *Khanjana* village has a good road net work and rickshaw/van can use the road during the dry season. The road, in other areas are mainly used by the pedestrians, but during the rainy season (from July to October) boats become the major means of transport particularly for the people of *Anohola Choubaria* and *Char Fatehpur*.

Markets

Porabari, Baruha and *Torabgonj* hats are the major markets. *Khanjana* and *Char Fatehpur* people do their marketing in *Baruha* and *Porabari* hats (inside the project area), while people of *Choubaria* and *Anohola* mainly do their marketing in *Torabgonj* hat. The *Torabgonj* hat is the main hat for the *char* (Saturday). About 15/20,000 people attend the hat on that day.

General Needs

The main need of the area is development of road communication to facilitate year round movement of people. There is also a great need of water during the dry season. There are no perineal water bodies other than rivers. People suffers from water scarcity for bathing, washing of clothes and also for bathing of their cattle during the dry season. Lack of drinking water facilities and irrigation facility is keenly felt. More hand tube wells (for drinking water) are needed in *Char Fatehpur* village, while demand for a deep tube well came from the people of *Khanjana*. Extension service for agriculture livestock and NGO coverage are also needed in the area.

Own Observation

Existing Water Related Situation

Except *Khanjana* village all other villages in the surveyed area are affected by riverine flood and this causes damage to the crops in the area regularly (every 2-3 years. Flooding occurs in *Char Fatehpur* and *Khanjana* from the *Dhaleswari* while it occurs in *Anohola* and *Choubaria* both from the *Jamuna* and *Dhaleswari*. Part of *Khanjana* village suffers from drainage congestion problems, but the problem is not that acute. Only in high flood and when the *Dhaleswari* overflows, the area is inundation and suffers drainage congestion. The congestion prone area is an area bounded by roads and homesteads at an all sides and the roads have no culvert or drainage pipes in them. So due to un-planned road construction the area suffers the problem of drainage congestion, although the area is of higher elevation.

During flood time and rainy season the people of *Char Fatehpur* suffers most. Homesteads in this village are inundated each year. To move from one house to another, people use *Bhela* (being poor area people of this village cannot afford to use boat during rainy season). However, the flood water in the field or around the homesteads does not stay more than 15-20 days at a time.

The same area suffers from shortage of water during dry season for having no pond, *beel* or any perineal water body other than the rivers at a quite far distance. As a result for bathing and other household works and also bathing of the domestic animals people of the area take much trouble. Drinking water facility in *Char Fatehpur* village have been found inadequate.

Socio-Economic Situation

The households in the area are mainly involved in farm activities and depend greatly on agriculture. Both economically and culturally people of *Anohola* have been found more advanced than people in other areas. The people in this village are also advanced in education and found very conscious about health care. *Khanjana* people are also in a better position both in terms of economy and education but not as good as *Anohola*. But people of *Char Fatehpur* are found living under very bad conditions. They are the poorest among all in all respect (economically educationally & culturally). The number of landless families is highest in this village. In respect of having landless families *Khanjana* village stands in second position, while there are a few landless families in *Anohola*. Out-migration of labour is highest in *Char Fatehpur* followed by *Khanjana* village. Out-migration of labour is very minimum in *Anohola* and also not regular.

Peoples Opinion (about solving water related problem)

According to some people of *Char Fatehpur* embankments on both side of the *Dhaleswari* many help prevent damage of floods. Some said that if the left bank of the *Jamuna* is embankment than flood will have no negative affect in their area. According to some, if the present embankment would have openings to let water inside during monsoon, then their sufferings (caused by water logging) would have been reduced to a great extent.

People of *Khanjana* think that the sluices in the embankment and un-planned road construction are responsible for flood damage and drainage congestion problems in their area. So they suggested to remove the sluices and keep the *khals* mouth open to save the area from flooding. In order to remove the drainage congestion problem, they think that some culvert on the roads will be helpful.

According to the people of *Anohola,* embankments with sluice gates on the left bank of *Jamuna* or dredging of the rivers and re-excavation of *khals* connecting with the rivers (both the *Jamuna* and the *Dhaleswari)* will save them from the flood and its damages. But they prefers the 2nd option i.e. dredging of the rivers and re-excavation of *khals,* because they think the 1st option will go against the use of boat, which they do not want.

Conclusion

The area in the *Dhaleswari* Flood Plain is affected by flooding on a regularly. The flooding is caused mainly by the overflow of the river, caused by the rise of the river bed and the low river bank. The flood comes as a disaster when flood water remains in the area for a longer time (having no way to out) and causes damages to the crops in the fields and creates problems to the people.

Due to the embankment along one side of the *Dhaleswari* and sluices on the embankment, the people of *Khanjana* and *Char Fatehpur* become the victim of flood as these structures cause water logging in their area, following which crops in the area are damaged and normal life is disturbed. People of these area thus have a very negative attitude about the embankment and particularly of sluices. The *Anohola* village being situated at a distance from the embankment are not influenced by the said sluices, even then they also have a negative idea about the sluices.

The people in the area, have adapted their life style to the existing situation and are also coping with the situation well. If measures are taken to improve the flooding situation in the area, then the socio-economic condition of the area could be much developed.

DH.8 SOCIO-ECONOMIC SITUATION - FEMALE

Employment (Labour Use Pattern and Activity of Women)

The major activity of women in the visited area is household work. Poultry raising, cow and goat fattening, homestead gardening have also been taken into consideration as a part of their household work. Apart from these, women help their husband during post harvesting work within their homestead premises. Women in *Char Fatehpur* and *Khanjana* seemed to be very enthusiasm to do some income generation activities within their homestead premises besides their household works so that they can earn some extra money to improve their economic status, because women think that they are fully depend on cultivation which is not sufficient to meet their economic needs. In *Khanjana* 50 60 women are members of the Grameen Bank. They received loans from the Grameen Bank and purchase various types of pulses and sell them.

Four women in *Anohola* village work in different positions like, family planning, school teachers and nurse in Tangail Sadar Hospital.

Wage Rate

Headmistress	Private High School	700-800/- per month.
Primary School Teacher	(Female)	2000/- per month.
FWA	(Female)	1500/- per month.
Nurse		1800/- per month.
Weavers (Male)		200-250/- per month.

Education and Literacy

The literacy rate in *Anohola* village is much higher than that of *Dakhin Khanjana* and *Char Fatehpur*. Women stated as the reason that education facility exist adjacent to *Anohola* village since long; 80% of the people in that village is literate. Women also mentioned that 40 girls and women in this village passed S.S.C. and higher.

Women is *Char Fatehpur* village expressed. That they are reluctant to send their small children to the primary school which is 1 mile away from that village. No other education facility exists there within the short distance.

This table indicates, types of educational institutions, the literacy rate (male/female) according to village:

Village	Type of Institution	No. of Institution	Literacy rate	Boys	Girls
Char Fatehpur	Primary School	1	10-15%	70%	30%
DK. Khanjana	Primary School	2			
	High School	2	20-25%	65%	35%
	Madrasha				
Anohola	Primary School	1	80%	60%	40%
	High School	1			
	Girls High School	1			
	College	1			

Society

More or less in all villages visited Govt. Departments and NGOs were found present. The list of organizations are stated below along with their memberships and activities:

List of Organizations

Name of Village	Name of Organizations	Member		Activities
		Male	Female	
Char Fatehpur	Govt. Family Planning	-	FWA	Motivation & distribution of F.P. contraceptions.
Dakhin Khanjana	BURO Bank	40	30	Savings habit creation train people
	Krishi Samabaya Samity	35	-	on improved agricultural techniques
	Grameen Bank	60	70	Savings and loan program, homestead gardening, MCH based F.P service poultry raising.
	SDS	30	40	Savings
	Govt. Health & F.P.	H.A=1	FWA=1	Immunization & family planning services.
Anohola	Samaj Kallayan Samity (Registered)	25	25	Savings habit.
	Tarun Tez Club	30	-	Games, Sports & cultural issues.

Public Facilities

Public facilities like post office, Union Parishad office, health and family planning clinics are available within one kilometres from the villages in the surveyed area except *Dakhin Khanjana*. No MCH service/ health clinics are available there. In case of any severe health problem people need to go to *Tangail*.

Development Needs

Women of *Char Fatehpur* fervently appealed to build at least one primary school within a short distance so that they can send their small children to the school for education without fear. Women of *Char Fatehpur* and *Dakhin Khanjana* urged to provide latrines and tube wells. No latrine facility is available in *Char Fatehpur* except kucha pit latrine while only a few slab latrines in *Dakhin Khanjana*. Women think, this sort of kucca pit latrine is quite unhygienic.

Severe scarcity of drinking water prevails in *Char Fatehpur* and *Dhakin Khanjana* villages because of the low number tube wells installed. Although in *Anohola* village 8-10 households have tube wells these are not sufficient to meet the needs of local people. Women of *Anohola* village also placed stressed on providing tubewells to the poor who cannot afford them.

Influential Leaders

Name of village	Name of People/Leader	Profession
Dhakin Khanjana	Mr. Boshiruddin	Businessman as well as farmer
	Mr. Ashraf	Teacher Pakullah High School
	Mr. Mazed Hossain	Farmer
Char Fatehpur	Mr. Moksed Ali *Chaklader*	Farmer
	Mr. Fazar Ali	Farmer
	Mr. Basher Ali	Farmer
Anohola	Mr. Abdul Momin	Headmaster Anohola High School
	Mr. Hazrat	Headmaster Anohola Pri. School

Water Related Situation

Women of *Char Fatehpur* stated that they have no pond there and have only two tube wells which are quite insufficient to meet the requirements. Women, men and children go to the river for which is one mile away from village bathing and carry water for cleaning household things. During the month of *Chaitra* the water level decreased much, causing scarcity of water.

Anohola Village

Women told there are some big ditches adjacent to their houses where there is water congestion. The water of those ditches is polluted causing mosquitoes, flies and other insects to grow.

SUB-COMPARTMENT E6

E6.1 INTRODUCTION

The sub-compartment E6 is to the South of the main pilot project compartment. It is bounded by *Tangail-Elasin* paved road on the West, *Tangail-Delduar* paved road on the East, *Karatia-Silimpur* earthen road on the North, *Elanjali* river and *Delduar-Elasin* earthen road on the South. Total area of this sub-compartment is about 1700 ha. This area is influenced by the flood flow from the pilot project compartment in the North through SC-13 and 14.

E6.2 HYDROLOGICAL SITUATION

River Flow: Flooding and Drainage

River flow usually begins in early June. This sometimes coincides with heavy down poors, causing early flood and thereby damaging standing crops such as mature Boro in low areas and B. Aman seedlings.

The usual surface flood flow in this sub-compartment is from the *Lohajang* in the North through the *Atia-Kumaria beel*, beginning in June. The flow passes through the breaches and bridges in the *Silimpur-Karatia* road. During the high flood season, overflow the *Elanjali* river bank, through *Gia Khali* in *Nallapara,* and back water flow from the *Lohajang* river in the East, aggravates the flooding.

These flood waters contain a heavy silt load. Siltation on farm land is beneficial but in canal and river beds causes drainage problems. Water flow from the *Elanjani* brings in sand which is detrimental to farm land. There is demand for closing the *Giakhali Khal* through *Nallapara,* which contributes in aggravating flood, brings in sand but does not help in drainage since the outfall zone is at a higher elevation. Water hyacinth flows along with the flood and a large part of this accumulates in *Nanduria beel.* Controlling of the flood flow in the *Lohajang* river will also control the flooding in this sub compartment.

Small country boats are used in monsoon for local communication of people and freight.

Drainage

The major flood flow comes through the *Thanar khal* and flows East to *Nanduria beel.* Another part goes to *Bara Atia beel* in the West, which flows to SC-13 through the *Pirijpur* bridge on *Tangail-Elasin* road. During the drainage period the *Bara Atia beel* empties back to *Atia beel* and then through *Thanar khal* to *Nanduria beel.* There from the flows reaches the *Lohajang* through two routes: (1) through *Seoratail* and *Jangalia* (SC-E7) and (2) through *Gaznasi Khal* in *Delduar.* However, drainage is inefficient due to silted up channels and drainage congestion is prevalent in the low and medium low farm land. All the channels need to be re-excavated to improve drainage.

Thanar Khal was reported to be re-excavated in 1977 by CARE. A local initiative to re-excavate a silted canal from *Rupsi* village to a flowing channel in *Seoratail* did not

materialize due to opposition from the people of *Seoratail.* Reportedly they feared damaged to their homestead and farm land.

The length of the channel to be excavated in *Rupsi* is about 800m. *Thanar khal* and *Gajnasi khal* are to be re-excavated for efficient drainage of the area. Presently drainage congestion in the early and late monsoon is prevalent in *Chala Atia, Nunduria, Rupsi, Dulla-Ramdeb, Kandapara, Katalia, Gaziabari, Garasin, Maishakatalia* and *Goaria.*

Bara Atia and *Hinganagan* area are relatively high and not affected by drainage congestion. In total about 50% of the available farm land of this sub-compartment is affected by drainage congestion.

Drought

There is a history of occasional drought in the early monsoon period causing some damage to B. Aman cultivation.

Erosion

There is no erosion problem from the *Elanjani* in the South.

Ground Water

From early February irrigation of Boro paddy starts. Deep tube wells of 2-cusec capacity (average 50 acres command area) and shallow tube wells of 1/2 cusec capacity (average 10-15 acres command area) are used. Adequate numbers of tube-wells are available in the area. It is reported that in some areas, at the later stage of irrigation season i.e., in March, April, the required pumping time increases 3 times due to lowering of the water table and increasing absorption. There is no report of any variation in discharge from year to year implying sufficient recharge in monsoon.

For drinking purpose HTW are used widely the available numbers appear adequate. The quality of ground water is reported to be acceptable. The iron content does not pose any problem for irrigation, drinking and/or other uses.

Conclusions

The area enjoys benefits of flooding, but faces the problem of drainage congestion in early and late monsoon. This can be managed by regulating the flow in the *Lohajang* and by a planned programme of re-excavation of channels up to *Lohajang*. If the few perennial *beels* are re-excavated, those will improve fish culture and surface water irrigation by traditional method and LLP. Ground water quality and quantity are satisfactory and adequately exploited, although there is demand and scope for expansion.

E6.3 AGRICULTURE

Crop Production

The gross area of the compartment is 1700 ha out of which approximately 1280 ha are net cultivated area. The major crops grown in the area are Boro (HYV) and Broadcast or transplanted deep water Aman. Among the Rabi crops, mustard dominates the area. The area is gently undulating to gently slopy towards the basin. The overall slope is towards the eastern side of the area. The cropping patterns practised by farmer in the area are as follows:

	Cropping Pattern	% of Area
a)	Boro (HYV)/Braus - B. Aman	25%
b)	Boro (HYV) - TDW Aman	20%
c)	Aus/Jute - T. Aman - Rabi crops (Mustard, potato, wheat)	10%
d)	TDW - Aman	10%
e)	Sugarcane	3%
f)	Sugarcane (intercultured with veg, potato or pulse)	2%
g)	Boro (HYV) - T. Aman - Mustard/ Wheat/Potatoes	20%
h)	T. Aman - Mustard/Wheat/Veg	10%

Average Yield and Price

The average yield of the major crops grown in the area and their sale price at farmgate in the harvesting season are as follows:

Crops	MT/ha.	Price/MT
Boro (HYV)	4.5	6030-6700/-
Braus (late boro)	3.5	6700/-
T. Aman	2.5	6700/-
B. Aman	1.5	6700/-
TDW Aman	1.6	6700/-
Jute	1.7	5360/-
Wheat	2.0	5360/-
Mustard	0.8	13400/-
Potatoes	13.0	3484/-
Pulse	1.2	16080/- Mugh 8040/- Khasari
Veg	5.0	3200/-

Farmers use fertilizers like urea 50-60 kg, TSP 30-40 kg and MP 15-20 kg per ha for Aman while in case of Boro (HYV), 200-250 kg of urea, 150-170 kg of TSP and 50-60 kg of MP are applied. Less quantity of fertilizer application for mustard and sugarcane are reported.

Most of the farmer believe that flooding increases soil fertility. Use of insecticides is occasional. They reported few insect/pest attacks in the area.

Irrigated Crops

Farmers irrigate mainly the Boro (HYV); irrigation on other crops is negligible. Irrigation equipment does not operate in other seasons except the Boro season. In case of necessity farmers irrigate other crops by indigenous method from available surface water source. In our visited area of 6 DTW and 30 STW were found covering a total irrigated area of Boro rice of 257 ha. These are as follows:

Villages	DTW/STW (cusec)	Total ha
Kandapara	DTW 2 Nos (2 cusec)	36 ha.
	STW 10 Nos (1/2 cusec)	50 ha.
Rupsi	DTW 1 No. (2 cusec)	20 ha.
	STW 8 Nos (1/2 cusec)	40 ha.
Bara Atia	DTW 1 No. (1 cusec)	20 ha.
	STW 2 Nos.(1/2 cusec)	10 ha.
Chala Atia	DTW 2 Nos.(2 cusec)	36 ha.
	STW 10 Nos (1/2 cusec)	45 ha.

Crop Damage

Crop damage is reported by the farmers both in the early monsoon (May - June) and during the monsoon (July - August). Damage in the early monsoon is not a regular phenomena. It occurs occasionally when there is a heavy shower in the early monsoon causing partial damage (about 15-20%) to HYV Boro or Braus. Transplanted deep water Aman (TDW) is affected to greater extent due to heavy shower in the of June to July as the water can not drain out properly. Farmers reported TDW is cultivated as a chance crop with the expectation of risk in the monsoon. Damage of this crop is reported to occur almost every year to the extent of 70-80%. Flood water also affect jute to some extent. Last year the TDW Aman losses were 30-40% in the area, as flooding was less in comparison with other years.

Livestock

The loss of natural fodder from low lying areas, due to water congestion, creates a deficiency in livestock feed. There is no grazing facilities for livestock except fallow land. Livestock in the area suffers from deficiency of green fodder throughout the year. In the cropping and the rainy season they are confined to homesteads and depend on supplied food like straw, rice bran, pulse residue etc. There is a lack medicare because of lack of initiative on the part of the livestock department. It is reported that farmers pay some incentive to livestock staff for the treatment of their livestock. Sometimes medicines are also purchased by farmers. The overall health condition of cattle & draft animals is moderate. Almost all the livestock are of local variety. About 5-6 HYV varieties are available in the area. Due to lack of artificial insemination facilities the HYV varieties of livestock in the area could not

increase. The area is deficient in draft animals. In the peak period the hire charge a animal pair rises from Tk. 40/- to Tk.50/-.

Poultry

Poultry are of local varieties. Though some HYV varieties are available in some household, they are not provided with required feeds. They mostly live on scavenging poultry like ducks of local varieties are found in the water bodies of many households. No poultry farm is reported in the area.

Physical Observation

The overall topography is gently undulating to slops towards basin siltes. The slope is from the West to the East. About 20% of the area is still water congested (January 1992). Farmers are compelled to transplant their HYV Boro late. Soils are of a medium to fare textured. Among Rabi crops, mustard is cultivated extensively. Inter-culture of crops like sugarcane and vegetable or other Rabi crops is practised. In some place 3 crops are cultivated on the same land.

Conclusion

The water congestion and poor drainage is the main problem in the area and thereby limiting crop production in the area. As a result the socio-economic condition of the people is less than optimal. The present condition with regard to the above may be improved by effective water management.

E6.4 FISHERIES

Fisheries Resources

Water bodies

The water bodies in the area with their number, type, area, available fish species and catch are shown below in the table

Sl. No.	Water bodies	Number	Area (Acre)	Type	Available fish	Annual	Remarks
1.	*Beels*	5	26	Perineal seasonal	Major and minor carps, catfish, snake-heads, spiny eels, dimbing perches small-shrimps. Shellfishes (Fresh-water nusetes, Lamellidiens and snails including pila-globossa.	Approxi-mately 300-500 mnds.	The area seems qua-litatively and quanti-tatively resourceful some *beels* are owned by public and some are Khash.
2.	Ponds	10	6	-	Carpfish, Punti, Nilotica.	Poor	Practically ponds deve-loping is very poor and no scientific fish culture

Professional fishermen

There are no professional fishermen who live in the area. The people in general catch fish mainly for their own consumption and few poor people sell fish.

Fishing periods

Generally fishing in the area goes on almost round the year but the months December and January are the peak period.

Fishing Methods

Nets such as *Berigal, Kharjal, Dharmajal, Jhakijal, Fashal, Maizal* and *Karentjal* are used. Traps such as *Dhair, Darki, Husa and Polo* are used. Dry season exclusive fishing of *beels* and road side ditches is sometimes done using low lift pump. Hand picking is done in shallow water in the dry season.

Flood plain fishery

Flood plain fishery is practised. For about 2/3 months the road side land and periphery of the *beels* are innundated. The areas is naturally stocked with different kinds of fish in the monsoon period. In the post monsoon period the fish go down-stream and gather in the *beels.*

Institutional facility

Practically no institutional facility are available for fishery development.

Fish predation & fish diseases

It is reported that there is a problem of fish predation. The major problem reported by the people is the occurrence of Epizootic Ulcerative Syndrome diseases over the last three years. This has caused a loss of production due to heavy fish mortality.

Fish migration

In the monsoon the fish from the nearby river migrate to the flood plain and *beels*. The brood fishes spawn in the flood plain in the month of May - June.

Views of the Public

Some peoples suggested to re-excavate the existing perineal water bodies so as to facilitate more fish stock in the area. Some suggested that migratory route of fish be re-excavated to facilitate their movement. Others suggested that immediate steps should be taken to arrest fish disease.

Own Observation

The status of *beel* fishery is good.Fish diseases are common in the area. The fish migratory routes from the rivers to the *beels* and the flood plain were found to be silted up. Professional fishermen from other areas were found fishing in the *beel* on hire basis.

Overall Conclusion

Water bodies

Five open water bodies covering an area of 26 acres are found in the area as well as ponds covering 6 acres of land. There is no fishermen community. People catch fish for their own consumption. Flood plain fishery prevails. Institutional facilities are not noticeable. Fish predation, fish diseases are common. Seasonal fish migration goes on.

E6.5 ENVIRONMENT

Significant Natural Vegetation

Natural vegetation is not well developed in the area except near homesteads, covering an average area of .2 acre in each homestead. There is no natural forest in the area. The homestead forest contains the most common varieties of trees. Fuel scarcity is keenly felt. The main sources of fuel are cow-dung, jute-stick, and the roots portion of sugarcane. Some peoples use paddy straw as fuel, and only very few people uses fire-wood. Poor people sell out their homestead trees to middle man to earn cash. Those trees are cut up by the middle man and sold in the market as fire-wood.

Afforestation

No planned afforestation programme is reported to be in the area. People plant trees at their own initiative. It is reported that CARE is supplying seedlings of some common varieties of vegetables among the people.

New homesteads

New houses are being constructed in the area every year resulting in a slight expansion of the area under homestead.

Aquatic Animal Life

Fish, Shrimp, Frogs, Turtles, Reptiles, Snake are reported to be available in the water bodies.

Land Animals

Domestic, Cow, Buffalo, Goats and Sheep and wild animals such as Foxes, Mongoose, Owls, Jungle Cats are reported to be present in the homestead forest.

Aquatic Plants

Aquatic plants are found in the water bodies e.g. water hyacinth, lily, B. Aman.

Birds

In the homestead forest common variety birds of are available. But the bird population is reported to be declined in the area. In the winter season i.e., in the post paddy harvesting period migrant birds visit the *beels* in search of food.

Rats

The rat problem is serious and cause of a lot of damage to people's property.

Wetlands

Only a few and rather small permanent beels exist in the area.

Ground Water

There are about 180 hand tubewells in the area and there are sufficient to ensure drinking water for the people. For irrigation of winter crops, mainly boro rice, there are about 30 STW and 6 DTW. The ground water stocks appear to be replenished each year by the monsoon rains and river flood water.

Water Quality

Fertilizers and pesticides are reported to be used in agriculture which are likely to be harmful to the aquatic lives.

Public Sanitation

This sector is very poorly developed in the area. With the exception of a few areas, most people use open spaces for sanitation.

Human Activities

Peoples main occupation is agriculture. Almost 80% of study area is under cultivation. Vegetables production is reported to be satisfactory and can meet local demand.

Views of the Public

People in and around the area have suggested thatin afforestation programme should be adopted, the sanitation sector be given attention, construction of roads, paths and the transportation system be improved and medical treatment facilities be ensured.

Own Observations

No natural forest, but only homestead forest was found in the area. The bird population seemed to be poor. Common varieties of trees, plants and shrubs are available. There are a good number of road side ditches and small ponds. The communication system is not so well developed. Hand pumps were seen but they are not adequate in the S-E part of the sub-compartment. No afforestation programme is going on, so deforestation is noticeable.

E6.6 SOCIO-ECONOMIC SITUATION

The following report has been prepared surveying the North-Western area *(Bara Atia Chala Atia* Village) and the eastern part *(Kandapara* Village).

Major Non-Farm Activities

The people of the surveyed area are engaged in different non-farm activities such as agricultural and non-agricultural labours, petty and seasonal business, Govt. and private services, weaving, transportation (rickshaw, van, tempoo etc.). A few families (8/10) earn their livelihood by selling goods made of bamboo.

Social and Institutional Aspects

Employement patterns

In the farm householders mainly family labourers is used except for sowing and harvesting (peak time for agriculture). Mainly labourers from the locality are engaged. Labourers from

outside the area come into the area during the harvesting season of HYV Boro and Sugarcane. The women of the area are not involved in any farm activities in the field. In the post harvesting period they are involved in rice parboiling, drying and husking. They mainly do household work like cooking child-bearing and raising. A few women (in the North-West side) work in the RMP programme of CARE. They are mainly destitute and/or widowed.

Wage rates

In the eastern part the wage rate for the labourers both for farm activities and non-farm activities (like earth cutting, household works, etc.) ranges from Tk. 20 to Tk. 25 with 3 meal and Tk. 30 to 35 without a meal most of the year. Only in the very lean season *(Paush and Magh)* the rate comes down to Tk. 12 to Tk. 15 with three meals. In case of in-migrated labours the payment is different. They are paid Tk. 3 to 5 less than the local labours are paid. The picture in the north-western side (*Bara & Chala Atia* village) is again different. Instead of 3 meal, they get 2 times meals. Other working conditions and wage (cash) rate are the same in both the area.

The labourers engaged with weaving on a contractual basis (production wise) earn Tk. 40-45 per day (without meal). Usually during *Kartik* and *Magh* the labourers of the area out-migrate to other areas *(Sakhipur* and *Kaliakoir)*. Labourers in-migrates into the area during *Bhadra* (season from HYV rice harvesting and sugarcane harvesting).

Education and literacy

The people of the area in the eastern side are not keen about education as most of the families cannot afford schooling of their children. The enrolment of students in schools is not encouraging literacy rate is very low (about 10%). There are two Government and one private primary school and one high school within 2 km of the area. The ratio of schooling students for boys and girls is 2:1. The people of the area in the north western side *(Bara Atia and Chala Atia* villages) are more educated and better off than eastern side. There are 3 primary school, 2 girls high school and one madrasha within one km of the area. The ratio of boys and girls enrolment in the schools is 60% boys and 40% girls. The literacy rate is about 15-20%.

Organized groups

The area in the eastern side has a few landless society of the Grameen Bank. One of these owns a DTW and earn an income though providing irrigation to the farmers. There are also a mahila society of CARE (mainly savings group), and a samity of *Nijera Kori* (a savings group). The Grameen Bank landless committee is running very well. The CARE's committee is also doing good but now lacks supervision by CARE. The *Nijera Kori Mahila Samity* is not functioning very well and the members are also not organized now, as the organization (*Nijera Kori*) is not providing the necessary assistance.

The villages in the north-western side (*Boro-Atia and Chala Atia)* have BRDB societies, three of BSSs with 60 members, one MBSS with 25-30 members and one KSS with 40-45 members. The Grameen Bank's has three Mahila Samities with 65-70 members and one Male

Samity with about 40 members. The activities of the samities are mainly training on different income generating activities and providing loans.

Public facilities

The eastern side area has no UP office, post office or any health & F.P centres. The north-western side has almost all institutions mentioned.

Transport and Communication

The *Kandapara* village (in the eastern part) is situated on the side of the *Silimpur-Delduar* road and the road is communicable throughout the year. Tempoo, Rickshaw and Van use the road. To go from one village to another or in the agricultural field (during rainy season) boats are used by the villagers, but for going to the market, school, hospitals the road communication is preferred.

The *Boro Atia* and *Chala Atia* village (in the *North-western* part) is also have the good road communication facilities, except 1-2 months during rainy season, when the main mode of transport is by boat.

Markets

The people of both area go to *Silimpur, Elasin* and *Karatia* hats. The eastern side people prefer to go to *Elasin* and *Silimpur* hats, while the north-western side people go mainly to *Elasin, Silimpur* and *Karatia* hat. Except the *Karatia* hat all the hats mentioned above have good road communication and approachable throughout the year.

The following table shows the hat (marketing) days with attendance:

Markets	Hat days	Attendance	Remarks
1. Karatia	Thursday	12-15000	All the hats
2. Silimpur	Friday	8-10000	han every day
3. Elasin	Tuesday	7-8000	bazaar day.

General Needs

In respect of education, health communication and marketing problems the people of the area do not suffer much. But the people on the eastern side are comparatively economically poorer than those on the western side and are less conscious about health care.

Creating health care awareness for the people of the eastern side and service of a health centre/clinic there is needed. Extension service for poultry, livestock etc. and samity activities needs to be strengthened in the village of *Kandapara* (eastern side). In both the areas the drinking water facilities (HTW) have been found more or less sufficient.

Own Observation

Existing Water Related Situation

The area in the North-West of the sub-compartment is of higher elevation and therefore flooding is not a problem to the people of the area. Flooding is also not a big problem to the people of the area of the eastern part. But in some areas of the North-central region of the sub-compartment and that of the south-eastern part suffers drainage congestion, which causes loss of one crop in part of the area.

Socio-Economic Situation

The people of the north-western part are more enlightened and (in respect of Education & Economic condition) a bit more advanced than the people of the area to the East. The social infrastructure and other social facilities are also more available in the north-western part than in the eastern part.

Peoples Opinion (about solving water related problem)

The people of (both) the area from all walks of life want to get rid of the drainage congestion as this problem hinders economic development of the area.

Conclusion

The main problem of the area is water logging and drainage congestion. If this problem is solved then the people of the locality will be benefitted to a great extent both economically and socially. The people of the area have indicated that they are agreeable to participate if any development schemes is taken by the concerned authority (WDB) to remove the drainage congestion problem of the area. To ensure peoples participation in the said water congestion removal programme the BRDB & other NGO's working in the area may play an important role to organize people through their activities (as the area has a considerable coverage of group activities) to get the problem solved.

SUB-COMPARTMENT E7

E7.1 INTRODUCTION

Sub-compartment E7 is to the South-South-East of the *Tangail* CPP. This sub-compartment is bordered on the North by the *Karatia-Silimpur* earthen road, to the South by the *Delduar-Matara* earthen road/embankment, by the *Tangail-Dhaka* paved road to the East and the *Tangail-Delduar* paved road to the West. Comprising an area of about 1800 ha. this sub-compartment lies mostly in *Delduar* Union of *Delduar* upazila. This area is influenced by the flood flow from the pilot project compartment in the North; directly from the SC-15 and indirectly from SC-14 through E6. About 50% of the total farmland is low and affected by drainage problem.

E7.2 HYDROLOGICAL SITUATION

River flow: Flooding and Drainage

River flow usually begins in early June. This combines with heavy rainfall and due to lack of proper drainage, causes drainage congestion and early flood. Mature IRRI paddy and new B. Aman seedlings in low areas are damaged due to inundation.

The major surface flooding in this sub-compartment is indirect flow from the river Lohajang i.e. from SC-15 through *Birkushia* canal in the North-East, through breaches in the *Karatia-Silimpur* road in the North, from SC-14 and E6 through *Boaljan* bridge and *Dulla* bridge on *Tangail-Delduar* road in the East. The only direct flooding from the river *Lohajang* is through back-water flow through the tail end of *Birkushia* canal in the North-East. The other canals from the *Lohajang* in the East through *Mirkumulli* and *Barapakia* are closed and a 1-vent 1.5m X 1.8m regulator has been constructed on each of there canals and these are operational since 1991. During the flood season no flood flow is allowed through these sluice gates.

The surface water flow from SC-15 in the north inundates the *beels* and flood plains of *Birkushia, Jalalia, Bhabki* and *Kandapara.* Drainage of these areas is through *Birkushia Khal.* This *Khal* has silted up causing drainage congestion in these areas. In 1977 this canal was excavated by the Union Council through the FFW programme. From SC-E6 the villages *Nalua, Seoratail, Bethuja, Jangalia, Mirkumulli* and *Motherkol* are flooded. Drainage is through the channels at *Mirkumulli* and *Barapakia.* On each of these channels the 1-vent 1.5m X 1.8m regulator is clearly inadequate for the drainage requirement causing widespread drainage congestion and resulting crop damage in these areas. People of the affected areas do not have any say or knowledge about the operation of these regulators. It was learnt from *Motherkol* people that during the drainage period last October, the regulator was left closed, aggravating the drainage congestion in the area. People of the adjoining affected areas were found to be extremely unhappy about there regulators. They cited 4 major reasons for their unhappiness: 1. inadequate capacity; 2. loss of navigation facilities and resulting loss of trade and communication; 3. loss of fish migration in the flood plain; 4. loss of benefits of flood especially of increase fertility of the flood plain from siltation. In fact the people are against the concept of regulator in these channels. Rather they prefer a bridge over a properly re-

excavated channel ensuring adequate drainage while required and enjoying the benefits of flood at the same time. During 1991 late monsoon, there was a small breach near the *Barapakia* regulator in the embankment and thereafter people secretly enlarged it and tried to solve the drainage congestion problem caused by the regulator.

There is strong motivation for improving the drainage congestion situation. In 1988 the people of *Birkushia* re-excavated the channel themselves. About 10 years back, the people of *Rupsi* went to excavate a channel in *Seoratail* but failed due to opposition from people of *Seoratail* as they feared that the excavated channel may endanger their homesteads. In 1988 the people of *Nalua* excavated a channel in *Bhabki* by force against opposition from the people of the area.

About 50% of the total farm land of this sub-compartment is low and affected by drainage congestion.

Country boats, small and medium size, are widely used for local communication of people and freight during the period June to September. Weekly village markets command major boat routes.

The villages *Motherjani, Karatipara* and *Nahali* on the eastern bank of the *Lohajang* are surrounded by roads without any drainage route. The area is flooded from the *beels* on the East of *Dhaka-Tangail* road through a culvert. The area is seriously affected by drainage congestion. Development of the old channel through *Karatipara* will solve the problem.

Outside the embankment the people in active flood plain of *Lohajang* river in *Motherjani* village are affected by the high flooding. Since there is no drainage problem, crops are more secure, especially the Rabi and Boro crops.

Erosion

There is no erosion problem from the *Lohajang* river in this area.

Ground Water

From early February irrigation of Boro paddy starts. Deep tube wells of 2-cusec capacity (average 50 acres command area) and shallow tube wells of 1/2 cusec capacity (average 10-15 acres command area) are used. Adequate numbers of tube-wells are available in the area. It is reported that in some areas, at the later stage of irrigation season i.e., in March, April, the required pumping time increases 3 times due to lowering of the water table and increasing absorption. There is no report of any variation in discharge from year to year implying sufficient recharge in monsoon.

For drinking purpose HTW are used widely the available numbers appear adequate. The quality of ground water is reported to be acceptable. The iron content does not pose any problem for irrigation, drinking and/or other uses.

Conclusion

The main problem of this sub-compartment is drainage congestion, which is aggravated by the two regulators on *Mirkumulli* and *Barapakia* channels constructed by BWDB. In addition to the direct rainfall in the area, flood flow from SC-15, 14 and E6 accumulate here since it is at the tail end of the drainage routes of those areas. In the early and late monsoon periods efficient drainage is very important. Re-excavation of the existing channels, one from *Seoratail* to *Barapakia* through *Jangalia* (about 1.5 km) and the other from *Nalua* to *Mirkumulli* through *Bhabki* (about 14m) will largely solve the problem. A few other internal link canals will be required but those will probably be done by the local people themselves or through the FFW programme. If the few perennial *beels* are re-excavated those will improve fish culture and surface water irrigation by traditional methods and LLP's. Ground water quality and quantity are satisfactory and adequately exploited, although there is demand and scope for further expansion.

E7.2 AGRICULTURE

Cropping Pattern

The total gross area of the sub-compartment is about 2250 ha out of which approximately 1650 ha are estimated to be net cultivated area. Among the major crops gorwn in the area Boro (HYV)/Braus, Broadcast Aman & Aus mixed for deep water transplanted Aman are prominant. The area consists of almost 50% low farm land. Among the Rabi crops mustard dominates in the area. The area is irregular to gently undulating and slopy towards basin and towards the South and South-east side. The present cropping patterns as in practice in the area are as follows:

Crop Patterns				
Land Type	*Kharif-1*	*Kharif-2*	Rabi	Approx. % of NCA
F0 (0-1')	-	-	Lentil/Veg + Sugarcane	5%
F0-F1(0-3')	B.Aus/Jute	T.Aman	Wheat/Potato	15%
F1(1-3')	F	T. Aman	Boro (HYV)	16%
F1(1-3')	-	T.Aman	Wheat/Veg.	5%
F1(1-3')	Aus/Jute	-	Mustard/Potato/Pulse	5%
F2(3-6')	Aus+B.Aman	-	Wheat/Pulse	10%
F2-F3(3-9')	-	-	Mustard-Braus (Late Boro)	15%
F2-F3 +	B/TDW Aman	-	Boro (HYV)	15%
(3-9'+)	-	-	Boro/Braus - F	20%

Average Yield and Price

The average yield of the major crops grown in the area and their sale price at the farmgate level in the harvesting period are as follows:

Crops	Av. yield/ha.(MT)	Price/MT
B. Aus	1.8	6030/-
T. Aman	2.2	6700/-
Aus+B. Aman	1.6	6700/-
B. Aman	1.6	6700/-
TDW Aman	1.8	6700/-
Boro (HYV)	4.5	6030-6700/-
Braus	4.0	6030-6700/-
Jute	1.8	5360/-
Wheat	2.2	5360/-
Mustard	0.9	13400/-
Potatoes	12.0	3484/-
Pulse	1.1	12060/-(Lentil)
Veg.(Cauliflower/cabbage)	8.0	3200/-

Share Cropping

In the sub-compartment share cropper give all inputs in case of crops other than Boro (HYV). The ratio of distribution of production along with by-products is 50:50. In case of Boro crops the cost of irrigation is met by both owner and share cropper equally. In some cases rich owner supply 50% fertilizers and seeds to the share cropper.

Use of Fertilizers

In the sub-compartment the use of fertilizers in different crops are usually below the optimal doses. This is usually due to lack of credit facility and financial constraints. However farmer in the area normally apply fertilizers comparatively in higher doses in Boro (HYV), wheat and mustard. Poor agricultural extension service in the area is also responsible for the lack of knowledge about fertilizer application. Occasionally they use insecticides or pesticides like *Diazin, Faradon, Basudin, Di-macron* etc. to save this crops from the attack of insects/pests. Farmers reported the following approximate doses of chemical fertilizers as follows:

Crops	Urea(kg/ha)	TSP(kg/ha)	MP(kg/ha)	Manure
B. Aus	60-70	40-50	-	1500-1800
T. Aman	60-70	30-40	20-30	(If available)
B.Aman	60-70	-	-	-
TDW Aman	60-70	-	-	-
Boro (HYV)/Braus	160-180	120-150	50-60	-
Jute	70-80	40-50	30-40	-
Wheat	110-130	50-60	30-40	-
Mustard	90-110	40-60	30-40	-
Potato	150-160	60-70	30-40	-
Pulse	-	-	-	-
Vegetable	150-160	60-70	40-50	-

Irrigated Crops

Farmers mainly irrigate Boro (HYV). Some vegetables plots are irrigated mostly by indigenous methods. Irrigation equipments does not operate in season other than for Boro. The following irrigation equipments were available which are given below along with the irrigated area.

Village	DTWs/STWs (Cusec)	Irrigated Area (ha)	Run by Diesel/ Electricity
Bir Kushia	DTW 4 Nos. (2 cusec) (2 No. not operating)	35 ha.	0 - 2
	STW 4 Nos. (1/2 cusec)	20 ha.	1 - 3
Alsa	DTW 2 Nos. (2 cusec)	35 ha.	0 - 2
	STW 20 Nos.(1/2 cusec)	90 ha.	17 - 3
Nalua	STW 6 Nos (1/2 cusec)	30 ha.	6 - 0
Madarkol	DTW 1 No. (2 cusec)	20 ha.	1 - 0
	STW 20 Nos. (1/2 cusec)	90 ha.	17 - 3
Saharatail	STW 8 Nos. (1/2 cusec)	40 ha.	7 - 1
DTW 5 Nos. & STW 58 Nos.	Total :	360 ha.	

Farmers are give 1/4 of their crops as the cost of irrigation at the end of the Boro season.

Crop Damage

The main crop damage occurs in the area in Aus+Aman (mixed), B. Aman and TDW Aman. The area is flooded in the monsoon due to flood flow from SC-15, 14 and E6 and accumulates in this sub-compartment since it is situated at the tail end of the drainage routes of those area. The main problem of this sub-compartment is the water logging due to poor drainage causing damage to Aus & Aman seedlings most of the year. Occasionally early flood causes some damage to mature Boro crops.

The above situation has been agravated due to construction of two sluice gates at *Mirkumuli & Bara Pakhia* by BWDB. People in the area opposed the construction of these sluice gates. They reported due to there sluice gates water cannot drainout properly and vast area is flooded during heavy rain and accumulated water from the SC-15 and 14. Farmers reported that after construction of these two sluice gates, the situation has deteriorated. Flood water enters the area early and drainout very slowly through these gates affecting deep water Aman and even some area of T. Aman in *Bhadra & Aswin*. People demanded wide bridge instead of these gates so that navigation, rapid drainage, normal fish migration in the floodplain is re-stored for the uplift of socio-economic condition of the people as well to save their crops from water congestion.

Due to water congestion for longer period most of the area is transplanted by late Boro (Braus) as water recedes from the area very slowly. In *Madarkol* some area around the *beels* local variety of Boro paddy is transplanted. If the drainage condition is improved would be possible to transplanted HYV Boro in time and farmers could obtain higher yields.

Livestock

Livestock in the area is not so developed. Most of the cattle in the area are of local varieties. Although their is an A.I. centre at *Karatia* farmers take no interest to give artificial insemination to their cattle as they think it costly to maintain hybrid cattle. The area is poor in medicare and lack in livestock extension services. Due to loss of natural folder from low lying areas due to water congestion, there is livestock feed deficiency. There are no grazing facilities in the area. Cattle mostly graze on fallow lands and road sides. Rice straw, water hyacinth etc. are the main feeds of the cattle. Rice bran, pulse residue, oil cakes etc. are also

supplied by farmers who can afford them. Farmers reported that they do not get proper treatment to their livestock. A few hybrid cattle is available in the area.

Cow pox, rinderpest, anthrax, toe disease etc. are the common disease among livestock. The area faces a shortage in draft animals. Hire charge of each pair of draft animals costs Tk.40/- per day. The average yield of milk per milch cow is reported to be 2-3 litres/day. One or two powertillers are available in the area which cost Tk.3/- for ploughing per decimal. Usually two ploughs are given by power tiller and finally prepared is done by draft animals. There is no report of epidemic in recent years.

Poultry

Poultry are of local varieties. Some HYV poultry, specially chickens, have been domisticated by some rich farmers. No scientific care is taken of the poultry. They mostly live on scavenging. Ducks mostly of local varieties are available in the households near water sources. Ducks are provided with fresh water muscles, snails, unios etc. when available. Medicare and extension service is poor. Ranikhet, fowlpox, tape worm etc. are common disease among the poultry.

Physical Observation

The different land types on the basis of flood depth available in the area are approximately F0 (15%), F1 (20%), F2 (35%) and F3 to F3 + (30%). The overall topography is gently undulating, irregular and gently slopy towards the basin at the South and South-East. During the field visit about 20-25% of the lands was still water logged. Farmers are compelled to transplant late Boro due to late receding of water from the low lying area. Soils are mostly Sicl to Sic. Mustard and Wheat is extensively cultivated in the area in the dry season.

Conclusion

The main problem of the SC-E7 is the water congestion for a longer period than normal. The water logging situation has been agravated by the construction of two sluice gates at the south eastern part of the sub-compartment at *Mirkumuli & Bara Pakhia*. People in the area are in favour of construction two wide bridges/culverts so that water can drainout properly and facilitate navigation and fish migration in the area. To the early and late monsoon periods efficient drainage is very important. Farmers demanded re-excavation of the existing channels, one from *Seoratail to Bara Pakhia* through *Jangalia* and the other from *Nalua* to *Mirkumuli* through *Bhabki* which will solve the problem to a greater extent. If *beels* are re-excavated that will facilitate the fish culture and migration from floodplain as well as will expedite the surface water irrigation by LLPs in dry season.
constructed by BWDB. *(Khaleque).*

E7.3 FISHERIES

Fisheries Resources

Water Bodies

The water bodies under the said sub-compartment with their number, type, area, available fish species and catch are shown below in the table:

Sl. No.	Water bodies	Number	Area (Acre)	Type	Available fish species	Annual	Ownership	Remarks
1.	Beel Birkushia Nalua Bagpir Saratut Betoza Beel Madarkoi	 2 1 1 2	 8 1.5 3 33	 Perineal Perineal Perineal Seasonal	Common varieties of fish like minor-crops, catfish, snake, heads, spinyeels, climbing perches, small-shrimps, shellfishes (Fresh water muscles, hamellindiens and snails including pila-globossa in each beel).	Approxi-mately 900-1200 mds.	Individual ownership	The area seems qualitatively and quanti-tatively resourceful.
2.	Ponds	10	9	cultur-able	Presently un-scientifi-cally the fish like Tilapia, Punti, Carps are stocked there.	Poor	Individual ownership	Pond fish culture is poor.

Professional fishermen

There are no professional fishermen in the area. It is reported that about 12 households of professional fishermen have migrated from *Mirzapur* upazila of *Tangail* district and have settled in *Madarjani (Karatipara)* village, *Habla* Union of *Basail* upazila. The whole community lives together in a particular area on the outskirts of the Lohajang river. They are reported to have migrate to this area because they they became landless. They have settled in *Madarjani* in the year 1989 and since then they are engaged in fishing. The professional fishermen go fishing in the Lohajang river and different *beels* of *Basail* upazila. They have purchased about 60 decimal land from Mr. *Siddiq Mohan Saha* of *Madarjani* for their habitation.

The fishermen work on a hire basis in the ponds and *pagar* under individual ownership. They sometimes take 50% of the total catch of fish from the pond owner and sometimes they catch fish on a contact basis on the owner's pond and *pagar*.

The other people in the area in general catch fish mainly for their own consumption and some poor people sell fish.

Fishing periods

Generally the months of December and January are the peak period for fishing in the area. But apart from this fishing goes on round the year.

Fishing methods

Nets such as *Berjal, Kharjal, Dharmatyal, Jhakijal, Fashal, Maizal and Karentjal* are used and traps such as *Dhair, Darki, Husa* and *Polo*. Dry season exclusive fishing of *beels* and road side ditches is sometimes done using low lift pumps (LLP). Hand picking is done in shallow water in dry season.

Flood plain fishery

Flood plain fishery is practised in the area. About two to three months the whole area remains under water and different varieties of fish are available the area. During the monsoon the flood plain is naturally stocked with fishes. People in and around the area catch fish and meet their own fish consumption. In the post monsoon period some fish go down-stream and gathered in the *beels* and *pagars*. With the receding of water to the rivers some fish spieces migrate back the river.

Institutional facility

It is reported that no institutional facility is available for the professional as well as subsistence fishermen.

Fish predation and fish diseases

There is a problem of fish predation in the area. Fish disease is reported to be extensive in the area. The disease Epizootic Ulcerative Syndrome is found among the fishes over the last three years. This has caused a loss of production due to heavy fish mortality.

Fish migration

Fish migration is relevant in the area as reported. In the monsoon different kinds of fish from the nearby river migrate to the flood plain and *beel* via canal. The brood fishes spawn in the flood plain in the month of May - June.

Sources of fish fry

For fish culture fishery fingerlings are available from the surrounding water, and from *Ashekpur* and *Tangail* fish fry production farm.

Views of the Public

People suggested to allow river water to the *beel* so that fish can pass from river to *beel* and other *pagars*. They suggested to re-excavate the existing perineal water bodies like *beel* and *pagar* to the possible extent so as to facilitate more fish stock. They also suggested to dig new *pagars* in the centre of the *beel* to accommodate more fish and to facilitate irrigation to the fields on the outskirts of the beels. Some suggested that migratory routes of fishes to be re-excavated for their easy to and fro-movement.

Own Observations

The status of *beel* fishery is good and there are potential water resources in the area. Homestead pond culture is poor. Only in negligible part of the area pond culture has started. Fish diseases was found to be severe. The migratory route of fish from river to *beel* via canal was found to be silted up. Both professional and subsistence fishermen community were found fishing in the *beel, pagar* and road side ditches.

Two sluice gates were found in the said sub-compartment one is known as *Baropakhira (Kalsipara)* sluice gate and the other is known as *Mirkummulia* sluice gate. Both the gates are constructed on two canals emerging from the *Lohajang* river. It is reported that the two sluice gates are not beneficial, rather they are a disaster to the people. The surrounding people are against the two gates and they narrated that due to the construction of the gates the following problems has been found:

- Navigation facilities has been greatly hampered.
- Prevents the deposition of silt on the land.
- Prevents the entry of fish population.

It was observed that due to the construction of the gates the fish population cannot enter into the *beel* from the river and thereby the fish population growth in the *beel* has been abruptly fallen. Navigation has been greatly reduced and as a result during monsoon the local trading system has been disrupted. People say fertility of the land will decrease and thereby crop production because non-availability of silt deposit. Moreover water logging has become acute in the *beel.*

Conclusion

The area with its *beels, pagars* and ponds is really rich in fish resources. In order to boost up fish production the perineal water bodies like *beel* and *pagars* in the area may be re-excavated so as to make suitable habitat for spawning of broad fish as well as to accommodate more fish. Re-excavation of fish migratory route from river to flood plain and *beel* should be channelized and well maintained.

E7.4 ENVIRONMENT

Significant Natural Vegetation

The natural vegetation is well developed in some parts of the area but in other parts less so. There is no forest in the sub-compartment. Homesteads forest covers an average area of .3 acres. The homestead forest comprises the trees like Mango, Jackfruit, Banana, Bamboo, Coconut, Palm Tree, Hard-fruit Trees, Goyeva, Berry etc.

Aquatic vegetation

Vegetation like water hyacinth, lily, hydrilla, B. Aman are reported to exist in the area (water bodies).

Biological

Fish

Fish are available in ponds, road side ditches and also in the *beels*. The nearby river *Lohajang* is reported to house different variety of fish.

Amphibian

Toads, Frogs etc. are reported to be present in the homestead forest and nearby ditches but their presence is reducing gradually.

Reptiles

Snakes, tortoise are reported to be exist in the area but tortoise population is very rare in the *beel.*

Birds

The bird population is decreasing in the area. It is reported that guest bird like Bele duck, *Khal-dighiri* etc. visit the nearby shallow water in the winter season.

Mammals

Terrestrial wild animals

Terrestrial wild animals like Fox, Mongoose, Jungle Cats, Bagdasha etc. are reported to be present in the homestead forest though in reduced number. Rats are said to be abundant in the area and cause a lot of damage to people's property.

Domestic land animals

Domestic cows, Buffalos, Goats, Sheep etc. are found in the area. The number of buffalos is decreasing. Bulls are used for ploughing the agricultural land.

Others

Public sanitation

Public sanitation is developed to some extent. It is reported that *Proshika* (NGO) has so far supplied inputs for construction of 20 Pucca Latrines in *Motherkoil* village and they will supply more latrines. In other visited area the *Pucca* latrines are very few but traditional latrines exist in the area and these are mainly used by women. Children and adult men uses open space for sanitation.

Drinking water

It is reported that the area has no problem regarding drinking water. There are sufficient numbers of hand-pumps (about 120) which ensures sufficient drinking water for the people. Most of the tubewells are privately owned while only a few public property.

Fuel

There is a general fuel scarcity for cooking. People in the area use cow-dung, jute stick, remains of sugarcane and dry leaves as fuel. Only few people use firewood. It is reported that main source of fuel is cow-dung.

Homestead vegetables

Vegetables like radish, cauliflowers, beet, potato, tomato etc. are reported to be grown on land close to the houses.

Afforestation

There is no afforestation programme in the area. Only in *Nalua* village a small scale programme for afforestation has been taken up by the Union Council Chairman with the help of the Upazila Forest Office. They are reported to do the plantation on both sides of the main road running through the village.

Deforestation

Deforestation prevails in the area. It is reported that there are 3 brick-fields along the *Tangail-Karatia* road where fire-wood is use extensively as fuel. People sell mature trees to middlemen and the wood is used in the brick-fields.

Human Activities

Agriculture

People's main occupation is agriculture. Almost 80% of the study area is under cultivation. Vegetables production is satisfactory and can meet the local demand. It is reported that farmers earn some money by selling vegetables produced in the market after meeting their own consumptions.

Human habitation

There is a report of building up of new houses like 5 to 6 houses covering an average area of 30 decimal for each house in the study area last year. This is happening due to increased population and gradually decreases the cultivated land in the area.

Use of Insecticides and Pesticides

It is reported that to protect agricultural crops from the attack of pest and destructive insect, people in the area are using insecticides like Diazin, Furadin, Bashudin and Dimacron.

Pollution

There is a report of water and air-pollution in the area and it is caused by both nature and mankind. Indiscriminate open sanitation, leaving of dead animal bodies (like dog, cat, cow, rat, chicken etc.) here and there is a source of water and air-pollution.

Views of the Public

People have requested that homestead forest should be developed by tree plantation programme the rats problem should be eradicated. For domestic use like bathing for animals, and washing purpose there should be water reservoirs in the dry season.

Own Observation

The homestead forest is well developed. The wood is extensively used in the brick-field. A few jungle cats, pigs, mongoose were found in the homestead forest. There is no natural forest in the area. Ducks were found grazing in the ponds/ditches. Poultry is more or less common in the area. Water logging conditions prevail in the road side ditches and nearby *beels*. Roads and paths are more or less developed.

Conclusion

From the aforesaid field findings it is concluded that the environmental situation needs improving. No doubt, the improvement of the present conditions of the environmental component will ensure better way of socio-economic life in the area.

E7.5 SOCIO-ECONOMIC SITUATION

Survey Area

The report has been prepared surveying the area in the north-eastern side, part of the western side and most after southern part of the SC-E7. The villages covered in the survey are: *Birkushia* in the northern part, *Nalua* and *Seharatail* in the western part and *Motherkol* in the southern part.

Major Non-Farm Activities

The households of the area are engaged in diverse non-farm activities and these differ from village to village. Households in *Birkushia* village (400 H.H) are engaged approx. 31% in farming, 25% in regular and seasonal business 17% in daily labour 10% in service 13% in weaving and 4% in misc. activities like transportation etc. Households in the northern part of

Nalua village (150 H.H) are weavers (80%). From the rest 20% are engaged in farming 10-12% and 8% households are regular agri. daily labourers. The households in the southern part (170 H.H) of *Nalua* village cover 80-85% craftsman (imitation ornaments workers), farming 5% and the remaining 10-15% are daily labourers.

The households in *Sehoratail* village are engaged in farming 50%, 15% in petty and seasonal business/daily labour, 10% in weaving and 25% in service. *Motherkol* village households (700 H.H) are engaged in farming 30-35%, 5-8% in regular fishing, 18-20% in petty and seasonal business, 5% in transport, 10% in weaving, 8-10% in service and rest 17-24% are daily labours.

Social and Institutional Aspects

Employment Patterns

Except for sowing and harvesting of HYV paddy mainly family labours is used in the farm households of the surveyed area. Only a couple of farm households in *Birkushia* and *Sehoratail* village, keep labour in their households throughout the whole year. During the season of HYV Boro harvesting use of immigrant labourers is common in the surveyed villages. Of *Nalua* village 70-80% and 50-60% of *Motherkol* village households are subsistence fishermen. They live on fishing for 3 to 4 months a year (during rainy season). During this period the landless and poor households earn quite a bit more than during the remaining part of the year. The women of the area are not involved with any farm activities in the field. During post harvesting time a few women from poor households particularly in *Birkushia* and *Motherkol* villages, engage in post-harvesting activities in their rich neighbours houses. The women from the households of *Nalua* village (those are engaged in weaving and crafts works) are fully involved with their household choirs. Beside household works rice parboiling, drying and husking are common activities for the women in all the surveyed villages (except *Nalua)*. There are 20-30 women in *Birkushia* village and 40-45 in *Motherkol* village who are engaged in rice-husking business. These women are mainly members of different NGO groups.

Wage Rate

The wage rate for the daily labourers both for farm activities and non-farm activities in *Birkushia* village ranges from Tk.25-30 without meal and Tk.15-20 with 3 meal. During harvesting of HYV Boro, the wages are Tk.45-50 without meal and Tk.30-35 with 3 meals. In *Nalua* village the wage rate ranges from Tk.20-25 with two meals and Tk.35-40 with 2 meals in the peak season. The wage rate in *Sehoratail* village ranges from Tk.20-25 with 3 meals and Tk.30 without meal and Tk.30 with 3 meals and Tk.40 without meal during harvesting of HYV Boro in *Jaistha* and harvesting of sugarcane in *Aswin* and *Kartic*. In *Motherkol* village the wage rate ranges from Tk.20-25 with 3 meals and Tk.30 without meal and Tk.25-30 with 3 meals and Tk.40-45 without meal during HYV paddy harvesting season.

The workers engaged with weaving in *Nalua* village get Tk.50-60 with three meal and Tk.70-75 without meal in the peak season. The weaving workers in other villages get 10-15

taka less and no meals as weavers of these areas do not produce quality sarees like those of *Nalua.*

In-migration of labourers occurs during the peak season in all the surveyed villages except *Motherkol.* Among the 4 villages *Birkushia* village provides wider scope of employment opportunity to outside workers during the harvesting season.

Education and Literacy

The literacy rate in *Birkushia* village is more than 35%. It is about 15-18% in *Nalua,* 45-50% in *Sehoratail* and 10-12% in *Motherkol. Sehoratail* village has maximum education facilities around it but no girls school is found nearby. Therefore the ratio of school enrolment is 70% boys and 30% girls. The ratio of enrolment of students in the *Nalua* village is 60% boys and 40% girls. The ratio of enrolment of students in *Birkushia* village is 52% boys and 48% girls. But the village has only one primary school and high schools are a bit far away (about 1 mile to 1 and 1/2 mile). In *Motherkol* village the ratio of students is 60% boys and 40% girls. The educational institutions around *Motherkol* village appears to be sufficient.

Organized Groups

NGO, Semi Govt. Organizations activities have been found in all the surveyed villages and a good number of organized groups is also there. The following table is presented with information about the organizations and groups.

Sl. No.	Name of the village with Union and U.Z.	Name of the (NGO/Semi Govt./ Autonomous) organization	No. of Group/Samity		No. of Member		Main activities of the organization	Identification of the area incharge/ supervisor of the organization	Remarks
			Female	Male	Female	Male			
01	Birkushia U.P. Karatia U.Z. Tangail	CARE	03		90		a)group formation b)literacy program c)health care/sanitation d)savings and loan for I.G. activities e)training	Not known	
		BRDB	01 (MBSS)	01 (KSS)	100+	125+	a)group function b)providing loan to the farmers c)landless class d)training on different aspects	"	
02	Nalua Union and U.Z. Delduar	CARE	02	-	60	-	As mentioned above	"	
		GRAMEEN BANK (G.B.)	01	02	30	60	a)training b)literacy program c)MCH-FP d)homestead gardening e)poultry raising f)group formation g)savings and loan for I.G. activities	"	
		BRDB	01	01	Not	known	as mentioned above	"	
		PROSIKHA	02	01	28	20	a)group formation b)training c)savings and loan for I.G activities etc.	"	
03	Sehoratail U.P. U.Z. Delduar	G.B.	01	-	15	-	as mentioned above		
		BRDB	01	-	?	-	- do -		
04	Motherkol U.P. U.Z. Delduar	G.B.	01	02	35	70	- do -		
		BRDB	01	02	60	100-105	- do -		
		PROSIKHA	06	07	15-20 in each group	20-30 in each group	- do -	Mr.Lutfar Rahman village incharge of Mothercole samities	Local H.Q.is ir Delduar

Public Facilities

Availability of public facilities is more or less good. But *Sehoratail* village, being situated beside *Delduar-Tangail Pucca* Road and *Motherkol* village near U.Z. *(Delduar)* Head Quarter, can avail the facilities with less effort than other two villages.

Transport and Communication

Except 2 to 2.5 months in the rainy season, all the village have good road communication facilities to move from one house to another during rainy season. The villagers of *Sehoratail* and *Motherkol* face some problem during the rainy season. They are to use *'Bhela'* at that time. The village road in side *Birkushia* has breaches at 3 points which cause disruption in movements to the people during rainy season. Particularly the young school students suffers most to attend their classes during the monsoon. Use of boat is mainly found during rainy

season by the *Motherkol* and *Nalua* (Southern para) villagers for fishing and business purposes.

Markets

Markets in *Karatia, Delduar* and *Rupshi* are the main markets of the people of the area. All the markets have good road communication throughout the year. People from *Birkushia* and *Nalua* villages usually go to *Karatia* market, while people from *Sehoratail* and *Motherganj* prefer to go to markets in *Rupshi* and *Delduar.*

The following table shows the hat (marketing) days with attendance:

Markets	Hat day	attendance	Remarks
1. *Karatia*	Thursday	12-15000	Karatia market have a bazaar day each day
2. *Delduar*	Tuesday	10-12000	Delduar market have a bazaar day each day.
3. *Rupshi*	Monday	02-3000	-

General needs

In respect of education, health communication and marketing the people of the area do not suffer much. People of *Sehoratail* village expressed their need of a girls high school in their area. The people of *Birkushia* village also urged for 2/3 culverts on breaches of their village road for easy movement during rainy season. A high road from the village connecting the *Delduar-Tangail pucca* road was also sought by the villagers of *Sehoratail* as there is no such road within the village for which the villagers suffers most during the rainy season to move.

Extension service for poultry livestock and agriculture is also needed to the villagers of the surveyed area.

Own Observation

Existing water related situation

The paddy fields around all the surveyed villages suffer drainage congestion, which causes crop losses of up to 50% to the farmers of the area.

Socio-Economic Situation

Among the 4 surveyed villages the economic condition of *Nalua* South para and *Motherkol* village is bad compared to that of the other two villages. *Nalua* north para (weavers village) is economically more advanced than other villages followed by *Sehoratail* village. On the other hand *Sehoratail* is more advanced in education while *Nalua* has the lowest literacy rate. In respect of women working outside the home the people of *Sehoratail* has some

reservations (social constrains) while people of *Motherkol, Nalua* Southpara and *Birkushia* have no problem seeing women working outside home even in the agricultural field.

Issue of opposition to Rupshi Khal Excavation by Seoratail People

Rupshi and *Seoratail* village are situated in two side of *Tangail-Delduar pucca* road. *Rupshi* is about half mile north from *Seoratail* village. But the Agri. *land(chak)* of the *Rupshi* people are just opposite (western side) of *Seoratail* village. The water of *Rupshi chak* used to flow by a *khal* through *Seoratail* village. During 1980-81 the *Rupshi chak* was under severe water-logging and agriculture in the field was greatly threatened. Therefore the people of *Rupshi* organised themselves and decided to excavate the *khal* in the *Seoratail* part to get rid of the congestion problem. The *khal* in the Seoratail part meanwhile was narrowed down and some houses were also constructed on the bank of the *khal.* So the people of *Seoratail* resisted the act of *Rupshi* people from excavating the *khal* as they apprehended that their houses on the *khal* side will be collapsed if they allow excavating. Finally, the *Rupshi* people returned being unable to convince the people of *Seoratail.* The *Seoratail khal* has its existence un till now but gradually it is being covered more and more by construction of new houses on its both sides.

Peoples Opinion (about solving water related problem)

The number one problem of the surveyed area is water logging and drainage congestion. This is the view of all the peoples of the area irrespective of the social classes. They want a solution to this problem as this hinders economic development.

Impact of Kumulli and Bara Pakhia Sluicegate

In the eastern part of the sub-compartment No.7 two sluice gate have been constructed by the WDB on the outlet of two *khals.* The *Kumulli* sluice gate was completed in 1990 and the *Barapakhia* gate one year before that. The gates ultimately proved useless and even harmful in the opinion of the people of *Barapakhia* and *Kumulli.* The gates have been constructed against the will of the people of the locality. They also protested against the construction of the gates at the site but finally could not succeed. Some of them were in fact taken into custody and the construction of the gates started under police protection.

The gates however did not bring any help to the people of the area rather these gates caused the water logging to increase. Now, a larger area is affected. As per the opinion of the local peoples (of *Barapakhia* and *Kumulli* village) the negative effects of the gates are as follows: (1) The gates caused more drainage congestion, (2) Reduced fish migration from the river to the flood plain, (3) Stopped navigation completely (hundreds of families lived on riverine trade by boat through the *khals* are helpless now) and finally (4) Silt from the river cannot get into the field.

The people of the area are now very frustrated with the sluice gates. They want the immediate removal of the gates. They prefer to have bridges instead of gates. They would even be happy if there was no bridge and no sluices. The people of other villages,

particularly *Motherkol, Bhalki* and *Nalua* also are not in favour of these sluice gates. The sluice gate committee is not yet formed. It's operation still lies in the hands of the BWDB.

Conclusion

Water logging and drainage congestion are the main problem of the SC-E7. Further economic and social development of the whole are will be possible if these problems are solved. Peoples participation (both economically and socially) will be possible as it is observed if measures are taken to solve the problem by the concerned authority.