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 1 : EASTERN PART : VOLUME 1
(SC. NO 1, 2, 3, 4)

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
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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.

SUB-COMPARTMENT 1

1.1 INTRODUCTION

The sub-compartment 1 is located on the eastern part of the *Tangail* CPP. This sub-compartment is bounded by *Karatia-Natkhola* road on the South, *Suruj-Karatia* earthen road on the west and the *Pungli* embankment cum-road along the *Pungli* river on the East and the *Gharinda-Suruj* road on the North. The area of this sub-compartment is about 690 ha. land slopes towards South-West.

1.2 HYDROLOGICAL SITUATION

River flow: flooding and drainage

The early flood in June is caused by the early monsoon rainfall. The low farm land is inundated by early rainfall. River water entry starts in late June and early July during high river stage. The major entry route of river water is through the *Bhatkura khal* from the *Lohajang* river and spreads by over land flow filling the low lying area of this sub-compartment. In early monsoon, *Kumulli Namdar* area is fed by overland flow from *Dapnajor* area.

The sub-compartment is severely affected by drainage congestion due to silted up channels and about 60% of the area is low farm land suffering from drainage congestion. Early flood in all these areas is caused by heavy showers in May-June and due to blocked channels, creating drainage congestion.

Peak flood is reached in August-September and in October drainaged takes place. But drainage flow stops early due to the fact that the *Bhatkura* is not well connected with other parts of this sub-project. Improvement of the *Bhatkura khal* will benefit the entire sub-compartment after excavation of internal link canal upto this *khal*. There is strong demand for immediate re-excavation of the *Bhatkura khal* from *Kumulli Namdar* to the *Lohajang* river via *Kachna beel* to solve drainage problem of the adjoining areas of this sub-compartment. A link canal of about 500m length is also required to be excavated to connect *Bir Nali chak & Hatilla beel* with the *Bhatkura khal*.

The local people also requested the construction of a few culverts to facilitate proper flow of water e.g. one culvert near *Bahadurbari*, one culvert near the house of *Showkat Ali at Kumulli Namdar* to relieve drainage congestion of the adjoining area of *Kumulli Namdar* and one culvert at south end of *Suruj* near the mosque to let the water drain out to *joair*.

People reported that the *Muchibari khal* was closed in 1988 near the *Lohajang* river providing two cross-bundh over the *khal* by Union Council under FFW programme and the area is thickly populated.

To avoid the conflict for re-excavation of the *Muchibari khal* near the *Lohajang* river the local people demand the excavation of a link canal along the *Dapnajor-Karatia* road (western side) from *Dapnajor* to college *khal* near *Karatia Zaminderbari* to facilitate the drainage of this area.

A quarter of a mile from the mouth of *Suruj khal* a culvert was constructed in 1986/87. This culvert restricted navigation, particularly as the *khal* silted up further and did not allow boats with a high cover/hood to pass. Then in 1990 the mouth of *Suruj khal*, where it crossed the *Pungli* river embankment, was closed to facilitate road communication though people actually wanted a bridge to allow water and silt entry for agriculture and fish migration. The closure also lead to the people living outside the embankment threatened to cut the embankment.

There is still a demand for opening the *Suruj khal* to the *Pungli* river with a bridge, ensuring flushing, drainage, entry of fish and navigation. Navigation will however only be partly restored as the culvert down stream limits the navigation of all but the lowest boats. If a bridge is not possible then people say a culvert will be better than the present situation. There is a public demand for construction of new embankment from *Dapnajor* to *Kamoti* along the *Pungli* river.

Water hyacinth poses problem in the monsoon and post monsoon period. These aquatic plants remains in the *beels* and *pagars* in dry season. During monsoon they multiply fast and spread out. Sometimes large colonies accumulate on paddy fields damaging the paddy. In the post monsoon the water hyacinth settles on farm land, delaying the availability of the land for cultivation. Extra cost is involved for cleaning. However there are other beneficial uses of water hyacinth e.g. as mulching agent and fertilizer.

Country boats of small and medium sizes are widely used in this area. The boats ply in this area althrough the monsoon mostly for transporting people and freight from house to house. Weekly village markets command the navigation routes.

The flood of 1988 had the same devastating effect in this area. BWDB is known for construction of the embankment along the *Pungli* river.

Erosion

There is no erosion problem in this area.

Ground water

The public reported that there are enough numbers of DTWs and STWs operating in this sub-compartment leaving very little scope for any further expansion. People generally drink HTWs water; but there is scope and demand for installing move HTWs specially in *Kumulli Namdar* area. Some people drink open well water due to scarcity of HTWs. The quality of underground water is good and iron does not seem to pose any problem for drinking and irrigation. In drought years, there is a report of less discharge from tubewells in April-May. But in normal years, discharge is normal. Now-a-days, frequent failure of electricity retards the total discharge from STWs and DTWs per day.

Conclusions

The main problem of this sub-compartment is drainage congestion in the early and late monsoon period. Early monsoon rainfall initiates the early flood which is later aggravated by the river flood entry through the *Bhatkura khal* from the *Lohajang* river drainage is effected mainly through the *Bhatkura khal*. But the *khals* is partly silted up and clearly incapable to properly drain-out the catchment areas resulting in drainage congestion in

about 60% of the farm land of this sub-compartment. Re-excavation of the *Bhatkura khal* and a few internal link canals will solve the drainage congestion problem. There are demands for construction of a number of culverts to allow proper flow of water. The *Suruj khal* may be opened to the *Pungli* river providing a regulator at the outfall ensuring drainage and flushing at desired times. However this should be verified through further detail field study.

Underground water resource is adequately exploited for irrigation by DTWs and STWs. Drinking water is obtained from HTWs, but more numbers are required in some areas. The quality and quantity of under ground water is satisfactory.

People are apparently motivated to cooperate for development works in the area if they are convinced that the works will definitely benefit them.

1.3 AGRICULTURE

Cropping pattern

The gross area of the sub-compartment 1 is approximately 690 ha. Out of this gross area about 490 ha is net cultivated area. Approximately 40-45% of the area is medium high to high land where mainly Aus, Jute and a little T. Aman is grown in the *Kharif* season and wheat, mustard, pulse, potato etc. are grown in Rabi season. A very small area is also used for growing sugarcane mixed with pulse. In the area 55-60% is medium low to low land where mostly Irri/Boro (HYV) is grown. In some area of this low lying area is also used for growing Aus+Aman (mixed) and transplanted deep water aman (TDW). The present cropping pattern in the sub-compartment is estimated to be as follows:

Crop Patterns

Land Type	*Kharif*-1	*Kharif*-2	Rabi	Annual	% of NCA
(0-3')F0-F1	Aus/Jute	T.Aman	Wheat/Pulse/Potato		15%
(0-3')F0-F1	Jute	-	Wheat/Mustard/Pulse/Potato/ S.Potato etc.		25%
(0-3')F0-F1	-	-	S.cane + Pulse		5%
(3-6')F2	Aus+Aman (mixed)/	-	Irri/Boro (HYV)		15%
(6-9')F2-F3+	TDW Aman	-	Boro (HYV)		20%
	-	-	Boro (HYV)		20

The above cropping patterns are estimated in the area on the basis of information from farmers in the area and on physical observation.

Average crop yield and price

The average yield per hectare of different crops collected from farmers in the sub-compartment along with the price in the cropping season at the farmgate level.

Crops	Av. yield in t/ha.	Price/MT
B. Aus	1.10	5360/-
T. Aman	1.70	6030/-
Aus+Aman/TDW Aman	1.40	6030/-
Boro (HYV)	4.50	6030-6700/-
Braus (late Boro)	3.90	6030-6700/-
Jute	1.30(White)	6700-7370/-
	1.60(Tossa)	5360-6030/-
Wheat	2.30	5300-6030/-
Mustard	0.70	12060-13400/-
Pulses	0.80(Lentil)	14740/-
	1.50(Khesari)	8040/-
Sweet Potato	7.00	2400/-
Potato	6.00	3200/-

The price of the commodities gradually increase in the lean season with the increase in demand.

Use of fertilizer

The use fertilizers in different crops in the sub-compartment is in traditional way. Lack of knowledge and poverty is the factors of using less quantity of chemical fertilizers less than the requirement. However farmers are atert in using fertilizers in HYV crops, wheat, mustard etc. In these crops the doses are comparatively higher than the other crops. Farmers at present using fertilizers in their crops in following doses. Some manures are also used mostly in Aus and Jute.

Crops	Urea(kg/ha)	TSP(kg/ha)	MP(kg/ha)	Manure/compost
B. Aus	70-90 (some not apply)	-	-	170-180(CD) 80-100(Ash)
T. Aman	130-150	90-110	30-50	-
TDW Aman	90-120	-	-	
Boro (HYV)/Braus	190-220	110-150	40-50	
Jute	90-110	80-100	50-60	
Wheat	170-190	70-900	50-60	
Mustard	110-130	70-80	-	
Pulse	70-90	-	-	
Sweet Potato	-	-	-	
Potato	130-150	90-110	30-50	
Sugarcane	180-	90-110	-	

Farmers realise the use of more quantity of fertilizers but apprehend the deterioration of soil condition. They receive no clear concept about method & quantity fertilizer application from the agricultural extension workers. Lack of credit facility as well as the high price is also responsible to apply fertilizers in less quantity.

Irrigated crops

Irri/Boro (HYV) is the only crops grown in the sub-compartment by ground water irrigation. In this area there are two LLP irrigating from *Pungli* river. The DTWs have been purchased by KSS in the area. But the KSS are not well organized to deal agricultural development in the area. The following irrigation equipments are available in the surveyed area as reported by farmers.

Village	DTWs/STWs (Cusec)	Irrigated Area (ha)	Run by Electricity/Diesel
Kumuli Namder	DTW 1 No.(2 cusec)	20 ha.	Electricity
	STW 20 Nos(1/2 cusec)	90 ha.	Electricity
Dapnarchar	DTW 1 No. (2 cusec)	20 ha.	Electricity
	STW 5 Nos. (1/2 cusec)	20 ha.	Electricity
Paschim Para	DTW 1 Nos.(2 cusec)	20 ha.	Electricity
	Total 28 no.	Total : 170 ha.	

In the village *Kumulli Namdar* the KSS members give Tk.15/- per decimal as cost of labours and maintenance. In village *Dapnarchar* and *Panch Betur* 1/4 of the crops are given as irrigation cost of DTWs and LLPs. For all STWs also 1/4 of crops are realised as irrigation cost. Failure of electricity for longer time (8-10 hours) in each day reported in the sub-compartment.

Share cropping

Share cropping in the area is in the terms of 50:50 of the produced crops. Owners do not supply any inputs to the share cropper. Occasionally some rich owners supply 50% of fertilizers and seeds to the share cropper.

Crop damage

Crops in the area is damaged by insects/pests, hailstorms, drought etc. *pumri, poka, mazra,* grasshopper, caterpiller etc. are responsible for damaging mostly the Irri/Boro (HYV) and TDW Aman. High price of insecticides compelled farmers to use them in less quantity which give the poor results. Farther due to poor agricultural extension service in the area farmers cannot identify requisite insecticides for a particular category of insects/pests. They are dependent on sellers of insecticides.

Flood water accompanied by rain water congested in the area due to poor drainage in *Ashar* and *Srabon* causing heavy damage to deep water aman and B. Aman and Aus seedlings. Farmers aprehending the flood damage do not grow deep water aman in a large scale. In the last year 80-90% of the TDW Aman damage reported. Water hyacinth from *beels* and *pagars* spreadout in paddy fields and cause damage to crops. Farmers in the sub-compartment requested *Muchipara khal* in *Dapnarchar* which has been blocked near *Talukdar bari* to be opened to drainout from the area. In village *Birnahali* one new *khal* of length about 500m. to be excavated to connect *Birnahali chak* and *Hatila beel* with *Bhutkura khal. Suruj khal* month which is closed at *Pungli* require to be opened. The *Bhatkura khal* from *Kumulli Namdar* to *Lohajang* if re-excavated the drainage situation in area will be improved considerably.

Livestock

Livestock in the area is mostly of local variety and with moderate to poor health. The area faces a shortage in draft animals. Milch cows are used as draft animals. Rinderpest, gastities, enthrush, cowpox are the common disease in the area. The disease by which about 200 cattle died in the village *Kumulli Namdar* and about 100 cattle in *Dapnerchar* is unknown to the farmers. This disease is probably enthrush. Medicare is reported to be poor. There is an A.I. centre at *Karatia.* Farmers said each A.I. cost Tk.20/-. The calves obtained from A.I. is not much health. Maintenance of such hybrid cattle is reported to

be costly. In most cases farmers have to purchase medicare. The livestock feeds crisis is acute in the area in the month of *Baishak and Jaistha*. No power tiller is available in the area. Each ploughing by a pair of draft animals costs Tk.30-40/-.

Poultry

Poultry in the area belong to local variety. A few farm poultry is available in the area. Ducks are available in the households near water bodies. Chickens are supplied with some rice bran, wheat, pulse, residue etc. while ducks are provided with some snails, bivalves, unio etc. Medicare is poor. Ranikhet, fowlpox, tape worm use the common disease among the poultry.

Own observation and views

The land in the area slopes to south, east and west in the area. They area nearly level, gently undulating and slightly slopy towards the basin sites. About 40-45% of the land belong to medium high to high land (F0-F1). The low lying area is under the land type (F2, F3 and F3+) and occupies approximately 55-60% of the total net cultivated area. Medium high to high lands are used for growing Aus, Jute, some T. Aman while Irri, some TDW Aman and Aus+B.Aman is grown on medium low to low land. Wheat is extensively grown among the Rabi crops. Irrigation of the Irri/Boro (HYV) is grately affected due to failure of electricity for longer time (8-10 hrs.) in each day. Large scale death of cattle in the area is a threaten to farmers causing shortfall of draft animals in thearea. Poultry development in the area would mitigate the financial problems of farm families to some extent in the area if organised by livestock department. Proper extension service on agriculture, livestock and poultry is essential to improve in these sectors. Proper medicare for livestock and poultry would reduce the death toll of livestock and poultry in the sub-compartment.

1.4 FISHERIES

Water bodies

The available water bodies under the sub-compartment SC-01 with their number, type, area and available fish species are shown below in the table:

Sl. No.	Water bodies	Number	Area (Acre)	Type	Available fish species	Annual	Ownership	Remarks
1.	Beel:	-	-	-	-	-	-	nil
2.	Ponds	06	5 acres approx	cultured cultur-able	Nura, Feka, Tilapia, Puti.	Poor	Individual	Pond culture fishery is poorly developed
3.	Pagars: i. Kumuli Namder	125	13 acres approx	cultur-able and derilicts	Koi,magur,sing,taki,puti, tengra,chela,shol,gajal, chanda,baim,batashi, Fresh water muscle including unio and pila. Shrimps and crabs.	125-150mts approxi-mately	Individual	Resourceful waterbodies in the area

Professional fishermen

As per report there is no household of professional fishermen in the villages under the sub-compartment.

Subsistence fishermen

As per report there are 40 households of subsistence fishermen living in the village *Kumulli Namdar*, Union *Karatia, Tangail Sadar Upazila*. They are poor Muslim people, just manage their family from hand to mouth and their average family size varies from 5-7. They are reported to fish in the pagars, floodplain under the sub-compartment and sometimes they also go to neighbouring *beels* for fishing. During full monsoon period when there is adequate fishing facilities their day to day income is good and pass their days happily but during lean period of fishing they find much difficulties in maintaining their families. During lean period they engage themselves in other profession like day labourer, rickshaw pulling and earthcutting etc.

Their children cannot go to school for education due to financial problems and even they are deprived any disease. They do not even have necessary inputs to go for fishing properly and they do not get any bank facilities to carry on their business smoothly sometimes, are to go to the well to do people of the village for monetary loan. They get loan from them but with heavy interest.

Fishing periods

Fishing periods are reported to go on in the area from *Ashar* to *Kartik* in case of floodplain fishery but in case of *pagars* fishery it goes on from *Falgoon* to *Baishak*. The months of *Ashwin, Kartik* and *Falgoon* are reported to be the peak period for fishing while the other time is reported to be the lean period for fishing.

Fishing methods

Fishing methods in the area vary from season to season and different fishing techniques are in practice. About 70-80% of floodplain fishery is done by *Shibjal, Jalijal, Jhakijal, Berjal* and about 15-20% fishing is done by harpoons like *Aro, Juti, Tenta, Darki (trap) and Angling*. During post monsoon period about 70-80% fishing in the *pagars* are done by *Jhakijal* and by complete draining out of water by lowlift pump. About 5-10% *pagars* fishing is done by handpicking.

Flood plain fishery

Floodplain fishery is practised in the area. The floodplain fishery starts in early *Ashar* and continue upto end of Kartik. The floodplain remains inundated with water for a period of 5 months and inhabited by different fish species. The available fish species in the floodplain includes fingerlings of *rui,katla, mrigal, kalabaush, boal, shol, gajal, taki, puti, foli, tengra, pabda, chela, batashi, koi, sing and magur*. The *pagars* available fishes reproduces in the

month of *Baishak* and *Jaistha* and spread over the floodplain when it is fully inundated. The river water from the surrounding river *Pungli* enters into the floodplain of the sub-compartment through *Balle* khal, *Suruj khal, Galabari khal, Poyla chak* and finally *chak* (floodplain) of the sub-compartment. The carp fingerlings and other fishes like *Boal, Pabda, Gulsha, Tengra, Baim* etc. enter into the floodplain and mixes with the *pagars* fish in the floodplain. This time the whole area becomes enriched in fish population and is caught by locality people. As per public report during this time there remian no fish scarcity in the area.

As soon as the floodplain water receds the available fishes migrate back to river whereas the *pagars* habited fishes are stocked in the pagars. Floodplian is the good habitat for both fish nourishment and fish multiplicaton.

Fisheries practices

Both capture and culture fishery is in practice in the area. Culture fishery is very poorly developed. Capture fishery is practised in the *pagars* and surrounding *Pungli* river.

Institutional facility

As per report the institutional facility is absent in the area. But there is a great public demand to help them by providing institutional facilities in the area.

Fish predation and fish disease

As per report both fish predation and fish disease is a common occurence in the area and both this factors are responsible for significant fish decrease in the area. In the months of Ashwin and Kartik most of the floodplain fishes mainly snake headed are seriously attacked with this disease and ultimately results in death which is reported to cause water pollution in the area. Fish predation by the predators is also reported. There is a great public demand to control this fish disease in the area.

Fish migration

Floodplain fishery flourishes in the area due to fish migration and which is reported to be relevant in the area. Migration of riverine fishes take place through *Balle* khal, *Suruj khal, Golabari khal* from *Pungli* river to the floodplain of the sub-compartment. As per report the migratory river fishes include fingerlings of carp, *boal, tengra, foli, gulsha, chanda, baim* etc. some of this fishes (female) do spawn in the floodplain after migration.

People requested to re-excavate the *Balle khal, Suruj khal* and Golabari *khal* to facilitate fish migration.

Own observation and views

There is no *beel* in the area but only few ponds are available. Pond fish culture is very poorly developed in the area but plenty fish culture scope is there. About 125 *pagars* of different sizes are available under the sub-compartment. Some of this *pagars* were seen

completely dried up while others were seen having shallow water. Women were seen fatching water from this *pagars* for various households activities. Villages were seen bathing themselves as well as their cattle in the *pagars* due to lack of surface water. Many children were found fishing in the *pagars*. These were emptied by lowlift pump which is very much harmful for fishery development due to overfishing.

Views

The derilicts ponds, side ditches, and dried up ponds need to be reexcavated to boost up fish production in the area. There is a great scope of pond fish culture in the area and which can be achieved by freshly excavating ponds.

1.5 ENVIRONMENT - MALE

Biological

Arthropods

Destructive insects like *Pathra, Peroli (black small insect with sharp teeth), pamri*, Mazra, *chenga, Letha* etc. were reported in the villages under the sub-compartment. Out of which *pathra, peroli* and *pamri*, are reported to be the major destructive insects and cause serious damage to pally like Irri/Boro etc. Jute and pulses also grow there but they are damaged by *chenga* and *letha*. The intensity of crop damage due to insect attack varies from 1-2% of the total production. As per report the *pathra* are highly resistant to insecticide and now they are beyond control. The intensity of insect attack is increasing in comprison to last year. Farmers are worried over the issues and they requested to control insect attack.

Mollusca

Fresh water muscles including unio (bivalve) and *pila* are reported to exist in shallow water bodies like *pagars* under the sub-compartment. As per report the unio population is less than that of *pila* and it is a bottom layer animal covered by strong shell. The *pila* is a free floating animal and sometimes it is available in the bottom layer of the waterbodies. Both this unio and *pila* are known as shellfishes and is very useful to mankind. Their body muscles is used as food for ducks and their covering shell is used as raw materials for the preparation of lime.

Annelids

Leech, Nerries, Earthworm are reported the visiting villages under the sub-compartment. Earthworms are abundantly found during rainy season in a damp places. Leech live both in water and bushes. Both leech and earthworms are useful to mankind and have medicinal value.

Fish

As per public report, once the area was rich in aquatic fish wealth and people would not face any fish scarcity problem. But with the progress of time this valuable fish population is gradually decreasing in the area due to heavy fish mortality and fish predation. Moreover the fish habitat is also decreasing in the area. People now-a-days strongly feel the scarcity of fish and they are worried over the issues.

Farmers requested to control fish disease and to help them by re-excavating the silted waterbodies to facilities fish stocking.

Amphibian

Amphibian population which includes toads, frogs, hyla etc. are reported to be present in the area satisfactorily though there is a report of indiscriminate frog catching practice in the area. They are very useful animal to mankind

Reptiles

Reptiles like *Anjan, Guishap* (varanas), Lizard, Poisonous and Non-poisonous snakes are reported but in reduced number tortoise is completely absent in the area. A section interested people do prey this guishap from the homestead garden and sell it in the market. So in this way this guishap is also on the verge of reduction.

Birds

Once the area was enriched in bird population but since 1988/89 devasted flood this population has been significantly decreased. Moreover human interruption as well as shortage of food are responsible for declyning of bird population. As per report only negligible quantity of birds are available in the area which includes different varieties of *shalik, dove, pigeon, boi, kingfisher, cuckoo, owls, sparrow, crow, rave, kites.*

Mammals

Terrestrial wild animals

Terrestrial wild animals are very scarce in the area and as per public report after the flood of 1988/89 this population has been decreased in the area. Moreover the lack of suitable habitat like bush is also an another reason for their non-availability. The wild animals, which are at the moment available in the area includes *jackle, mongoose, rats, mole, bats, jungle cats* but in very reduced number.

Domestic land animals

Domestic land animals though reported in the area but in reduced number. Horse, Buffalo are completely absent in the area. Dry cow, milch cow are present but in very limited number. The abrubtive declination of cattle population in the area is due to widespread cattle

disease. Cattle disease is reported to be the serious problem in the area; every year about 5-6 cows die in this area due to cattle disease. Cattle disease has not yet been diagonised and the symtoms of the disease is the attacked cows abdomen becomes swollen very much followed by body shaking then all on a sudden the animal dies. The time span of this disease is so short that it does not give time to call for a livestock doctor. So there is a great shortage of draft animals in the area and farmers are very much disappointed in this regard. Even they cannot afford to purchase cattle from the market as it is costly. So ploughing of their agricultural land has now become a serious problem.

The farmers requested to help them by providing livestock medicare facilities to save their valuable cattle population.

Others

Afforestation

As per report there is no afforestation programme done either by Govt. agencies or by any NGO. The tree plantation is practised by the public purely by their own initiation in the rainy season. Farmers plant valuable timber yielding and fruit yielding plants at their homestead garden. The farmers urged to supply them quality seeds and sapplings of timber yielding plants as well as they requested to train up there in horticulture.

Deforestation

Like other sub-compartments the practice of deforestation goes on in the area round the whole year.

Kitchen gardening

Kitchen gardening is well practised in the area and which is reported to be a good source of farmers additional income. About 70-80% farmers have got kitchen gardening. They are reported to cultivate sweet potato, potato, peanach, bittergourd, gourd, pumkin, cucumber, chilli, cabage, cauliflower, peas, etc. They do meet their own vegetable consumption demand and sell the surplus.

Human activities

Human habitation

There is a report of new human habitation growth in the area but very negligible. About 2-3 new houses covering an average area of 10-15 decimal has been constructed in the villages under sub-compartment over the last 3-4 years.

Pollution

Open sanitation, un-plan-wise construction of *katcha* latrines, dumping up of households garbage scatteredly, throwing of dead animal bodies here and there, stagnant water in the homestead ditches are reported. These factors are very much uncongenial and is an

environmental hazards as it pollutes the atmosphere. This pollution is the source of many disease.

Own observation and views

Homestead gardens are well developed. Wild animals are reduced in number. There is an acute shortage of draft animals. Hand pumps seem to be inadequate. There is acute shortage of surface water facilities. With the exception of few, almost all the *pagars* were seen completely dried up.

The children and male members were found bathing in the water of shallow tubewell (STWs). Cattle bathing is impossible due to lack of surface water. Ducks and aquatic birds were found grazing on the road side due to lack of surface water. Communication is poor.

People's views

In the whole visited aeas under the sub-compartment there is acute shortage of surface water which needs to be attended. This problem can be solved by excavating fresh *pagars* and by re-excavating derilicts, ponds, dried up *pagars* and road side ditches. If it is done it will help retention of more water thus will facilitate household activities of the farmers.

1.6 ENVIRONMENT - FEMALE

Homestead forest

The homestead forest is reported covering an average area of (.1-.2) acres in most of the homestead in the sub-compartment. The homestead forest comprises with the most common varieties of trees like *herbs, shrubs, mango, jackfruit, banana, bamboo bush, palm tree, date tree, jamboora, berry, hard fruit trees, like Kori, Shimul, Guava* etc. Kitchen gardens are also seen in this sub-compartment having common varieties of seasonal vegetables.

Fuel

Severe fuel scarcity is reported the poor people who do not have livestock and paddy field. The main sources of fuel are dry leaves and remains of paddy, wheat pulses, bushes etc.

Drinking water

In an average approximately 60-80 numbers of tubewells are reported available in this sub-compartment. People having no tubewell, sometimes drink *kua*/well water in dry season. Underground water is adequately exploited during this period. Men go to *chak* for having their bath in the shallow tubewell.

Sanitation

Sanitation is very poorly developed. In an average approximately 5-10 *pucca* latrines is reported available in this sub-compartment. Almost all households use *katcha* latrines.

Diseases

Diarrhoea, dysentery, pox, fever and worms prevails here mostly in the month of *Falgoon* and *Chaitra* wile scabies in *Magh* and *Falgoon*. The main sources of getting this diseases are *katcha* latrines and use of bad water.

They think cock, hens and flies absorb germs from *katcha* latrines and spread here and there.

Rats

Rats and mosquitoes are abundants in the visited area. Rats are damaging wheat, rice and other crops in outside and household belongings inside the homestead. Mosquito also create problem for human life and livestock. Other wild animals include jungle cats, mongoose, bagdasha etc. are available here while fox decreased in number to a great extent after flood.

Domestic land animal like cow, bull etc. are reducing in number due to cattle disease in the area. There is a scarcity of draft animal for cultivating the land in the visited area.

1.7 SOCIO-ECONOMIC SITUATION - MALE

Major non-farm activities

The major non-farm activities of the area are service, business, transport works etc. From the total households of the surveyed are about 40% are attached with different non-farm activities. From the total households about 25-28% are service holders, 10% are businessmen and 6-8% are transport workers. About 30% households of the area are day labourers mostly of whom are from the landless families.

Social and institutional aspect

Employment patterns

Both family labour and hired labour is used in the farm households of the area. Hired labour is used in the area mainly during saving and harvesting time of HYV Boro paddy. The landless and marginal farmer families of the area are the main sources of labour (of agricultural works) in the area. During the peak seasons of agriculture in the area all the local labourers find their work in the locality. In-migration of outside labourers also occurs in the area during peak agricultural seasons.

During the lean season a few from landless households migrate outside of the area, while others engage themselves mostly in earth cutting works in the area. Some poorer households from marginal and small farms sell hats at that time, to earn money. During the monsoon (about three months) about 80-100 poorer households (including landless families and marginal farmers) totally depends on fishing to earn their livelihood. Vegetable gardening and selling vegetables is also a part-time but a regular seasonal activity of majority of the households of the area.

Wage rates

The wage rate in the area (for agricultural labourers) ranges from Tk.15-20 with 3 meals during lean seasons and Tk.20-40 with the some number of meal during peak seasons (Tk.20-25+ 3 meal during sowing and Tk.30-40 during harvesting time). The duty hours for the day labourers in the area is 6:00 a.m. to 6:00 p.m.

Organized groups

Grameen Bank, CARE and SDS have their groups in the area. There are also clubs of local people one in each village.

Public facilities

All public facilities except Union Council office (of *Dapnajor* village) are available at a short distance from the area.

Transport and communication

The area is well connected with the wider road communication system and the internal village roads are also good. Rickshaw, van can use the roads of the area in all seasons.

Markets

The people of the area used to do their marketing in the hats and bazars are *Karatia, Taratia, Gosaijoair and Bailla*. (The hat/bazars day and attendance of the said markets mentioned in previous reports).

Development needs

Main development need of the area is a bridge on the road from *Kumulli Namdar* to *Suruj* as requested by the people of *Kumulli Namdar* village for a better communication to *Suruj* hat. A culvert or a drain pipe is also requested by the people of the same area in the road at *Garasin-Kumulli* border point in order to remove the water logging problem in the area, particularly within *Kumulli Namdar* village. Demand for re-opening *Muchibari khal* (about 1km) was also raised by the people of the area to remove the drainage congestion problem in the *chaks* of *Dapnajor and Kumulli Namdar* village, to help boost agricultural production in the area. (Mainly to make possible to grow deep water Aman and to safely harvest HYV-Boro which is at present threatend by water congestion by early rainfall). To supply

electricity, mainly for household consumption is also a need for the people of *Dapnajor* village.

Own observation

Socio-economic condition

The main occupation of the people in the area is farming. The overall socio-economic condition of the area, particularly of the surveyed villages, are almost equal. Comparatively the economic condition of *Kumulli Namdar* village is better than *Dapnajor*. Educationally, the people of *Kumulli Namdar* is also a bit advanced than the people of *Dapnajor*.

The area is rich in vegetable gardening and provides an additional income to the poorer household of the area. Fishing in the floodplain of the area is also a great source of income of about 100 families in the area who depends exclusively on fishing during the whole monsoon (for about 3 months). Some marginal and small farmers of the area also earns by ploughing/tilling others/and during lean agricultural seasons. Credit program of Grameen Bank and other organizations also have a considerable positive role for the economic development of the poorer households of the area and landless in particular. They seemed to be happy with the credit programmes.

But the economic development of the area in general would have been much faster if the drainage congestion problem of the area was solved. Due to the filling of *Muchibari khal* and construction of road on it, have aggravated the situation of waterlogging in the *chaks* of the area. Now, although the people of the area demand to re-excavate the canal to remove the drainage congestion problem, it is found very hard to do that as some influential persons who actually supported the road over the khal, are not in favour of re-excavating of the *khal*. Practically, that is (re-excavation) also not possible, as some houses are also there by now on the *khal* alignment. Thus the closure of the *Muchibari khal* has become a conflicting interest for the people in the area.

Peoples opinion

About the NGO activities

The people of the area are found very much in support of the NGO activities particularly of their credit programmes. This is true, that the people of the area have benefitted much by the NGO programme in the area.

About functioning of Union Parishad and Upazila

The people of the area are found not satisfied by the performance and functioning of the Union Parishad, but as a rural development institution they feel that the Union Parishads are the unique institutions. However, they stressed the need of its proper functioning and come out as an institution for the welfare of the rural masses.

About the activities and functioning of the upazila the people area have no clear idea but they think the upazila should have more control over the activities of Union Parishads in order to set priorities of the works of Union Parishads.

1.8 SOCIO-ECONOMIC SITUATION - FEMALE

Employment patterns and activities of women

The visited villages under the sub-compartment #-01 are *Namdar Kumulli* and *Dapnajor*. Women of the visited area are mainly doing household works. Besides their household works, some women are engaged in different types of income earning activities.

The following table includes the type of work along with their daily wage rate:

Name of Village	Type of Works	# of Women involved	Wage rate with meal		Wage rate without meal	Remarks
			Tk.	meal	Tk.	
Namder Kumuli	Rise husking	50-60	-	-	25-30/-	
	Cotton wrapper	10-15	-	-	5-8/-	seasonal
	Mat making	10-15	-	-	5-8/-	on demand
	Post harvesting	25-30	3-4/-	3 m.	-	seasonal
	Road maintenance	5	-	-	24/-	regular
	Service holder	1				regular
Dhapnajor	Post harvesting	10-15	5-6/-	3	-	seasonal
	Maid servant	10-15	3-4/-	3	-	
	CARE Earthwork	-			3	regular

The women involved with post harvesting and household works obtain their wage in kind i.e. 1-2 maunds of paddy, 1-2 saree alongwith 3 times meal.

Education and literacy

In both the visited villages, educational institutions are available either in the village or in the bordering village with 1-2 km distance. The people of this sub-compartment avail more or less good communication facility. Villagewise literacy rate of the visited area is shown below:

Sl. No.	Village	Literacy rate	Attendency rate	% of Girls	Remarks
1.	Namder Kumuli	20-25%	65-75%	35%	
2.	Dhapnajor	25-35%	70-80%	40%	

Organized groups

Different organized groups like Grameen Bank, SDS, BRDB and CARE Samity etc. are present in both the visited villages. A few local groups on their area initiative is reported exist there. The list of these orgaizations and groups are shown below.

Sl. No.	Village	Name of Organization/Samity	# of Groups	# of member invol.		Remarks
				Male	Female	
1.	Namder Kumuli	1. Grameen Bank - Mukti			150	
		2. SDS	-	30	20	
		3. BRDB Samity	-	40	-	
		4. BURO Bank	-	-	80-90	No longer working since last 1 year.
		5. Local Young Club		-	30	No longer functioning
		6. Local Boys Club	-	50	-	
2.	Dhapnajor	1. Grameen Bank	-	-	50-60	
		2. CARE Samity	-	-	30-45	
		3. CARE Para Comittee	-	-	30	

Public facilities

Public facilities like Union Council office, post offices, F.P clinic and hospital etc. are available around the area within one and 3 km distance from the villages.

Although the F.P clinic is around 3-4 k.m. away from *Dapnajor* but F.P people provides the same service in the village a regular basis.

General needs

Water scaricity in dry season is reported severe in this sub-compartment. The poor households could not sink tubewell carry tubewell water from long distance for bathing and drinking purpose. Men and children go to the *chak* for bathing. According to them sikking of tubewell and digging of ponds will motigate there water scaricity.

Implementation of income earning activities wider basis is urged by women to develop their economic situation. Construction of few *pucca* latrines was also urged by women in the surveyed area.

Existing water related situation

Water congestion over the *Kumulli* lying *chak* is reported during rainy season causes damage to Irri and Rabi crops. Re-excavation of *Katakhali khal* will beyond the congested water drainout from *Kumulli chak*. It will facilitate Irri and Rabi crops cultivation approximately over the 500 acres of land in *Kumulli chak*.

The women said the villagers of *Hatila, Golabari, Dhaltia and Dharat* in western side of the *Katakhali khal* and *Birnahalijoair* in northern side of the same *khal* will also be benefitted if the *khal* is reexcavated.

The early rainfall fills up the low farm lands causing the early flood in the *Dapnajor* village. Presently, no way is exists there to drainout excess rainfall leaving the area water congested. Women urged, to provide other means like drainage system through their farm land to

culverts will be constructed over Tangail to *Shakhipur Biswa Road* will drainout the stagged water.

Women stated about the impact of 1988 flood caused significant loss human property.

Own observation

The area faces many problems like surface water scarcity, lack of sanitation facilities, scarcity of drinking water. There is a great demand to provide them with surface water facilities in dry season like by excavating deep ponds, supplying more tubewells to facilitate households consumption.

There is also a severe fuel scarcity problem observed in this area. Women go to the *chak* and other places to collect fuel.

Womens opinion

About Union and Upazila Parishad

Women do not have any clear idea about the activity of upazila Parishad. But they cited about the benefit avail from Union Parishad to a very little extent.

Ngo

While asked women reference to SDS, provides free education to the children upto primary level alongwith education materials and also disseminate health manage to them.

List of villagewise influential leaders

Village	Name of Leaders	Profession
Namder Kumuli	Mojid Khalifa Joinal Abedin	Matabbar Service holder

SUB-COMPARTMENT 2

2.1 INTRODUCTION

The sub-compartment 2 is located on the eastern part of *Tangail* CPP & in between sub-compartment 3 on West and sub-compartment 1 on East. The sub-compartment is bounded by the *Tangail-Karatia* paved road on the South, *Gharinda-Suraj* paved road on the north, *Taratia-Gharinda* earthen road on the West and *Suruj-Karatia* earthen road on the East. Total area of this sub-compartment is about 1300 ha. and about 50% of the farm land is low lying, affected by drainage congestion. The land slopes gradually towards the South.

2.2 HYDROLOGICAL SITUATION

River flow: flooding and drainage

The early flood is caused by rainfall, starting in April-May. Due to the silted up *khals* the excess run-off cannot drain-out to the river and the low farm land is inundated. River water entry starts in late June and early July. The major entry is throught he *Gharinda khal* in the North and this *khal* meet with the *Suruj khal* at *Golabari* and by the name of *Golabari* khal, it flows towards *Hatilla beel* and inundates the adjoining areas. The major flow takes place through the *Suruj* khal, *Golabari* khal, *Bhatkura khal* and discharge to the *Lohajang* river is through *Bhatkura khal*. A small flow enters in early monsoon from the *Lohajang* river through *Bhatkura khal* and *Muchibari khal* and also drains out through the same routes in October.

Flood entry in this sub-compartment continues through August and early September. Peak flood level is reached in August and September.

Major drainage of this sub-compartment takes place through *Bhatkura khal* on the South. The *khal* section is not adequate to ensure proper drainage of this big catchment. Drainage flow also stops early due to the fact that the *khals* in the north and south are silted up and drainage through them stops by late October leaving the low farm lands of *Suruj, Neogijoair, Gosaijoair, Golabari, Hatilla, Bhatkura* and *Garasin* are waterlogged.

There is strong demand for re-excavation of the *khals* to relieve the drainage congestion in this area. The main *khals* requiring re-excavation are (a) *Gala khal* from *Gharinda* bazar to *Suruj khal* (b) *Suruj khal* from the *Pungli* river upto *Hatilla beel* (c) *Bhatkura khal* from *Hatila beel* upto the *Lohajang* river (d) *Khudirompur khal* from *Hatila beel* to the *Lohajang* river (e) *Muchibari khal* from *Kumulli Namdar* to the *Lohajang* river (f) and the *khal* along the road from *Gosaijoair* to *Hatilla* and one new link canal from *Gugudao* bridge upto *Suruj khal* is required.

There are public demands for construction of some bridges and culverts to facilitate proper flow of water to allow drainage, e.g. (a) one culvert on the road from *Golabari* to *Suruj* (at *Chuar pai*) (b) one culvert on the road from *Golabari* to *Gosaijoair* (at *Kurirpar*) (c) one bridge on the road from *Gosaijoair* to *Hatilla* (at *Dhakhin para* of *Gosaijoair*) (d) one bridge

at *Hatilla* on the *beel* (on boundary between *Hatilla & Gosaijoair*) (e) one bridge on *Muchibari khal* near *Karatia* bazar.

A quarter of a mile from the mouth of *Suruj khal* a culvert was constructed in 1986/87. This culvert restricted navigation, particularly as the *khal* silted up further and did not allow boats with a high cover/hood to pass. Then in 1990 the mouth of *Suruj khal*, where it crossed the *Pungli* river embankment, was closed to facilitate road communication though people actually wanted a bridge to allow water and silt entry for agriculture and fish migration. The closure also lead to the people living outside the embankment threatened to cut the embankment.

There is still a demand for opening the *Suruj khal* to the *Pungli* river with a bridge, ensuring flushing, drainage, entry of fish and navigation. Navigation will however only be partly restored as the culvert down stream limits the navigation of all but the lowest boats. If a bridge is not possible then people say a culvert will be better than the present situation.

The most severely affected area are the low farm land in *Hatilla beel* area; some areas are under water even in March. In some places, the congested water from the low land is pumped out to higher areas, to make the land available for Irri-cultivation. Due to late sowing these crops are susceptible to be damaged by the early flood.

Usual devastation occured in this sub-compartment due to flood in 1988. People do not have any clear idea about BWDB and their activities.

Water hyacinth remains in the *beels* and *pagars* in dry season. During monsoon, they multiply and spread out. Sometimes they create severe problem for Aman paddy when thick colonies spread among the paddy. Water hyacinth also serves the purpose of sheltering fish, crop mulching and as fertilizer. After the monsoon, extra cost is involved for clearing of the land for cultivation where water hyacinth accumulated.

During peak monsoon, country boats of small and medium sizes are used for internal movements of people and small freight.

Erosion

There is no erosion problem.

Ground water

According to the people there are adequate numbers of STWs and DTWs operating in this sub-compartment leaving very little scope for any further expansion. People generally drink HTWs water, but there is a scope and demand for installing more HTWs. The quality of under ground water is good and iron does not seem to pose any problem for drinking and irrigation. In drought years, there is a report of less discharge from tubewells in April-May. But in normal years discharge is normal.

Conclusion

The main problem of this sub-compartment is drainage congestion in the early monsoon and late monsoon period. Surface flood water enters mainly through *Bhatkura khal* on the south, *Gharinda khal* on the north. Drainage is effected mainly through the *Bhatkura khal* and partly through the *Muchibari khal*. But these *khals* are silted up and clearly in capable to proper drainout their respective catchment areas resulting in drainage congestion in about 50% of the farm land of this sub-compartment. Re-excavation of the *khals* and excavation of internal link canals will solve the drainage congestion problem. There is some public demand for construction of bridge and culverts on the existing roads to allow proper flow of water and to develop communication system. Under ground water quality and quantity are satisfactory and adequately exploited.

2.3 AGRICULTURE

Cropping pattern

The gross area of sub-compartment 2 is approximately 1300 ha out of which about 900 ha are estimated to be net cultivated area. The villages studied during the MDSC-survey are *Suruj*, *Gosaijoar*, *Brinahati*, *Niagijoair*, *Hatilla*, under *Gharinda* Union and *Bhatkura* and *Garasin* under *Karatia* union. The villages *Bhatkura* and *Gorasin* posses more than 60% of medium high to some high lands where in other villages 50-60% of the area belong to medium low to low lands. The extension crops grown in medium high to high lands are Aus, Jute, some T. Aman with little Irri/Boro (HYV) where irrigation is provided. The medium low to low lands are used mainly for growing Irri/Boro (HYV). Among the Rabi crops wheat and mustard is extensive. The following cropping patterns are at present practised by farmers in the sub-compartment.

Crop Patterns				
Land Type	*Kharif*-1	*Kharif*-2	Rabi Annual	% of NCA
F0-F1	Aus/Jute	T.Aman	Wheat/S.Potato/Potato/Pulse	10%
F1	Jute	-	Wheat/Mustard/Pulse	10%
F1-F2	-	B. Aus + B. Aman	Wheat/Pulse/Potato	10%
F0	-	-	- S.cane + Pulse	10%
F2-F3	TDW Aman	-	Irri/Boro (HYV)	30%
F2-F3+	-	-	Mustard-Irri/Boro (HYV)	20%
F3-F3+	-	-	Irri/Boro (HYV)	10%

The above cropping patterns are estimated in the area on the basis of the information supplied by farmers. In the villages *Bhatkura* and *Garasin* there is less scope of growing Irri/Boro (HYV) due to excess medium high lands with sandy soils.

Average crop yield and price

In the sub-compartment the average yield of different crops in the area and their price at the farmgate level is as follows. The price of the produced crops increases according to demand in the lean period.

Crops	Av. yield t/ha.	Price/MT
B. Aus	1.15	5360-5896/-
B. Aman	1.70	5060-6030/-
T. Aman	1.90	5060-6030/-
TDW Aman	1.20	5060-6030/-
Irri/Boro (HYV)	4.60	5060-6030/-
Braus (late Boro)	4.20	5060-6030/-
Jute	2.50(Tossa)	8040/-
	1.70(White)	4556-6700/-
Wheat	2.50	5030-6030/-
Mustard	0.60	13400-14070/-
Pulses	1.40(Khesari)	8040-9380/-
	1.10(Lentil)	16080/-
Sweet Potato	9.80	2420/-
Potato	8.30	4020/-
Sugarcane	21.00	670/-

In the sub-compartment a vast area is light to medium textured soils like FSL and FSCL where sweet potato is grown extensive. In almost all the villages sweet potatoes are grown extensively.

Use of fertilizers

The use of fertilizers in the area is in traditional way. Farmers estimate the amount of fertilizers with their own experience. They reported that they receive no advise from the agricultural extension works in the area. They rarely meet them. Poverty and less credit facility in the area is also the bottlenecks to apply optimal doses of fertilizers in their crops. Comparatively higher doses is applied in Irri/HYV Boro and wheat. The average rate of application of the fertilizers in the area are as follows:

Crops	Urea(kg)	TSP(kg)	MP(kg)	CD/Mannure(Kg)
B. Aus	70-90	40-60	-	700-800
B.Aus + B.Aman	75-100	-	-	
T. Aman	90-110	50-60	-	
TDW Aman	90-110	-	-	
Irri/Boro (HYV)	290-300	100-110	50-60	
Jute	120-130	50-70	50-60	
Wheat	180-200	90-110	50-60	
Mustard	90-110	-	-	
Pulse	-	-	-	
Sweet Potato	-	-	-	
Potato	90-110	40-60	-	
Sugarcane	150-180	100-120	-	

Share cropping

Share cropping system in the sub-compartment in most cases is in term of 50:50 when owners do not give any inputs to the share-cropper. Occasionally some rich owners give 50% of fertilizers and seeds to the share cropper.

Irrigated crops

In the sub-compartment only Irri/Boro (HYV) is irrigated by ground water by DTW and STWs. Most of the DTW & STWs cover the command area beyond their capacity as reported by farmers. Due to lack of distribution of irrigated water the yield of Irri crops are affected. In some area the water distribution is poor due to prolonged drought. The following number of DTWs and STWs are available in the surveyed area:

Village	DTWs/STWs (Cusec)	Irrigated Area (ha)	Run by Electricity/Diesel
Suruj	DTW 1 No.(2 cusec)	25 ha.	Electricity-5
	STW 2 Nos.(1/2 cusec)	100 ha.	Diesel-15
Gosaijoair	DTW 1 No. (2 cusec)	18 ha.	Electricity
	STW 20 Nos.(1/2 cusec)	105 ha.	Electricity-6 Diesel-14
Birnahati	DTW 1 No. (2 cusec)	22 ha.	Electricity
	STW 8 Nos.(1/2 cusec)	40 ha.	Electricity-8
Neogijoia	STW 5 Nos. (1/2 cusec)	25 ha.	Electricity Diesel-3
Hatilla	DTW 3 Nos. (2 cusec)	60 ha.	Electricity-3
	STW 4 Nos.(1/2 cusec)	16 ha.	Electricity-2 Diesel-2
Bhatkura	DTW 3 Nos.(2 cusec)	50 ha.	Electricity-4
	STW 8 Nos.(1/2 cusec)	40 ha.	Diesel-4
Gorasin	DTW 1 No. (2 cusec)	40 ha.	Electricity
	STW 1 No.(1/2 cusec)	6 ha.	Diesel
	Total : 547 ha.		

Farmers give 1/4 of their crops to the owners of the DTW and STW. DTWs are owned by KSS and the STWs are privately owned. The members of the KSS do not give 1/4 of crops but give 1/2 mds. of paddy each plus labour cost. In the past farmers would give 1/5 of their crops as irrigation cost. It has increased this year for the rise of fuel price. Failure of electricities for longer time is a regular phenomena in the area.

Crop damage

Crop damage in the sub-compartment is by insects/pest attack, hailstorms, draught etc. *Pumri, mazra,* grasshopper etc. are common. Farmers use basudin, faradon, di-micron and other insecticides in the area, but this appears to be less effective. Sprayer machines are not sufficiently available in the sub-compartment. The use brooms to spray insect/pesticides in their fields.

Occasional early flood by rain water causes partial damage to Irri/Boro (HYV). Mostly deep water Aman (TDW) is affected extensively in the area due to water congestion. Water enters into the sub-compartment in *Ashar* and *Sraban* from *Pungli* river by overtopping or through

breeches in the embankment and flood water accompanied by rain water congested in the area causing damage to TDW Aman. People of *Gosaijoar* requested for stronger embankment to check the breeches and entrance of sand into this fields which deteriorates their agricultural land. They requested one new *khal* (from *Dakhin* para upto *Hatila* and *Karatia*) and culverts at *Kurirpur, Joar Dakhin para* and *Gosaijoar* uttarpara to drainout water from the area. In *Birnahali & Neogijoair Katakhali* (survey) *khal* and *Gala khal* from *Lohajang & Pungli* flooded the low lying area affecting deep water aman. The month of *Katakhali* (*Bhatkura*) is blocked by high lands and re-excavation is needed to drainout water properly. In *Neogijoair* muddy water damage some Aus & deep water aman seedlings entering from *Gala khal.*

One culvert on the road connecting *Neogijoair & Ranagacha* is requested by the people of the village. In village *Hatilla* the *khal* connecting *Kumulli Namdar & Hatilla* requires re-excavation to remove water congestion from the area. In village *Bhatkura & Garasin* less damage by flood or water congestion is reported as the major part of the area belong to high and medium high land.

The 1988 flood has caused heavy damage to crops and other household property. Almost 100% of TDW Aman and T. Aman damaged in that year.

Livestock

The livestock situation in the sub-compartment is not well developed. The area faces a shortage in draft animals due to death of cattle in the area by different diseases to a number of 25-30 almost every year. Among the diseases rinderpest, gastritities, cowpox etc. are common. Farmer reported poor medicare in the area. They do not get free medicine for their livestock. A.I. centre is available in *Suruj*, *Karatia* and *Tangail.* Farmers said each A.I. costs Tk.15/- to Tk.20/- and without money the Livestock Department staff do not take care of their cattle. Milch cows are also used as draft animals. There is a cattle feed crisis in the area from the month *Falgoon* to *Baishak,* when they have to purchase straw @ Tk.80-90/- per mounds. Hire charge of pair of draft animal is Tk.2-3/- per plough per decimal. No power tiller is used in the area. Few hybrid cattle are available. The maintenance of hybrid cattle is costly. Ineffectiveness of artificial insemination also discouraged farmers and consequently hybrid cattle in less number in the sub-compartment. Average production of milch cow in the area reported to be 2-2.5 kg per day per cow.

Poultry

Among the poultry chickens are available in large numbers with some ducks in the household near water sources. They mostly belong to local varieties. A few farm chickens have been domisticated by wives of medium and rich farmers. Medicare is poor. Mass vaccination is given in given once or twice a year, for which some incentives are given to the Livestock Assistants.

Poultry in the sub-compartment mostly live on scavenging on nearby fallow lands and in households. Rice bran, wheat and pulse residue are occasionally supplied to chickens. Ducks are provided with snails, bivalves, unio etc. when available. Ranikhet, tapeworm and fowlpox are the common disease among the poultry.

Own observation and views

The land in the sub-compartment mostly slopes towards the South. About 50-55% of land belong to medium low to low land type and belong to F2 (30%), F3 and F3+ type (25%). The remaining part of the area is high to medium high land and belongs to F0 (15%) and F1 type (30%). Mainly the low lands are used for growing Irri/Boro (HYV) and some TDW Aman is grown. The land on higher elevation i.e. medium high to high land is used for growing Aus, T. Aman Jute, Sugarcane etc. Among the Rabi crops wheat is prominant. Soils along river sides are FSL in texture and silty day loan (Sicl) to silty day (Sic) in basin edge and basins. The topography is nearly level, very gently to gently undulating. With improved drainage on most of the land double crops can secured.

Livestock and poultry mostly belong to local varieties. The area faces a shortage in draft animals. Peoples are less interested for artificial insemination as the maintenance cost of hybrid cattle is high. Farm poultry are few in the area. The Livestock department should take care for proper medicare and extension services is necessary to be enhanced to develope the livestock and poultry in the sub-compartment.

2.4 FISHERIES

Water bodies

The available water bodies under the sub-compartment SC-2 with their number, type, area and available fish species are shown below in the table:

Sl. No.	Water bodies	Number	Area (Acre)	Type	Available fish species	Annual	Ownership	Remarks
1.	Beel: i.Bara Kum beel(Goshaijoir ii.Sikdarbari Kum(Goshaijoir)	01 01	04 03	Perineal Perineal	Koi, magur,sing,taki,shol, boal,gajal,foli,tengra,puti, chanda,baim,gutum,batashi, nura, feka,kalabaush,migral Fresh water muscles including unio & pila. Shrimps+crabs. Crustacea including crabs.	100 mts. approx. 90 mts. approx.	Khash Khash	Veryresource fulwaterbody Very useful waterbody fishery and surfacewater irrigation point ofview
2.	Ponds i. Suruj ii.Neogijoir iii.Hatila iv.Bhatkura v. Grasin	07 01 03 05 01	10 acres approx	cultured cultur-able and derilicts	Nura, Feka, Tilapia.	Poor	Individual	Culture fishery is poorly de-veloped but prospectis there.
3.	Pagars: i. Suruj ii. Goshaijoir iii.Birmahati iv. Neogijoir v. Hatilla vi.Bhatkura vii.Grasin	15 20 15 10 20 70 25	30 acres approx	cultur-able	Koi, sing, magur,puti,taki, gajal,shrimp,pabda,tengra, baim, foli, chela,batashi etc.	700 mts. approxi-mately	Individual	Very much useful.

Barakum *beel* and sikdarbari kum

Both these *beels* are very important waterbodies in the village *Goshaijoir*, Union *Gharinda*, *Tangail Sadar Upazila*. Both the *beels* are easily approachable from the *Suruj-Neogijoir* main road. As per report both the *beels* are Govt. *khash* and the people in and around enjoys the fishing, surface water irrigation, duck culture and other households facilities. The *Barakum beel* is reported to be cover a total area of 4 acres of land and the *Sikdarbari Kum beel* is composed of 3 acres of land. Both these *beels* are perineal waterbodies and even in extreme dry season the depth of water does not go below 6' in its middle. As per farmer's report the *beel* contains different species of fresh water fishes like *Rui, Katla, Mrigal, Kalabaush, Shole, Gajal, Taki, Boal, Tengra, Puti, Koi, Sing, Magur, Pabda, Bijri, Chela, Chat, Baim, Kakla, Chanda, Gutum, Tiputi* etc. of which major carps and snakeheaded are prominent.

Fishing goes on in the *beel* round the year but the months of *Kartik, Agrahayan & Poush* is reported to be the peak fishing period. Both professional, casual and subsistence fishermen are reported to fish in the *beel* itself in the month of *Ashar* with the onset of monsoon rain. The baby fishes quickly grow up and during full monsoon the *beel* fishes dispersed all over the flood plain for a period 2-3 months. Some of the fishes are trapped while others go back to the *beel*. Fishes are always available in the *beel* and the entire locality people do meet their fish consumption demands by fishing in these *beels* The *beels* are covered by water hyacinth and many aquatic birds like *Panikauri, Kora* and other unidentified aquatic vegetation are present in the *beel*. Besides fresh water muscles including unio, *pila* and tortoise, crabs are also present in the *beels*. Water lily, hydrilla, topa shela etc. are also present. So the *beels* are rich in both flora and fauna. In extreme dry season when there is an acute scarcity of water, the *beels* become the only source of water for the local people for their different uses like bathing, cattle bathing, duck culture, washing of cloths, surface water irrigation facilities and fishing etc. The water hyacinth serves as cattle fodder, organic manure (compost) for agricultural field and also sometimes as fuel.

As per public reports the outskirts of the *beel* gradually becoming silted thus reducing the storage capacity. So both farmers, subsistence fishermen, professional fishermen are requesting the proper maintenance of the *beel* like re-excavating the outskirts of the *beel* to facilitate water retention capacity and thereby to help more fish stockings. In one ward the *beel* is the vital waterbody in the area.

Professional fishermen

As per report there are no professional fishermen in the sub-compartment.

Subsistence fishermen

There are about 10-12 households of subsistence fishermen in *Goshaijoir*, 2 households in *Birnahali* and about 15 households in *Hatila* village under the sub compartment. They are reported to be poor Muslim people and fish in the floodplains, pagars, *beels* and ponds in the area. During lean fishing period they engage themselves in other profession like earthcutting, rickshaw pulling, day labourer. During early and full monsoon period they get sufficient scope to earn money by fishing. They are reported to be so poor that they cannot afford to purchase necessary nets for fishing. They mainly do fishing by *Jhakijal*.

Fishing periods

In the *beel* fishing goes on round the year and the months of *Ashin, Kartik, Agrahayan and Poush* is reported to be the peak period for fishing in the *beel*. In the floodplain fishing goes on in the month of *Ashar*, Sraban and *Bhadra*. Besides fishing in *pagars* goes on in the month of *Chaitra*.

Fishing methods

Floodplain fishery is mainly done by using 80% fishing gears like *Berjal, Kharjal, Karentjal, Jhakijal and Jali* and 20% of harpoons like *Aro, tenta, Juti* etc.

Beel fishery during pre-monsoon and post monsoon is operated by using 70-80%. *Berjal and Jhakijal* and 20% of scoopnet, polo and handpicking.

Pagars fishing is done mainly by lowlift pump (LLP) during post monsoon. The pond culture fishing is done by marginal *Berjal*.

Flood plain fishery

Floodplain fishery is well practised in the sub-compartmental floodplains. With the onset of rainfall and flow of river water in the month of *Ashar* from *Pungli* river through *Suruj khal* and *Gharinda khal* the floodplains of the sub-compartment becomes inundated. This time all the agricultural field minus the public roads and homestead are under water. Along with the river water many fingerlings of carp fishes as well as others fresh water gravid female (*Koi, magur, sing, puti, pabda, tengra* etc.) enter into the floodplain. The gravid female spawn in the floodplain and the juvenile fishes do grow quickly there by getting adequate nourishment.

Both adult and junevile *beel* fishes also dispersed into the surrounding flood plain and mixes with the white fishes (*beel* fishes). This time many professional fishermen from surrounding villages, subsistence fishermen and local people fish in the floodplain freely. During this time the surrounding people do not have any fish scarcity as the floodplain is full of different types of fish. Many fishes are caught while others go back to river along with receding of water in the month of Kartik. The available floodplain fishes migrate to the *beels* and other depressions of the floodplains and these are thys naturally stocked. This flood plain fishery lasts for a period of 2-3 months.

Fisheries practices

Both culture and capture fishery is reported but culture fishery is very poorly developed. There is a great public demand to develop culture fishery in the area.

Institutional facility

The institutional facility is nill as per report.

Fish disease

Fish disease is a common occurance and is seriously reported. Almost all the fishes come under attack of disease in the month of Ashwin and Kartik. As per report due to severe attack among snakeheaded fishes the dealth toll is maximum and the waterbodies become polluted.

People in the area are worried and they urged to help them by controlling fish disease.

Fish migration

As per report fish migration takes place in the area. The river fishes (white fishes) from the surrounding river *Pungli, Lohajang* migrate to the flood plains of the sub-compartment through *Suruj* and *Gharinda khal* during early monsoon. Fish migration is necessary as the migrated female gravid fishes spawn in the floodplain and also get proper nourishment there in monsoon. During the post monsoon some of the migratory fishes go back to river through the *khal*. Fish migration thus helps fish reproduction and nutrition.

People requested that there should be proper channelization between the floodplains and the surrounding river *(Pungli)*. To facilitate fish migration as well as navigation the locality people requested to re excavate the *Suruj*, *Gharinda* and *Bhatkura khal*.

Own observation and views

The visited area has two small *beels* known as *Bara Kum* and *Sikdar Kum beel*. The area has small number of ponds, but a good numbers of pagars. There are about 175 *pagars* of different sizes in the sub-compartment. Many farmers, children, fishermen were found fishing in these waterbodies mainly with *Jhaki* and *Scoopnet*. Their catch was not so satisfactory as this is the lean period for fishing. The available fish catch from the *beel* were not seen diseased. Some of the *pagars* and detilicts ponds were pond culture fishery is very poor in the area.

Views

The derilicts ponds and dried up *pagars* needs to be re-excavated to increase waterbodies to facilitate fish stocking.

2.5 ENVIRONMENT - MALE

Biological

Arthropods

Many destructive insects has been reported. The destructive insects comprise *pertha (small black insect), peroli, mazra, pamri*, mantis, letha, changa and many other inidentified insects

out of which *pathra* one is reported to be new one and is seriously harmful to Irri/Boro. This insects are reported to be highly resistant to any insecticide. The *mazra* and *pamri* also causes serious damage to Irri, Changa, causes damage to Jute, *letha* causes damage to pulses, grasshopper causes damage to sugarcane. As per report by the farmers that about 2-3% of the total crops of every type are damaged by insect attack. Crustacea like shrimps and crabs are also present in the area and are useful to manking. Butterfly, housefly, moths, honeybee are also present in the area.

Farmers are really concerned over the insect attack and they requested to control this insect attack on an priority basis.

Mollusca

Fresh water muscles including unio (bivalve), *pila* (snail) are reported to be present in the *pagars* and *beels* of the sub-compartment. In the monsoon period their population increases in the area as the water bodies increases due to inundation. Both these mollusca are edible to many birds and ducks and also serve as raw materials for quick-lime preparation.

Fish

Fish is reported to be important wealth in the area but their population has been showing significant decrease over the few years due to fish disease. People reported that this important fish wealth is gradually decreasing in the area due to negligence of appropriate govt. agencies. The upazila fishery officer does not pay any attention to this inspite of being informed by the farmers. Farmers reported that once, the water bodies in the area were rich in fish population and they would not face any fish scarcity problems. Now it is very difficult for them to make fish available.

People requested to control fish disease and save fish population from disease havoc.

Amphibian

Toads, Frogs and Hyla are reported. Toads and frogs are satisfactorily present but they are reported to be caught in the village *Neogigoshai* and *Birnahati* by a group of people at night during rainy season. These animals have got a high export value. They also help in biological control of destructive insects.

Reptiles

It includes *tortoise, lizard, anzan, guishap, snakes*, and are reported to present in different area of the sub-compartment. But their population has significantly decreased since the devasted flood of 1988.

Birds

As per report once the villages *Hatila, Neogijoir & Suruj* were enriched in bird population but after the devastating flood of 1988 and public interference this bird population has been seriously declined. People reported that only heron are found in the waterbodies in

satisfactory numbers. The other bird species comprise kingfisher, tuntuni, boi, owl, crow, shalik, cuckoo are present but are in reduced number. Many farmers domisticate pigeon the symbol of peace in their houses and when its population increases are eaten by the owners. As per report the meat of pigeon is very nutritions.

Mammals

Terrestorial wild animals

Though the visited area has homestead forest and bushes here and there but the presence of wild animals are very scarce in the area as per report. Whatever wild animals are reported to be present include *Jackle, mongoose, jungle cats, nangar, bats, khatash* etc. But their population is very poor and as per report since the flood of 1988 these wild animals has been decreased in the area. Rats are a great problem in the area.

Domestic land animals

Domestic land animal numbers are very poor in the area. They include dry cow, milch cow, draft animals. Buffalows and horses are completely absent for unknown reasons. Cattle disease is reported in every villages of the sub-compartment. Farmers reported that about 20-30 cows die due to cattle disease over the last two years. This cattle disease has not yet been diagonised and it gives very little time for treatment. Farmers reported that once the cattle is attacked it dies within three to four hours. The symtom is that the cattle's abdomen starts swelling, it then trembles and all on a sudden dies.

Farmers are very much disappointed due to this problem and their draft animals has shortened. They urged to help them by providing livestock medicare to save their valuable cattle wealth.

Afforestation

The visited area has well developed homestead forests and bushes. An afforestation programme is reported to be carried out by the public at their own initiation in early monsoon. There is no report of govt. scheme to develop afforestation in the area but small scale programme is carried out by CARE. CARE is reported to supply them sapplings of *Mehogony*.

There is a great public demand to develop an afforestation programme in the village of *Hatila and Garasin*. Farmers urged to supply them best quality seedlings, seeds and sapplings of timber yielding and fruit-yielding plants before rainfall to boost up afforestation programme in the area.

Deforestation

Deforestation practice is reported to go on in the area round the whole year but its intensity increase specially in the month of *Ashar*, Sraban and *Bhadra*. Generally the brick-field owners and saw mill owners purchase the timber from the farmers to be used in their brick-

fields and saw mill respectively. In this way the homestead forest wealth is being destroyed gradually.

Kitchen vegetation

Kitchen vegetation is developed in *Suruj* and *Neogijoir* consisting of common varieties of vegetables. Farmers reported that whatever vegetables they cultivate in their kitchen garden is enough to meet their own vegetables consumption demands. In addition to that the surplus vegetables are sold to the market by the farmers and is reported to be their good source of income.

There is a demand from public in the area to help them by sappling different seeds or vegetables timely and also to train up them in horticulture.

Human activities

Human habitation

The growth of new human habitation is reported in the village *Hatila,Bhatkura and Garasin*. The intensity of its growth is reported to be high in *Hatila* and about 3/4 new houses covering an average area of 10-15 decimal has been constructed last year thus causing decrease of land in the area.

Pollution

Pollution is reported to be a problem in the area. Owners throw dead animals here and there in the villages thus inviting vulture, jackle, dogs, crow and making the whole area very uncongenial. Besides open sanitaion by children and adult male members, dumping up of households garbages and filth here and there, stagnant water in the nearby ditches etc. causing both air and water pollution. As a result many air and water borne diseases are developing in the area.

Some educated people in the area are very concerned over the issues and they approached to help them to this effect.

Own observation and views

The sub-compartment seems to have many environmental problems like open sanitation, deforestation, crop damage, stagnation of ditches water, throwing of dead animals bodies here and there. Cattle shortage is a great problem in the area and due to shortage of draft animals the farmers are at great difficulties for ploughing their agricultural land.

The visited area house well cultivation of Irri/Boro but they are not free from problems. There is a severe insect attack to these crops and due to which the farmers are extremely worried. The road side ditches, *pagars* and detilicts ponds are completely dried and which is a very common scene in the village *Garasin*. Farmers were found excavating small ponds

near their homestead in the village *Garasin*. Homestead gardens trees like mango were found with green mangoes, litchi trees were found starting fruiting so these are the common scene came into sight. Bathing pools for both cattle and mankind are scarce in the area. Hand pumps though not adequate but villagers somehow manage to meet their drinking water needs from the available hand pumps. Kitchen garden is developed and comprising common vegetables.

Birds population in the area seem to have decreased significantly and the same is the case with reptiles and fish population *Pally Biddut* supply is there but not to majority houses even. The communication system is not so developed.

Views

The derilicts ponds, *pagars* and ditches need to be re-excavated on priority basis to increase water bodies in the area and to facilitate easy life of the villagers.

2.6 ENVIRONMENT - FEMALE

Homestead forest

Homestead forest is reported to cover an average area of (.1-.2) acres a most of the visited villages. The homestead forest have the most common varieties of trees such as *herbs, shrubs, mango, jackfruit, coconut, banana, shimul, bamboo bush, jumboora, black berry, pomogranate leamon, hard fruit trees, koroi, mehaginy* are also available in the visited area.

Fuel

There is a severe fuel scarcity for the poor people was reported in the area. It was reported that poor women sometimes collect fuel from the *chaks*.

The main source of fuel is dry leafs and bushes, remains of sugarcane, paddy, etc. The well-to-do and middle class families store cow dung and wood for rainy season.

Drinking water

Tubewell is the main source of drinking water in the visited area. About 150-200 tubewells were reported installed in the visited villages which not sufficient as per demand except *Bhatkura* village. A few people was reported use well pond water for drinking.

Sanitation

Sanitation is very poorly developed in this area. In an average 50-60 *pucca* latrines were reported available in the visited villages except *Bhatkura*. Most of the people use *katcha* latrines. Women stated bad small from *katcha* latrine pollute the air. Chickens, hens wondering in the *katcha* latrine and spread the germs here and there.

Diseases

Diseases like diarrhoea, dysentry, scabies, worms, measles, pox take place in the visited villages. Most of the disease occur in the month of *Ashwin, Kartik, Falgoon and Chaitra.* But women from a few village told that diarrhoea brakes out all most the year round.

Rats

Rats were reported abundant inside and outside of the homesteads in the visited area causing damage to crops, fruits and household belongings. Mosquito also creates problem for human being.

Other wild animals

There are other wild animals like fox, bagdasha, mongoose are available in the visited area. Women of *Bhatkura* and *Neogijoar* told that this type of animal has decreased significantly after 1988 flood.

2.7 SOCIO-ECONOMIC SITUATION - MALE

Major non-farm activities

The major non-farm activities of the people in the surveyed area are: Weaving, Service, Workshop and Garage works, Transport workers, Agricultural works, fishing and carpentry. From the total households of the area about 24% are servicemen (also they have farm lands), about 21% weaver (85% of whom have farm lands) about 08% businessmen about 4% different engineering works worker and about 6% transport (rickshaw/van puller, bus/truck helper) worker. A few fishermen (05/06 households) and carpentars (05/06 households) are also found in the area. During the lean season of agriculture and weaving, the landless families and poorer households find their work in transport line, earth cutting or engages in seasonal businesses.

Social and institutional aspects

Employment patterns

Mainly family labour is used in the farm households of the area. Outside labourers and hired labour is used during sowing and harvesting of HYV Boro paddy. Out-migration of labourers is reported from one village (*Garasin*) from the surveyed area and the number of out-migrating labourers is also not that high (only 10 to 12). But regular in-migration of labourers during sowing and harvesting time of HYV paddy is reported in all the villages. The day labourers in the area from *Bhatkura* village (mainly from the landless families) depend mostly on non-agricultural works (rickshaw/van pulling, construction works, petty business, automobile garage works, engineering works etc.) in Tangail town. Dependency of

day labourers on agricultural works is reported in *Hatilla* village while day labourers from *Garasin* village depend on weaving works and day labourers of *Bhatkura* on non-agricultural works. During the lean season of agriculture (in *Hatila* village) and of weaving (in *Garasin* village) the day labourers mainly engage themselves in transport works in Tangail town or in *Karatia* and in earth cutting works adjacent to the area.

Wage rates

The wate rates for labourers engaged in agricultural works in the area differs from village to village. Following table shows the wage rates in the area:

Sl.#	Village	Wage Rate		Remarks
		Lean Season	Peak Season	
1.	Hatila (Dakhinpara)	Tk.15+ 1 meal	Tk.25+ 1 meal	Duty hours:6:00 am.m to 1:00 p.m.
2.	Bhatkura (Purbapara)	Tk.15+ 3 meal	Tk.25+ 3 meal	Dury hours: 6:00 a.m to 6:00 p.m.
3.	Garasin (Dakkhinpara)	Tk.15+ 3 meal	Tk.25-30+ 3 meal	- do-

In the weaving industry worker's wage are given on production and contract basis. However, on an average, the per day income of a weaving industry worker ranges from Tk.25-35 (without meal) during peak season (*Baishak-Jaistha, Agrahayan and Poush*) of the industry.

Organized groups

There are Grameen Bank, SDS, CARE and BRDB are working in the area. All these organizations have their target groups and samities as well. The Grameen Bank and SDS have their activities in all the (surveyed) villages and have several female and children groups. The BRDB (KSS) has its groups in two villages while CARE has its program and a female group in only one village. Clubs of local people (one or two in each villages) are also there in the area.

Markets

The main markets for the people of the area are *Karatia, Taratia, Joair and Bajitpur* (details of the markets are given in previous reports).

Public facilities

All the public facilities are available at a very close distance for the people of the area. Tangail town and *Karatia* being situated nearby, people of the area can avail other facilities too.

Transport and communication

The present road condition of the area is quite good and it is well connected with Tangail and *Karatia* and Dhaka-Tangail highway. The village roads are useable by rickshaw, van and other motorable traffic. The road through *Bhatkura* village is connected with *Basail* upazila head quarter is an important road of the area.

General needs

The main development need of the people of the area is to construct two bridges on the road from *Hatila South Para* to North para for smooth communication of the people of the area as well as for the young students, particularly during the rainy season. Removing drainage congestion and waterlogging problem in the *chaks* of *Bhatkura* village is another need of the people in the area. For the weavers community of *Garasin* village, high production cost of cloth (of weaving industry in the area) is a threat to their existence in the profession, therefore, they urged to take measures to lowered down the price of raw materials (thread, dying materials etc.) used in the industry.

Own observation

Socio-economic situation

The socio-economic condition of the people in the area differs from village to village. In *Hatila* village (*Dakhinpara*) about 50% households are reported engaged with farm activities. While about 35 to 40% households in *Bhatkura (Purbapara*) are attached with agriculture. On the otherhand, about 95% households in *Garasin (Dakhinpara*) village are reported to be weavers.

The day labourers of *Hatila* village (about 25% of the total household) move to Tangail town during the lean season of agriculture in the area and works as rickshaw puller, construction worker, earth-cutter etc. while the day labourers from *Bhatkura (purbapara*) village always prefer to work in the town *(Tangail*) area. Besides working in transport line earth cutting and construction line, the day labourers (rather low income group people) of the area (about 30-35%) also engage in seasonal business and different engineering workshops and automobile workshops in Tangail town. As a result, the area (*Bhatkura*) suffers labour shortage problem during the peak season of agriculture in the area. The farm households of *Bhatkura* area therefore has to depend on in-migrating labour. On the otherhand, during the lean season of weaving industry the poorer households of *Garasin* village either remain idle or works in transportation line or in earth cutting. A few weaver moves to other area to do the same work. As majority of the weavers of the area are not experienced to do other jobs, they sit idle during the lean days of their industry.

The economic condition of the households in *Garasin* village have been found poorer and *Bhatkura* is the riches in the whole area. Educationally, *Hatila and Bhatkura* people are found to be in the same position, while the people of *Garasin* are behind the other two village.

The number and proportion of landless families in *Hatila* and *Bhatkura* area are also almost equal, but in the *Garasin* area it is more than double that of the other two villages.

Peoples opinion

About the NGOs

The people of the area are found supportive to the activities that the NGOs have carried out in the area, except that too many roads have been constructed by CARE without any proper plan. The people from *Bhatkura* village found the roads of CARE sometimes unnecessary and a reason for creating un wanted drainage congestion problem in the area and in other areas too.

About functioning Union Parishads and Upazilla

Although people of the area are not quite happy with the performances of Union Parishads, but they see no alternative institution for rural development other than this institution. Being not linked directly with the upazila the people of the area expressed their inability to comment on how upazila is functioning.

2.8 SOCIO-ECONOMIC SITUATION - FEMALE

Employment patterns and activities of women

The visited villages under the sub-compartment 2 are *Suruj, Goshaijoir, Birnahati, Neogijoir, Hatila, Bhatkura and Garasin*. In all the visited villages women are involved with different types of income generating activities apart from their household works. Quite a good number of women in *Suruj* and *Neogijoir* villages are involved with *Biri thonga* making while the women of *Garasin* village are mostly involved with spinning work due to availability of work scope. Most of the households on *Garasin* village have their own weaving machine which has created a great opportunity for women to do spinning work.

The daily wage rates for various type of income generating activities of women in the sub-compartment 2 are shown in following chart:

Name of Village	Type of Works	# of Women involved	Wage rate with meal		Wage rate without meal	Remarks
			Tk.	meal	Tk.	
Suruj	Biri Thonga making	300-350	-	-	8-10/-	
	Cotton wrapper	5-8	-	-	8-10/-	on demand
	Post harvesting	3-5	3-4/-	3 m.	-	seasonal
	Sikka making	4-5	-	-	5-10/-	on demand
	Sweing	20-25	-	-	5-10/-	
Goshaijoar	Biri thonga making	20-25	-	-	8-10/-	
	Spinning	20-30	-	-	8-10/-	
	Weaving	8-10			10-12/-	
	Post harvesting	10-12	4-5/-	3 m.	-	seasonal
	Cotton wrapper	2-3			5-8/-	ondemand
	Sikka making	2-3			4-8/-	ondemand
	Hand Pakha	2-3			4-5/-	ondemand
	CARE Road Maintenance	3			24/-	regular
	Service holder	2-3				regular
Binahati	Cotton wrapper	2-3			5-8/-	ondemand
	Post harvesting	3-4	4-5/-	3 m.	-	seasonal
	Maid servant	4-5	3-4/-	3 m.	-	
	Service holder	2-3				regular
	CARE Road maintenance	2-3			24/-	regular
Neogijoir	Biri thonga making	100-150			6-10/-	
	Cotton wrapper	3-5			4-5/-	ondemand
	Post harvesting	10-15	3-5/-	3 m.	-	seasonal
	CARE road maintenance	1			24/-	regular
	Service holder	4-5				regular
Hatilla (Maidhapara)	Embroidary	2-3			3-4/-	ondemand
	Spinning	2-3			5-6/-	
	Cotton wrapper	2-3			5-8/-	ondemand
	Net making	4-5			4-5/-	seasonal
	Hand pakha	8-10			8-10/-	ondemand
	Post harvesting	3-4	3-5/-	3 m.	-	seasonal
	Maid servant	2-3	6-7/-	3 m.	-	
Bhatkura	Cotton wrapper	10-12			5-6/-	ondemand
	Sikka making	4-5			5-10/-	
	Cane & Bamboo work	12-15			30-40/-	regular
	Net making	2-3			10-12/-	seasonal
	Boiler mill	2-3			8-10/-	regular
	Service holder	1-2				regular
Garasin	Spinning	25			5-10/-	regular
	Sweing	10			15-20/-	regular
	Weaving	5			10/-	regular
	Embroidary	20			10-12/-	regular
	Mat making	4-5			5-10/-	
	Net making	4-5			4-5/-	seasonal
	Cotton wrapper	15			8-10/-	ondemand
	Maid servant	8-10	3-4/-	3 m.	-	
	Rice husking	4-5			25-30/-	
	Spinning	150-200			5-6/-	

Education and literacy

The following tables indicates the villagewise litearcy rate of the sub-compartment #-2:

Sl. No.	Village	Literacy rate	Attendency rate <5-14>	Ratio of Girls	Remarks
1.	Suruj	15-20%	60-70%	35%	
2.	Goshaijoar	30-35%	85-90%	45%	
3.	Birnahati	15-20%	60-70%	30%	
4.	Neogijoar	25-30%	65-75%	35%	
5.	Hatilla	5-10%	20-25%	25-30%	
6.	Bhatkura	35-40%	80-90%	45%	
7.	Garasin	10-15%	50-60%	45%	

Organized groups

Sl. No.	Village	Name of (NGO/Semi-Govt./ Autonomous) Organizations	# of Groups	# of Member		Remarks
				Male	Female	
1.	Suruj	1. Grameen Bank - Mukti Bhumiheen Mahila Samity	-	-	100	
		2. SSS	-	-	100	
		3. SDS	-	-	50-60	
		4. Local Mohila Samity		7	10	
		5. Local Panch Tara Samity		20	6	
2.	Goshaijoar	1. Grameen Bank	-	-	150	
		2. SDS	-	15	20	
		3. Local Goshaijoar BekarSamity	-	14	2	
		4. Local Boys Club	-	100	-	
		5. Local Juba Songha	-	200	-	
3.	Birnahati	1. CARE Samity	-	-	45	
		2. SDS	-	15	10	
		3. (Local) Local Samity	-	10	10	
		4. Local Boys Club	-	70	-	
		5. Shuprovatee Juba Songha	-	80	-	
4.	Neogijoir	1. Grameen Bank		-	50	
		2. SDS		60	40	
		3. (Local)Afzal Sriti Songha		40	-	
5.	Hatila	1. Grameen Bank		-	25	
		2. SDS		15	15	
		3. Local Boys Club		16	-	
6.	Bhatkura	1. Grameen Bank		-	120	
		2. SDS		60	40	
		3. (Local) Mohila Samity		-	19	
7.	Garasin	1. CARE Samity		-	30	
		2. Grameen Bank		-	80	
		3. Local Boys Club (2)		100	-	
		4. BURO Bank				Not functioning
		5. Jono Kollayan Mohila Samity		-	50-60	

The women from most of the villages in this sub-compartment expressed that they have organized Local *Mohila Samity* on their own initiative but then became non-active after 1-1.5 years. The reason they stated is that the people who take charge to administer and run the *samity* are found to be incapable after a few months.

Women of *Garasin* village complained against BURO Bank which has started working in the same village for last 5 years. Approximately 50-60 women retained the membership under the BURO Bank Samity and each women deposited Tk.5.00 (five) per week for about 3-4 years. But none from BURO Bank going there since last one year. Finally, women came to conclusions that BURO Bank misappropriated their deposited money.

Public facilities

Public facilities like Union Council office, post office, F.P. clinics, health clinic etc. are available around the area within two-three miles distance from the villages.

People of these villages avail health care service from *Suruj* Hospital and *Coallition Health* Clinic which are close by. In case of any severe health problem patients are referred to *Tangail Sadar Hospital*. Women expressed their sorrow that medicare facilities with free of cost is not available from *Suruj* and *Tangail Sadar Hospital*.

Development needs

Tubewell and pacca latrines are the common need a most of the visited villages. Coverage of more NGO activities were also requested by women to promote their socio-economic status.

In *Goshaijoar* village women told that there are some small *beels* named *Choto Kum, Boro Kum, Dorgabari Kum, Malibari Kum & Tati Bari*. These are helpful for men, cattle and fish culture. People living adjacent to those *beels* (who do not have tubewell) use *beel* water for cooking and drinking purpose. Water hyacinth always floating there case the water quality very bad and rapid grows of mosquito.

Women of the above village stated that in the rainy season water flow leads water hyacinth to get entry into the paddy fields cause damage to Aman seedlings and IRRI crops. Re-excavation of these *beels* will help the people to get Aman and IRRI crops as well as fish culture also.

Women of *Birnahati* stated that waterlogging over the western side *chak* causes damage to T. Aman in the month of *Sraban*. Re-excavation of *Katakhali khal* and flow out of the same *khal* towards *Lohajang* river will drain out the stagged water of the same *chak*. This will help them to get three crops in a year.

Women of *Neogijoar* mentioned that flooding in the month of *Ashar* and *Sraban* and water congestion over the eastern and western low lying *chaks* damages Aman and Rabi crops each year. Women suggested construction of a least one culvert over the *Goshaijoir katcha* water from the above *chak*.

Women of *Atatila* village expressed that since the *Maidhapara* is high land, water bodies dry up in the dry season. People take their bath using the tubewell but there is no water body in this para for cattle bathing. They have a demand of exacavating one pond at least in *Maidhapara*.

Women also stressed the need for construction of two bridges over the important *katcha* road from *Hatila to Goshaijoar*. Presently, people are using a bamboo made bridge over those breaches of the same road which damage in the rainy season due to water flow from *Hatila*.

Women of the same village requested re-excavation of the *Bhatkura/Katakhali khal* to drain out the rainfall water over the northern and eastern side low lying *chaks*.

Women of *Hatila* and *Bhatkura* villages requested construction of a high school in each village. They think non-availability of high school is the major cause of dropping out the student particular from higher education.

Existing water related situation

Women from most of the villages remember the significant loss of human property in 1988 flood.

Peoples view

About Uand Upazila Parishad

Different types of feelings about the activities and contribution of the above institutions were expressed. Some women stated that they are not concerned about this. Some women opined that these are unworthy institution and cannot make any good of the common people. Finally, sometimes their institution does some good work for the people.

About NGOs

Women of the sub-compartment mentioned that all NGOs are more or less helpful for them. But they mainly referred to the Grameen Bank provides credit with less interest.

List of villagewise influential leaders

Village	Name of Leaders	Profession
Suruj	Shukkur Mahmud	Farmer
	Abdul Mannan	Dealer
Goshaijoar	Bodoruddin	Farmer
	Nitai	Matabbar
Neogijoar	Badsha Miah	Businessman
	Inuddin	Matabbar
Hatila	Nizamuddin Talukdar	Farmer
	Abdul Quddus	Teacher
Bhatkura	Kabir Hossain	Matabbar
	Hamid Khan	Rtd.Service holder
Garasin	Sobur	Rtd. Service holder
	Fazlur Rahman	Farmer

Own observation

Micro floating aquatic vegetation was found over the water bodies in most of the pagars, ponds and small *beels*. People were seen using water from there for bathing, washing etc., which is a major source of getting skin diseases.

There is a *Jono Kallayan Mohila Samity* in *Garasin south para* where more than 50 (fifty) women have been working on different trades from 10:00 a.m. to 4:00 p.m. everyday. Approximately 50 (fifty) women have been given a VGD (Vulnerable Group Development) card and getting 30 kgs of dry season per head per month. This is its an important training centre to generate income earning activities for women.

SUB-COMPARTMENT 3

3.1 INTRODUCTION

The sub-compartment 3 is on the eastern periphery of the *Tangail* CPP. This area is almost triangular in shape and is bounded by the *Tangail-Gharinda* paved road on the North and South, *Paila-Garinda* earthen road on the East and *Tangail-Karatia* paved road on the South. The total area of this sub-compartment is about 630 ha.

Land slope is towards the South. Average land level is medium high and low farm land affected by drainage congestion is about 40% of the total farm land, located at the central part of this sub-compartment.

3.2 HYDROLOGICAL SITUATION

River flow: flooding and drainage

Early monsoon rainfall in May is the initial source of flooding. It fills the low areas.

In June, river water enters and aggravates the flooding. Riverwater enters from the *Lohajang* river through *Tangail khal* (near stadium) and its outfall at *Biswasar Betka* and then enters the flood plane of sub-compartment-3 near *Dorun beel*. From *Baillah* khal, water enters *beel Gharinda* and then *Gharinda beel*, through, the culverts on *Tangail-Gharinda* road by overland flow. From another branch of *Baillah* khal, flowing through a culvert at *Gharinda* bazar, water enters *Paila beel* through the *khal* in *Aultia & Sarutia*. A small water flow, at first enters this sub-compartment through *Jalfai khal* from *Lohajang* river in June. *Dorun beel* is located approximately at the central part of the sub-compartment and the *Gharinda beel* is located in northern part of this sub-compartment. Early flood in the areas is caused by heavy showers in June and due to blocked channels creates drainage congestion. River flood enters later in July during high river stage peak flood level is reached in August. In September and in October drainage take place. Generally the surface water flows from north to south during the monsoon period.

The major drainage route is through *Jalfai khal* in sub-compartment-4 to *Lohajang* river. Partly drainage takes place towards east to sub-compartment-2 through some breaches on the earthen road from *Paila to Gharinda*. Of the total farm land 40% is affected by drainage congestion. For proper drainage of the adjoining area, one new *khal* of about 1km length from *Sarutia* to *Jalfai* is required to be excavated and the *khal* from *Jalfai* to *Lohajang* is required to be re-excavated. To drain out water of the area of *Gharinda beel*, one new link canal of about 500m length is required to be excavated to connect the low pocket of the *beel* with the existing *Sarutia khal*. Another one internal link canal from *Tangail khal* to *Dorun beel* through *Biswaser Betka* is required to be excavated to relieve some drainage congestion of the adjoining areas.

There is a demand from the public of this area to excavate a *khal* from south of *Dorun beel* upto *Sarutia khal* to facilitate the drainage of this area in time. The excavation of the new

khals and the link canal, this may be opposed by the affected land owners unless proper compensation is paid in advance.The *khals* under the two existing bridges at *Paila* are required to be excavated for proper drainage of the congested area.

Due to higher sill level of the old existing bridge on the same road at *Paila*, proper drainage can not take place. *Sarutia khal* from *Gharinda* bazar to *Paila* was re-excavated in 1978-79.

Two bridges are required on the road from *Sarutia* to *Gharinda* to drain out the water at *Sarutia* and *Dharat*. Two pipe culverts are required at *Dhakhin* para of *Paila* to relieve drainage congestion of one congested pocket of this area. There is a strong public demand to construct one bridge at *Dorun* over *Dorun beel* and the other one at *Sarutia* over *Sarutia khal* on the same earthen road connecting *Darun* to *Gharinda* bazar to develop communication system.

Usual devastation occured in this sub-compartment due to flood in 1988. People do not have any clear idea about BWDB and its activities.

Water hyacinth remains in the *beels* and *pagars* in the dry season. During the monsoon they multiply and spread out. Sometimes they create severe problem for Aman paddy when thick colonics spread among the paddy. Water hyacinth also serves the purposes of sheltering fish, crop mulching and fertilizer. After the monsoon extra cost is involved for clearing of the land for cultivation, where the water hyacinth accumulated. But people do not appear to be anxious to get rid of it completely.

Country boats, small and medium are used in the central part of this sub-compartment. From June to September boats are used for transporting people and freight. Weekly village markets command the major boat routes.

Erosion

There is no erosion problem.

Ground water

According to the people's opinion, there are adequate numbers of DTWs and STWs in this sub-compartment and ground water is adequately exploited.

HTWs are used for drinking purposes, but their numbers are not enough to meet the demand. Open well's water are used jfor washing and cooking. There is demand from the public for installation of more HTWs in this area.

There is iron in the ground water, but this does not pose any problem for drinking or irrigation. There is no complain about discharge in normal years but water discharge is less in drought year in the late dry period.

Conclusion

The main problem of this sub-compartment is drainage congestion in the early monsoon and late monsoon period. River water enters from *Lohajang* river through *Tangail khal* and outfall at *Biswasa Betka* and then enters to flood plain of sub-compartment-3 near *Darun beel*. From *Baillah* khal, water enters *beel Gharinda* and then *Gharinda beel* through the culverts on *Tangail-Gharinda* road. From another branch of *Baillah* khal, water enters to *Paila* through culvert located at *Gharinda* bazar.

The major drainage route is only *Jalfai khal* in sub-compartment-4 to *Lohajang* river. Re-excavation of a *khal* from *Jalfai* to *Lohajang* and new excavation of the *khals* and a few internal link canal will solve the drainage congestion problem.

There is public demand for construction of two bridges on the road from *Sarutia* to *Gharinda* two pipe culverts at *Dhakin para* in village *Paila* to relieve drainage congestion and two bridges on the same earthen road connecting from *Darun* to *Gharinda* bazar to develop communication system.

Ground water resource is adequately exploited. HTWs are not adequate in this sub-compartment. People are apparently motivated and co-operative for development works in the area.

3.3 AGRICULTURE

Cropping pattern

The studied area of sub-compartment 3 covers the surveyed area of the village *Darun, Paila* and *Aoltia* and some surrounding area. The gross area is approximately 630 ha out of which about 450 ha are estimated to be net cultivated area. The major part of the area is medium low to low lands where mainly Irri/Boro (HYV) and some deep water Aman is grown. The high to medium high lands are used for growing mostly Aus, Jute and T. Aman. Among Rabi crops, wheat is extensive along with mustard in some area. The following cropping patterns are at present in practice by farmers.

Crop Patterns

Land Type	*Kharif*-1	*Kharif*-2	Rabi	Annual	% of NCA
F0-F1	B.Aus/Jute	T.Aman	Wheat/Paira/Pulse		15%
F1	Jute	T. Aman	Wheat/Mustard		10%
F1	Jute	-	Wheat/Potato/Vegetable		10%
F2-F3	-	B/TDW Aman	Irri/Boro (HYV)		35%
	-	TDW	Mustard/Irri/Boro (HYV)		10%
F3-F3+	-	-	Boro (HYV)/Braus		20%

Average crop yield and price

The average yield of different crops reported by farmers and the price of their production at farmgate level is as follows:

Crops	Av. yield t/ha.	Price/MT
B. Aus	1.20	5360-6030/-
T. Aman	1.80	6030-6700/-
B/TDW Aman	1.40	6030-6700/-
Irri/Boro (HYV)	4.40	6030-6700/-
Braus (late Boro)	3.80	6030-6700/-
Jute	1.80	4550-5300/-
Wheat	2.50	5360-6030/-
Paira	2.60	5360/-
Mustard	0.80	12060-13400/-
Pulse(mainly Khesari)	1.00	8710-9380/-
Potato	9.00	3200/-
Veg(cabbage/cauliflower)	12.00	3220/-

The price of the above commodities increases with increase in demand in the off season.

Use of fertilizers

The use fertilizers in different crops is in traditional. In most cases fertilizers are applied in their crops below the optimal doses with variation in Boro (HYV), mustard and wheat. Farmers decide to use the higher doses compared to other crops in these crops as per their own experience and advise from other co-farmers. The agricultural extension workers rarely visit the area and the farmers do not get any advise from them about the method and doses of fertilizer application and improved agriculture. At present the amount of fertilizers used in different crops are as follows:

Crops	Urea(kg)	TSP(kg)	MP(kg)
B. Aus	70-90	-	-
T. Aman	120-150	70-90	-
B/TDW Aman	80-110	-	-
Irri/Boro(HYV)/Braus	240-290	120-150	40-60
Wheat	210-230	110-130	30-50
Paira	130-150	70-90	30-50
Mustard	190-210	90-110	30-50
Pulse	-	-	-
Potato	120-130	90-110	30-40
Veg(cabbage/cauliflower)	130-150	50-70	-

In Irri/Boro(HYV), wheat and mustard the rate of application of fertilizers are comparatively higher than other crops. The main constrains in applying proper doses of fertilizers is financial and lack of credit facilities in the sub-compartment.

Irrigated crops

In major part of the sub-compartment Irri/Boro(HYV) or Braus (late Boro) is grown by irrigation. Farmers do not provide irrigation to other crops due high cost and less return. They grow other crops under rainfed condition and on the basis of available moisture. They

irrigate the Irri crops by STWs and DTWs in the area. The available DTWs and STWs in the surveyed villages and adjacent villages are as follows. Farmers pay 1/4 of their crops as the cost of irrigation at the end of the season.

Village	DTWs/STWs (Cusec)	Irrigated Area (ha)	Run by Electricity/Diesel
Darun	DTW 0		
	STW 8 Nos.(1/2 cusec)	35 ha.	Electricity
Paila	DTW 2 Nos.(2 cusec)	40 ha.	Electricity
	STW 0		
Ashekpur	DTW 2 Nos.(2 cusec)	40 ha.	Electricity
	STW 5 Nos.(1/2 cusec)	24 ha.	Electricity
Aoltia	DTW 2 Nos. (2 cusec)	40 ha.	Electricity
	STW 3 Nos. (1/2 cusec)	15 ha.	Electricity
	22	Total : 194 ha.	

Share cropping

Very few share croppers are found in the area. The terms of share cropping is 50:50. Owners supply no inputs to the share cropper.

Crop damage

In the sub-compartment crop damaged occurs by flood and rain water in the month *Ashar* and *Sraban*. In some years farmers can harvest TDW Aman if their is less flood. Occasionally the deep water Aman paddy is damaged in the order of 70 to 80%. In the last year almost 100% and the previous year 50% of the deep water Aman crop has been damaged. In village *Darun*, flood water enter into the area through *Bailla khal* and rain water accumulation causes damage to TDW Aman. Slow drainage submerge the TDW Aman seedlings in the area. In village *Paila* farmers reported less damage of deep water Aman. In the rainy season TDW Aman crops in the area are not prominant but about 30%.

In the Rabi season heavy shower affects Rabi crops. Of the low lying area where mainly Irri/Boro(HYV) is grown affects the mature Irri if their is an early shower. The water may be removed from the area by re-excavating *Nagar Jalpai khal* to drainout to *Lohajang* river. In the village *Aoltia* similar damage of TDW Aman reported in *Ashar* and *Sraban* by flood and rain water. Water enters through *Bailla khal* from *Lohajang* river, *Karatia*, *Ashekpur*. *Nagar Jalpai khal* is also responsible to flooding the area. For proper drainage from the area *Suruj khal* and *Bertha khal* require re-excavation.

The overall drainage situation is expected to improve by re-excavating some *khals* in the area. In 1988 the flood covered many houses in the sub-compartment by knee deep water and caused damage to 100% of TDW and T. Aman in the area. Many trees were damaged and plenty of cattle died in that year for want of feed.

Livestock

Livestock in the area are of moderate to poor health. Among livestock many goats and some sheeps are available. Cattle in the area graze on fallow land. No grazing field or HYV fodder is available. Farmers reported cattle feed deficiency for about 3 months until the Irri/Boro (HYV) is harvested. Artificial insemination and medicare is provided from Tangail but they are poor. Some failure of artificial insemination is reported. Few hybrid cattle are available. Most of the cattle belong to local varieties. Farmers expressed their inability to maintain hybrid cattle as they cannot supply the required cattle feed. Draft animals shortage in the area is a problem. Most of the farmers hire draft animals at the cost of Tk.40/- per pair. One power tiller available in the sub-compartment which cost Tk.2-3/- to plough one decimal. Cattle disease like gastritities, rinderpest, cow pox, toe disease etc. are common.

Poultry

Only a few number of farm poultry (chickens) are available in the sub-compartment. The major part of the poultry belong to local varieties. They mostly live on scavenging around the homesteads and fallow land. A few number of ducks are available in homesteads near water sources. Ducks are provided with some snails, unio, fresh water muscles etc. A hen of local variety lays 12-16 eggs in a month while about 25-30 eggs are laid by the HYV hens and lays eggs with short intervals. Local hens lay eggs with long intervals. Ranikhet tape worm, fowlfox are common disease among the poultry.

Own observation and views

The land in the area is nearly level, gently undulating and slopes towards basins. Irri/Boro (HYV) is cultivated on 60-65% of the area which belong to F2, F3 and F3+ land types. The rest of the area are high to medium high land (F0 to F1), where Aus, Jute and Rabi crops mainly wheat and mustard are grown. Some area of low to very low land remain water congested for longer period where no Rabi crops other than Irri/Boro (HYV) can be grown. Improved drainage of this area would expedite the growing of Rabi crops and timely planting of Irri if water recedes earlier. In other area improved drainage would secure the growing of TDW Aman and T. Aman in some extended area with good yield.

3.4 FISHERIES

Water bodies

The available water bodies under the sub-compartment SC-3 with their number, type, area and available fish species are shown below in the table:

Sl. No.	Water bodies	Number	Area (Acre)	Type	Available fish species	Annual	Ownership	Remarks
1.	beel: i.Dorun beel ii.Gharindabeel	 01 01	 26 10	 Perineal Perineal	Shol,Boal,Koi,Magur,Taki, Sing,Tengra,Pabda,Puti,Gajal Chat,Kaklia,Kalisha,Gutum, Balley,Bijri,Rui,Katla, Mrigal. Fresh water muscles including unio & pila. Crustacea including crabs.	350-400mts approx.	Joint ownership	Before both the beels were Govt. khash but now under joint owner-ship. The beels are most resour-ceful water bodies.
2.	Ponds i. Poyla ii. Aultia iii. Gharinda	 06 04 07	15 acres approx	cultured and cultur-able	Nurn, Fekn,Carfu,Tilapia, Mrigal, Silver carp etc.	Poor	Individual	Culture fishery is poorly de-veloped though enough re-sources are there.
3.	Pagars: i. Dorun ii. Poyla iii. Aultia iv. Gharinda	 07 28 05 06	6 acres approx	Derilicts cultur-able and cultured	Koi,Magur,Shol,Taki,Sing, Tengra,Puti,Foli,Baim,Sing, Chela,Gajal,Pabda etc.	75-100 mts approxi-mately	Individual	Most useful waterbodies both from the pointof fish culture as well as forhousehold activities.

Dorun *beel*

The *Durun beel* is under the village *Dorun*, Union *Gharinda* and is easily approachable. The *beel* is very close to *Tangail* town and is very useful to both fishermen and the public in general. The *beel* covers approximately 26 acres of land and runs through the village in the form english alphabet 'V'. It is about 1.5 km. long having almost uniform width (40-60') approximately. Villagers have constructed their dwelling houses on either side of the *beel* and enjoy its benefit. The public road passes along the outskirt of the *beel* which facilitates easier movement. This waterbody is also known locally as *Borai river*.

This 26 acres *beel* was once under Govt. *khash* sometimes before 1947 but afterwards about 20 villagers of *Dorun* and some unknown numbers of people from neighbouring villages took *Pattan* (registered) from Govt. and since then the benefit of the *beel* is shared among them.

As per report the owner of the specific plot of land of the *beel* is enjoying the full benefit like fishing, agriculture and others.

From the fishery point of view the *beel* is resourceful. It contains different varieties of fish like *Rui, Katla, Kalabaush, Mrigal, Shol, Boal, Gojal, Taki, Kalisha, Baim, Chanda, Titputi, Bijri, fresh water muscles (unio & pila)*, and crustacean (crubs + shrimps). Out of the whole fish population of the said *beel* the snake headed fishes and catfishes are prominent and is followed by other misc. group.

According to farmers, the *beel* is connected with the surrounding river *Lohajang* (*Karatia river*) through a *khal* known as *Nagarjalpai khal*. During early monsoon (*Jaistha + Ashar*) and full monsoon there is a continuous flow of water from the river to the *beel* through the *khal* and floodplain. This connection facilitate riverine fishes to migrate to the *beel* and flood plain during monsoon.

Other than fish population, water hyacinth, aquatic birds, aquatic reptiles and other aquatic known and unknown plant vegetation abound in the *beel*. So the *beel* is reported to be rich in both flora and fauna population.

As per report fishing goes on round the whole year in the *beel* and whatever fish catch is available is enough to meet the local fish demand throughout the year. During full monsoon the intensity of fishing is high and the catch is satisfactory. During monsoon period public in and around are allowed to fish in this *beel* freely but during post monsoon period (*Kartik, Agrahan & Poush*) the people who are not owner of this *beel* are not allowed to fish freely in this *beel*. As per report the poor people as well as the professional fishermen from the surrounding villages earn money by selling their catch from this *beel* in the month of *Bhadra* when there is no restriction for fishing for others.

The *beel* is very useful to the villagers and it serves the public in many ways like the *beel* provides fishing facilities round the whole year, provides surface water irrigation to the farmers during post monsoon period, provides duck culture facilities, provides bathing facilities for both men and cattle, provides fodder facilities to the cattle, and also facilitate other household activities. The water depth of the *beel* in some places is reported to be above six feet (6') even in post monsoon period. But there is also a report that during extreme draught some places of the *beel* dry up. The outskirts of the *beel* is under Irri/Boro cultivation. The cattles graze freely in the shallow water region of the *beel* and eats water byacinth and other aquatic grass in the month of *Chaitra*.

All categories of public in the *Dorun* village expressed their views that the *Dorun beel* is so essential for them that their existence would be at stake without this *beel* and so the status of the *beel* be well maintained at any cost. Villagers asked to help them by re-excavating the outskirst and the shallow water region of the *beel* with a view to increase the water area of the *beel* to facilitate more water retention and thereby more fish stocking. They also asked to re-excavate the *Nagarjalpai khal* which and connects the *beel* through floodplain of the village in order to channelize fish movement. They also urged to help there by constricting definite bank on either side of the *beel* which will facilitate silviculture.

Gharinda *beel*

The *Gharinda beel* is another prominent *beel* under the sub-compartment, in the village *Gharinda*, Union *Gharinda*. The *beel* covers 10 acres of land and is very close to Tangail town. The *beel* is easily approachable and is situated on the north-eastern side of the town. The *beel* is oval shaped, having its deep and shallow water region. In the post monsoon period (*Chaitra + Baishak*) the water depth of its middle region varies from 4' to 5' and its outskirts tend to dry up.

At one time the 10 acres of *Gharinda beel* were *khash*, but then a particular person of *Gharinda* village took *pattan* of this *beel* and since them it is under individual ownership. This *Gharinda beel* has been selected as one of the *beel* under special fisheries studies of CPP-20. The *beel* is situated very close to *Tangail-Gharinda pucca* road.

This *beel* is basin like and is reported to contain different kinds of fish which includes *Taki, Shol, Gajal, Boyal, Koi, Sing, Magur, Chat, Gutum, Puti, Nura, Feka, Mrigal* etc. out of which the cat and snake head fishes are prominent. The professional as well as subsistence and casual fishermen of the village catch fish in this *beel* without any interruption during the monsoon period. But during post monsoon period they are not allowed to fish inside the *pagars* of the *beel* by the owner.

Many other fauna and flora like *snails, unio, pila, shrimps, crabs and hydrila, water lily, topa shela, water hyacinth, aquatic grass* etc. are reported to abund in this *beel*. People of the surrounding villages do collect snails and unio from this *beel* and prepare quick-lime. This unio and *pila* is also a good source of income for poor people of the area. As per report the *beel* is a very important waterbody for the local people as it provides fish supply, bathing pool for cattle, suitable habitat for duck culture, surface water irrigation for outskirts crops, and navigation during monsoon.

People requested to increase the water bodies by re-excavating the inundated shallow water region of the *beel* for facilitating fish stocking. There are about 6/7 *pagars* inside the *beel* which is very important for fish stocking. Generally the owner does not allow anybody to fish inside the *pagars* as it contains more fish. The owner is reported to earn money (approximately 20,000/=) every year by selling fish from this pagars. Besides the professional fishermen earn about Tk.70/80 by fishing from this *beel* everyday and (this was confirmed by talking to a fishermen).

Professional fishermen

About 45 households of professional fishermen live in the village *Poyla Aulta* and *Gharinda*. They are Hindus and catch fish in *Dorun* and *Gharinda beel*. These professional fishermen are very poor and they maintain their family with great difficulties. Some professional fishermen from village *Aulta* have also adopted the weaving profession in addition to fishing. People reported that very recently the Grameen Bank has started advancing loan to these fishermen. All are not eager to take loan as they fear being unable to re-pay. Some of these professional fishermen go to *Lohajang* river, *Pungli* river for fishing. As per report by a professional fishermen from *Poyla* village that Mr. *Suikha Rajbangshi* is there leader.

Subsistence fishermen

There are about 10 households of subsistence fishermen in the village *Dorun* and *Poyla*. In addition to their fishing business they also engage themselves in other profession like day labourer, earth cutting etc. during the lean fishing period. They are reported to be poor Muslim people with their big families and they find much difficulties to maintain their families with their poor income.

The professional fishermen in the sub-compartment appealed to help them by providing medical facilities. Due to financial problem they cannot go for medical treatment and as a result many members of their community are acutely suffering from various diseases.

Fishing periods

Fishing goes on round the whole year in the two *beels* of the sub-compartment. The fishing activities reaches its peak in the months of *Sraban, Bhadra* and *Ashwin, Kartik* as this time there is plenty fishing facilities.

Fishing methods

Different fishing technique are adopted in different seasons. In the early and full monsoon period about 80% of the fish catch is operated by *Darki, Berjal, Karentjnet, Jhakijal, Jali* and about 20% is done by *Darki, Ahuka, Tenta* and *angling*. But during post monsoon period about 70-80% of fish catch in the *beel, pagars* is done by *Berjal, Jhakijal* and *Lowlift* pump (by irrigation) and about 15-20% catch is done by handpicking and *pollu*.

Floodplain fishery

Floodplain fishery is relevant in the area and takes place in the months *Ashar*, Sraban, *Bhadra*. The river fish migrate into the floodplain alongwith water and mixes with *beel* fishes. The gravid female river fishes spawn into the flood plain and helps in maintaining fish races every year following this practice. This time both *beel* and river fishes move freely into floodplain and grow quickly as plenty of food becomes available at tha time. After 2-3 months the flood water starts receding and flows back to river. The available fish species migrate to the surrounding *beel* and few fish species (carp) go back to river. In this way the *beel* fishery flourishes.

People of all categories expressed the need to develop floodplain fishery. To facilitate fish migration from river to floodplain they requested to excavate where necessary and re-excavate the silted up *Nagarjalpai khal* through which seasonal fish migration takes place.

Fisheries practices

Both culture and capture fishery is reported. But as per report pond fish culture is very poorly developed.

Institutional facility

The contribution of both Govt. and Non-Govt. organization to develop this sector in the area is reported to be nil.

Fish disease & fish predation

Fish disease and fish predation is reported. People are concerned over the issues as the fish population is decreasing gradually in the area. The villagers told that the fish disease and fish predation and the use of *Karentjal* are the main factors for significant fish decrease in the

area. The fish disease intensifies in the waterbodies specially in the months of Ashwin and Kartik. During that time the fishes die to such an extent due to fish disease that the available water bodies surface becomes covered with floating dead fish which creates a very bad small as the environment is polluted.

People requested to check this problem to save the valuable fish population and them training in fish culture.

Own observation and views

Useful waterbodies like *beels*, pagars, and derilicts, cultured and culturable ponds are found in the sub-compartment. The two *beels Dorun* and *Gharinda* are very resourceful as they contain fish as well as other flora and fauna. Many people were found fishing in these *beels* with *Jhakijal* and *Jali*. Some children were found fishing with scoop net and handpicking. Birds were found grazing in these *beels* as its foods are available there. Many cattle were found grazing in the *beels* eating water hyacinth. The outskirts of the *beel* is under Irri/Boro cultivation and the farmers were found irrigating their crops from these *beels*.

There are many *pagars* in the sub-compartment. *pagars* owners were found fishing in these *pagars*, as well as bathing themselves and their cattle. Women were found fetching water from this *pagars* to facilitate their household works. Ducks were found grazing in these pagars. Some of these *pagars* were found with much water, some with shallow water and some are completely dried up.

About 17 ponds were found in the whole sub-compartment out of which only 2/3 ponds are under carp culture fishery whereas the rest are derilict and culturable.

The dried up *pagars* need to be re-excavated to increase water reservoir to facilitate fish stocking and household activities. The farmers may be encouraged and motivated to freshly excavate more ponds in the area to boost up culture fishery.

3.5 ENVIRONMENT - MALE

Biological

Arthropods

There is a report of both destructive and useful insects in the visited area. Destructive insects like *pamri*, *mazra* are prominant and cause a lot of damage (.5-1%) of the total crops Irri, Boro. The pulses, sugarcane, kitchen vegetables, jute etc. are reported to be damaged (about 1-2%) by changa, *letha*, and other unidentified insects. Farmers are reported to be worried about this insects attack as they are now-a-days resistant to insecticide. Useful insects which includes honybee, butterfly are also present. Crustacean like crabs and shrimps which are edible are reported to be present in the waterbodies. Farmers requested to control destructive insects.

Mollusca

Fresh water muscles including unio (Bivalve) and *pila* (snails) are reported. Both these fauna has Guriderable economic importance as some farmers of the village *Aulta* are reported to collect these animals and prepare quick-lime on commercial basis. Besides the small size *pila* is used as food for grazing aquatic birds and ducks. Sometimes children collect big sizes *pila* from the nearby waterbodies and supply its delicate parts (muscle) to the ducklings as food. Sometimes the snails are used as bait for angling. The population of this species has not decreased so much, compared to others, due to less exploitation.

Annelids

Many annelids like leech, earthworm and *nerries* are reported to be present in the area. These populations are constant in number.

Fish

People reported a significant decrease of fish over the last few years due to its mortality caused by fish disease. People requested to control the fish disease in order to save this valuable wealth as it is one of the easily available food items for the poor people.

Amphibians

Toads, Frogs and Hyla are reported in the area. In the village *Aulta* and *Poyla* the presence of this population is satisfactory though there is a report of toad catching on commercial basis in the area. Farmers of these villages do not allow other people to catch frog in the area. The villagers of *Dorun* village reported that the toad has got medicinal value and there is a report of toad eating in this village.

Reptiles

Different species of reptiles which includes poisonous and non-poisonous snakes, anjan, lizard, blood suckes (Racta chosha) *Guishaps* and tortoise. It is very interesting to note that this population is satisfactorily present in *Poyla* village which is unlike in other sub-compartment. Tortoise are reported to be eaten by Hindu in the area.

Birds

This population is also satisfactorily present in the village *Dorun, Poyla* and *Aultia* which is very uncommon. Birds of different categories like *Doel, Shalik, Boi, Heron, Kingfisher, Crow, Raven, Kora, Panicauri, Cuckoo, Owl, Tuntuni* are present in the area. Out of all there varieties the Shalik and Herons are reported to be prominent. There is also report of bird killing by hunting in the area. People reported that guest birds do visit the *Dorun beel* every year during winter.

Mammals

Terrestorial wild animals

Both *Poyal* and *Aultia* village are rich in homestead garden and nearby bushes. Farmers reported that wild animals like *jackle, rats, moles, bats, bagdasha, jungle cats, khatash, nangar, mongoose* are present in the bushes to the satisfactory extent. The Mongoose population is reported to be dominant over the other population.

Rat menace

There is a great problem of rats in the area which causes a lot of damage (about 1-2%) to the agricultural crops (Irri/Boro/Sugarcane). The intersity of damage caused by rats become serious during the harvesting period of Irri/Boro. Farmers are worried over the issues and they seek help for rat control.

Domestic land animals

Domestic land animals includes dry cow, milch cow, sheeps and goats are satisfactorily present. Horses and buffalows are completely absent in the area. As per farmers report there is not much shortage of draft animals in the area. Cattle disease is reported but not so serious as in other sub-compartments.

Institutional facility

There is no report medicare from livestock department in the area.

Others

Afforestation

Though there is no report of afforestation scheme either from Govt. or NGO in the area but still the villages of *Aultia* and *Poyla* are rich in afforestation. Farmers at their own initiative have developed their homestead garden and they plant trees every year during early monsoon.

Farmers requested to supply them the necessary sapplings of timber as well as fruit yielding plants to boost up afforestation programme.

Deforestation

The practice of deforestation goes on in the area year round. People, as per their own need, sell trees and earn money. The wood is used in the furniture shops and also as firewood in the brick-field of the area. There is a brick-field in the village *Poyal*.

Kitchen gardening

Kitchen gardening is well developed in the village *Aultia* and *Poyla*. Kitchen gardening includes different varieties of vegetables like *Mistikumra, Chilli, Peanach, Chichinga, Bittergourd, Chakumra, Patal, Bangi, Occra* etc. Farmers earn some money by selling the vegetables after meeting their own consumption. Farmers say that this practice of kitchen gardening is a good source income and can easily be done without much investment.

Farmers urged to supply them quality seeds of different kind of vegetables to boost up kitchen gardening.

Human activities

Human habitation

New human habitation growth is reported but the rate of growth is very negligible. Villagers reported that over the last 4 to 5 years only 2-3 new houses covering an average area of 10-15 decimal has been constructed in the whole visited area.

Pollution

Pollution is reported in the area. The operation of brick-field in the village *Poyla* is reported to pollute the surrounding environment. Farmers reported that the generated black smoke from the brick-field retards the growth of nearby crops (Irri/Boro) and homestead trees.

Besides the practice of open sanitation, drinking of wells water, unplanwise construction of *katcha* latrines have created environmental hazards. As such there is a report of many water borne (diarrhoea, dysentry etc.) and air borne (headach, vomting, breathing difficulties) diseases in the area.

Own observation and views

One brick-field in the village *Poyla* is in operation. The brick-field was seen ejecting black-fumes fll of carbon-monoxide which has negative impact upon human breathing and vegetation growth. The sanitation system was seen to be poorly developed and no doubt the same they are an environmental hazard. The road side ditches derilicts ponds, homestead *pagars* were seen to have little water or completely dried up. The farmers were bathing in the supply water of shallow tubewells as there is no nearby waterbodies. Ponds are rarely present. Domestic ducks were found grazing on the public roads. The communication system is not well developed in the visited area.

Attention may be given to solve the water scarcity problems in the area for post monsoon period. In this regards the road side ditches, derilicts, ponds, *pagars* may be re-excavated to increase water reservior to facilitate water conservation. More handpumps are needed in the area. The sanitation system may be developed.

3.6 ENVIRONMENT - FEMALE

Natural vegetation and homestead forest

The natural vegetation and homestead forest is well developed in this sub-compartment. The common varieties of trees found in the homestead are *mango, jackfruit, date, palm, leamon, pomogranide, jamboora, dalim, coconut, battlenut, guava, karoi, mahogony, tamarine* etc. Kitchen gardens are very poorly developed in *Darun* and *Poila* village.

Fuel

In the visited area the main sources of fuel are dry leafs, remains of paddy, wheat, mustard, pulses etc. People from middle class and rich families use wood, cow dung, etc. Severe scarcity of fuel was reported for the poor people particularly in the rainy season.

Drinking water

Most of the households in this sub-compartment have access to tubewells except *Darun* village. One an average 5-7 tubewells were reported available in *Darun* village provided by Grameen Bank. The main source of drinking water is tubewell in this area. A few families were reported drink well water. In each and every village poor women have to walk far to get tubewell water. The people who do not have tubewell, use well and *beel* water for bathing cooking and household works. Women live near the river bath in the river.

Sanitation

In an average a total number of 25-30 *pucca* latrines were reported installed in this sub-compartment and the traditional *katcha* latrines are common in all most every houses. Most of the *pucca* latrines were provided by Grameen Bank.

Diseases

Diseases like Diarrhoea, Dysentry, Worm, Skin disease and fever have occured here. Women think that the main source of getting diseases is *katcha* latrines. Cocks, Hens and fly are wondering in the *katcha* latrine and carry germs from there. Bad small from *katcha* latrines also pollute the air which affect them seriously. Most of the diseases takes places in the month of *Kartik, Falgoon and Chaitra.*

Rats

Rats are abundant in the visited area both inside and out side of the homesteads damaging crops, fruits and household belongings. There are other wild animals like fox, *bagdasha,* which catch goats and chickens.

3.7 SOCIO-ECONOMIC SITUATION - MALE

Major non-farm activities

The major non-farm activities of the households in the sub-compartment 3, are service, business, fishing, weaving, transport works, carpentry, agriculture works, leather procession and shoe mending etc.

From the total households (in the surveyed villages) about 60% households depend on different non-farm activities. And from the total non-farm activities about 09% is occupied by service holders, about 07% by businessmen, about 09% by fishermen, about 3.5% by weavers about 24% by transport workers 7.5% by cobblers about 3% by carpentars and rest by wage labourers of different categories (including agricultural workers, mason, brick-field workers, earthcutters, construction workers etc.).

Social and institutional aspects

Employment patterns

Family labour is generally used in the farm households of the area. Hired labour is used only during harvesting time, and in the farms whos owners remains busy otherwise or stays outside the area.

Both out-migration and in-migration of labourers is reported in the area. The rate of in-migration of labourers is higher than the out-migration. Out-migration of labourers from the area (particularly from *Paila* village) mainly occurs for non-agricultural work like earth cutting in the brick-fields. From *Augrahayan* to *Magh* (3 months) the labourers work in the brick-fields and stays outside their houses. During the lean season of agriculture in the area, other day labourers mainly find their works in *Tangail* town area. They engage themselves in transport works (rickshaw/van pulling) in construction works, *Bidi* making etc. type of works. Those (day labourers) who works in the area and in adjacent area are mainly the marginal and small farmers and those who migrates out are mainly from the landless families.

Wage rates

The wage rate in the sub-compartment differs from village to village. However the villagewise wage rates are given in the following table:

Sl.#	Village	Wage		Remarks
		Lean Period	Peak Period	
1.	Darun	Tk.25+ 1 meal	Tk.30-35+2 meal	i)Working hour 6:00 a.m. to 2:00 p.m.
2.	Paila	Tk.15+ 1 meal or Tk. 20	Tk.25+ 1 meal or Tk.30	ii)For a whole day work from early morning to evining 3 meal is provided to the day labourers in Aultia village.
3.	Aultia	Tk.20+ 1 meal	Tk.25-30+ 1 meal	

Organized groups

In respect of NGO activities and groups of different organizations the area is quite below the average. Only two NGOs (Grameen Bank and SDS) are reported working in the area. The Grameen Bank has its groups (both male and female) in all three surveyed villages having 105 female and 115 male members in total. While SDS has its program in two villages. There are two landless group of 25 and 30 members (of Grameen Bank) in *Paila* village who runs two deep tubewells in *Paila* village provided by Grameen Bank. There is one KSS of 60/70 members in *Aultia* village. One club of young people in each village is also reported in the area.

Transport and communication

The area is connected through a good road communication system and the internal village roads are also quite good. The village roads remains useable by rickshaw/van throughout the whole year except where there are breaks in the roads and needs bridges or culverts on such points.

Markets

The people of the area used to do their marketing in the hats and bazars as listed below with other informations:

Sl. No.	Name of the Market (Hat/Bazar)	Hat/Bazar Day		Attendance	
		Hat	Bazar	Hat	Bazar
1.	Tarutia	Sunday	-	3/4000	-
2.	Karatia	Thursday	Everyday	35/45000	4/5000
3.	Suruz	Monday	-do-	7/8000	5/600
4.	Gosaijoair	Saturday	-	7/8000	-

The people of the area also do their marketing (mainly non-agricultural products) in Tangail town.

General needs

The people of *Darun* suffers (in respect of communication) for not having a bridge on the road through the village to go to Tangail town. Therefore, they requested a bridge on the road in their village. The people of *Paila* village urged their need to have a few culverts on the road through their village. The road has no culverts in it and this creats and increases problems of water logging and due to which the deep water Aman paddy is generally got damaged. Therefore, the farmers of the area requested to put 3/4 culverts on the road that divides the village and the *chak* of the village into two parts.

While some people of *Aultia* village expressed the need to have more scope of employment for the people of the area in general. Shortage of drinking water facility (in two villages out of 3 surveyed villages) is also reported from the area.

Own observation

Of the people of the surveyed area about 50% are found engaged in farming and the remaining 50% in different non-farm activities. From the non-farm households about 60% are day labourers and the rest (40%) are different traditional occupational groups and service holders.

Non-farm households are found most in *Darun* village while most farm households are in *Aultia* village. The economic condition of the people in *Aultia* village has been found better than other villages, while the economic condition of *Darun* village are the worst. In respect of education and other socio-cultural side, the people of *Paila* are found more advanced than all in the surveyed area. *Aultia* also have the highest number of landless (about 50% of the households of the village). Out-migration of labourers also occurs from this village. There is also in-migration of labourers in this village, as there are some big land owners.

The day labourers from *Aultia* and *Darun* village tend to find their work (during the lean season of agriculture in the area) in Tangail town, while day labourers from *Paila* mainly work in brick-fields. The day labourers who out-migrate are mainly landless, and those who try to find their work in the locality or in Tangail town are mainly marginal and small farmers who in view to manage their farm do not out-migrate. The day labourers who work in brick-fields can earn a bit more than in other occupations. So some day labourers regularly work in brick-fields during its season from *Augrahayan* to *Magh*.

Peoples opinion

About the NGOs

People from all the surveyed villages opined NGO activities and their role as helpfull particularly of the NGOs credit program aiming at improving the economic condition of rural poors.

About Functioning of Union Parishad and Upazila

The people of the area supported the existence of union parishads as rural development institution although their expectations and aspirations are not adequately and timely fullfilled by the concerned Union Parishads.

Having no direct contact with the Upazila the people of the area declined to comment on the system (Upazila).

3.8 SOCIO-ECONOMIC SITUATION - FEMALE

Employment patterns and activities of women

Under the sub-compartment 3, the visited area are *Dorun, Poila* and *Aultia* villages. In most of the villages poor women look inside and outside of their villages for work. A good number of women are engaged in Biri making. In all visited areas, some women are engaged in different types of activities besides their domestic works. The nature of employment along with daily wage rates are shown below:

Name of Village	Type of Occupation	# of Women involved	Wage rate with meal		Wage rate without meal	Remarks
			Tk.	meal	Tk.	
	Biri Thonga making	70-80	-	-	5-6/-	
	Sweing	3-5	-	-	8-12/-	on demand
	Spinning	25-30	-	-	5-8/-	
	Net making	60-65	-	-	8-10/-	on demand
	Cotton wrapper	35-40	-	-	4-5/-	on demand
	Post harvesting	40-60	-	-	3-4/-	seasonal
	Cane and bamboo	2-3	-	-	8-12/-	regular
	Service holder	3-4	-	-		regular
	CARE (Earth work)	5	-		-	regular

Education and literacy

The literacy rate of the visited villages is shown in the following chart:

Sl. No.	Village	Literacy rate<14>	Attendency (aged 5-14)	Ratio of Girls among allstudent	Remarks
1.	*Dorun*	20-25%	60-70%	40%	
2.	*Paila*	20-30%	65-75%	35%	
3.	*Aultia*	25-35%	70-80%	35%	

Organized groups

The surveyed villages in the sub-compartment #-3 has a very limited number of NGO activities and therefore, there are a few organized groups in the area except in *Aultia* village. A few local groups/clubs was reported organized in the surveyed area. Their activities are limited with the objective of savings and investment of profit making activities. The women of *Dorun* expressed that bad road communication is the only the reason of having limited NGO there. However, the following NGOs/Groups were reported exist in the villages under the sub-compartment 3.

Sl. No.	Village	Organization/Samity/Groups	# of Groups	# of Member		Remarks
				Male	Female	
1.	Dorun	1. Grameen Bank	-	-	35	
		2. SDS	-	10	10	
		3. Local Mohila Samity	-	-	17	
		4. Local Boys Clubs	-	20	-	
2.	Paila	1. Grameen Bank	-	-	30	
		2. SDS	-	150	150	
		3. Local Young Club	-	20	-	
		4. Local Mukti Jubo Songha	-	48	4	
		5. Local Sonchay Samity	-	-	25	
3.	Aultia	1. Grameen Bank	-	-	40	
		2. Paribar Parikolpona Samity	-	-	50	
		3. SSS	-	-	50	
		4. SDS	-	+50	150	
		5. Boys Club	-	200	-	

Public facilities

Public facilities like Union Council Office, Post Office, F.P. clinic, Health clinic etc. are available around the area within one to three miles distance from the villages. But women of all the visited villages have a common complain about non-availability of free medicare facility from *Tangail Hospital*. Therefore most of the times they do not go to *Tangail Hospital*. The women who so there came back only with prescription and buy medicine from the local market.

General needs

Women of *Dorun* village stated that no single tubewell is available in *Maidhapara*. Women of *Dorun* village have demand of tubewells *pucca* latrines and one *Madrasha*. They have also great demand of constructing a bridge on the *Dorun katcha* road near *Dorun beel*. This bridge will help the movement of the local people round the year.

Women of *Poila* village have demand to construct two bridges over the *Paila katcha* road (*Karatia-Suruj*). A few culverts were also requested over the same, road to drainout excess rainfall over the *paschim chak* causes damage to Rabi crop during rainy season. Women of *Poila* village appealed to provide one high school within the village.

Women of *Aultia* village have urged to provide at least one girls high school within the village to facilitate higher education for their grown up daughters. Women strongly requested to re-excavate the *Suruj* and *Bertha khal* as water in the *khals* will help them to irrigate their crops during the dry season. They also have demand of good number of *pucca* latrines.

Women from most of the villages in the surveyed area requested to increase the number and coverage of NGOs so that they can get scope to work within their homestead premises besides household works in order to improve their economic status.

Existing water related situation

Women of *Dorun* pointed out that the present bamboo bridge over the *Dorun beel* was completely damaged during the rainy season due to heavy pressure of water and water hyacinth. People have to swim to cross the *beel* to go to different places. Its is the same problem for the school going student. The local people suffer much throughout the year for want of a bridge over the *Dorun katcha* road.

The people living adjacent to the *Dorun beel* area, having no tubewell, use this *beel* water for cooking, bathing cleaning and drinking. According to them water quality of this *beel* during rainy season becomes very bad.

Women of *Poila* village told that since the *paschim chak* is surrounded by three *katcha* roads water cannot drain out and damages their Rabi crops. So construction of a few culverts will relieve the area of the drainage congestion problems.

The 1988 flood submerged almost all areas of this sub-compartment except a few high spots. People left their houses under water and stayed on the high way for about two weeks.

List of villagewise influential leaders

Village	Name of Leaders	Profession
Darun	Fatik	Farmer
	Sabed Ali	Shopkeeper
Poila	Mojibor Rahman	Farmer
	Abdul High	Ex-Member
Aultia	Dr. Dhirandra Nath	Doctor
	Ibrahim	Matabbar

SUB-COMPARTMENT 4

4.1 INTRODUCTION

The sub-compartment 4 is on the South-eastern corner of the *Tangail* CPP. This area is almost triangular in shape and is bounded by the *Tangail-Bajitpur* paved road on the West, *Bajitpur-Jalfai* earthen road on the South-East and the *Tangail-Taratia* paved road on the North. The total area of this sub-compartment is about 420 ha. And about 80% of the farm land is low lying affected by drainage congestion. Land slope is towards south.

4.2 HYDROLOGICAL SITUATION

River flow: flooding and drainage

The early flood is caused by rainfall starting in April-May. Due to the silted up khals, the excess run-off cannot drain out to the river leaving the area water congested. Therefore in July, river water enters and aggravates the flooding. The major entry route of river water is through the *Jalfai khal* from the *Lohajang* river on the South up to the culvert located at the central part of the area of *Nandir Betka* and fills the low farm land and low lying adjoining area of *Jalfai, Nagar Jalfai, Mirrer Betka and Nander Betka.* During peak monsoon, river water enters from the *Lohajang* river to this sub-compartment through a culvert at *Bajitpur* and spreads by over land flow to the higher land so *Mirrer Betka* and *Nandir Betka.*

Flood water enters this sub-compartment from *Paila beel* in sub-compartment-3 in late monsoon. Flood entry in the sub-compartment continues through August and early September. Usually drainage starts in late September.

Major drainage of this sub-compartment takes place through the *Jalfai khal* to the *Lohajang* river on the South. The *khal* section is not adequate to ensure proper drainage of the catchment of the compartment. The *Jalfai khal* from the culvert at *Nandir Betka* to the *Lohajang* river is silted up and drainage through the *khal* stops by early October leaving the low lands full of water and congested. As such quite severe drainage congestion is experienced in the low farm land of *Mirrer Betka, Nandir Betka, Jalfai and Nagar Jalfai.*

Some drainage takes place through the culvert at *Bajitpur* to the *Lohajang* river, draining out the congested area of the Southern part of *Mirrer Betka.*

To solve the drainage congestion of the area, there are strong demands from the public of this area for re-excavation of (a) the *Jalfai khal* from *Paila beel* to the *Lohajang* river through three bridges over the *Tangail-Karatia* road to drain out the low lying adjoining area of *Jalfai* and *Nandir Betka* (b) the link canal from *Nandir Betka* to *Jalfai khal* through *Mirrer Betka* to ensure drainage of the low area of *Nander Betka, Mirrer Betka, Jalfai and Nagar Jalfai* and for new excavation of a (c) link canal from low lying area of *Mirrer Betka* to interconnect the low pockets enabling free flow water and proper drainage to the *Lohajang* river on the South.

There is demand for construction of one bridge over *Mirrer Betka baor*, South-West part of *Mirrer Betka* near *Lohajang* river to allow proper flow of water and to relieve the adjoining area from drainage congestion.

About 80% of the farm land in *Jalfai, Nagar Jalfai, Mirrer Betka* and *Nander Betka* of sub-compartment-4 are low and suffers due to drainage congestion.

The flood in 1988 had the well known devastating effect in this area. People are not acquainted with BWDB and their activities.

Water hyacinth remains in the *beels* and *pagars* in the dry season. During monsoon they multiply and spread out and creates problem for Aman paddy when thick colonies spread among the paddy. Water hyacinth serves the purposes of sheltering fish and as a fertilizer by burning and rotting. After the monsoon extra cost is involved for clearing the land for cultivation.

Country boats of small size are used in the northern part of the sub-compartment. From July to September boats are used for transporting people and small freight from house to house.

Erosion

There is no erosion problem in this area.

Ground water

Underground water is exploited adequately as enough numbers of STWs and DTWs are operating for irrigation of Irri paddy. HTWs are used for drinking purposes. There is demand for installing more HTWs in the area e.g. *Mirrer Betka* and *Nandir Betka*. Iron content in under ground water does not pose any problem for drinking or irrigation. There is no complain of any appreciable discharge problem from the tubewells except during the late dry season in drought years.

Conclusions

The sub-compartment No-4 is severely affected by drainage congestion due to silted up khals. Surface flood water enters from the *Lohajang* river mainly through the *Jalfai khal*. The low farm land is flooded and congested initially by the early monsoon rainfall and later river water entry increases the water level. Due to the silted up *khals* drainage is hampered in early monsoon and late monsoon period.

The main drainage route is through *Jalfai khal* to the *Lohajang* river. Re-excavation of this *khal* including some link channels will relieve the drainage congestion of this area.

Underground water resource is adequately exploited for irrigation by DTWs and STWs. Drinking water is obtained from HTWs; but more numbers are required in some areas e.g. *Mirrer Betka* and *Nandir Betka*.

4.3 AGRICULTURE

Cropping pattern

The gross area of the sub-compartment 4 is approximately 420 hectars out of which about 300 hectars are estimated to be net cultivated area. The area is a suburb of Tangail town. Some part of the area belong to Tangail town. The major part of the agricultural land in the area belongs to medium low and low lying area where mainly Irri/Boro(HYV) is grown. In some area Irri followed by TDW Aman. In less flooded area from where water recedes quickly, mustard followed by Irri/Boro(HYV) is grown. In some area in the higher elevation Aus, Jute, transplanted Aman and Rabi crops are grown. The present cropping patterns are as follows:

Crop Patterns				
Land Type	*Kharif-1*	*Kharif-2*	Rabi Annual	% of NCA
F0-F1	-	-	Sugarcane+Pulse	5%
F1	Aus/Jute	T.Aman	Wheat/Pulse/Potato/S.Potato	15%
F2	Aus+B.Aman	-	Pulse	20%
F2-F3	TDW Aman		Irri/Wheat/Mustard/Pulse/ Boro(HYV)/Sweet Potato	20%
F2-F3+	TDW Aman		Irri/Boro	20%
F2-F3	-	-	Mustard-Irri/Boro(HYV)	5%
F3-F3+	-	-	Irri/Boro (HYV)	15%

The area of NCA under different cropping pattern is estimated on the basis of the information from farmers and field observation.

Average yield and price

The average yield of different crops grown in the area in cropping season at the farmgate level one reported as follows:

Crops	Av. yield t/ha.	Price/MT
B. Aus	1.90	6030/-
T. Aman	2.20	6030-6700/-
TDW Aman	1.60	6030-6700/-
Boro(HYV)/Irri	4.40	6030-6700/-
Braus (late Boro)	3.80	6030-6700/-
Jute	2.50	5360-6030/-
Wheat	2.25	5360-6030/-
Mustard	0.70	13400/-
Pulses	1.40(Khesari)	8040/-
	0.80(Lentil)	14740/-
Potato/S. Potato	8.30-9.50	3180/-
Sugarcane	30.00	670/-

It is reported that the price of the produced crops gradually increases in the lean season but farmers in most cases cannot stock them upto that period for the necessity of money for the next crops.

Use of fertilizers

Like other sub-compartment the use of fertilizers in different crops in the area is traditional. The amount fertilizers applied in their crops are determined according farmers experience. No agricultural extension workers explain to them the method and amount to be applied in different crops. Some farmers also use cow dung and manures in Aus and Jute crops. At present farmers in the area are using fertilizers in the following doses. Higher doses are applied in HYV crops.

Crops	Urea(kg/ha)	TSP(kg/ha)	MP(kg/ha)	C/D (Kg/ha)
Aus	70-90	60-80	-	70-80
T. Aman	80-100	60-80	40-50	
TDW Aman	70-90	-	-	
Irri/Boro(HYV)	220-240	140-160	50-60	
Jute	70-90	60-80	40-50	
Wheat	90-110	110-120	50-60	
Mustard	70-90	90-110	60-70	
Pulse	-	-	-	
Sweet Potato	-	-	-	
Potato	90-110	70-90	60-70	
Sugarcane	110-120	90-110	60-70	

Poverty and less credit facility is the cause of application of fertilizers below optimal doses. Use of fertilizers in HYV crops are near optimal doses. Method and time of application is also not perfectly known to farmers due to poor extension work in the area.

Irrigated areas

The only crop irrigated in the sub-compartment is the Irri/Boro (HYV). Groundwater is the only source of irrigation. DTW and STWs are used to irrigate the Irri crops. The following irrigation equipments are reported in the surveyed area (see table). 1/5 of the produced crop is given as the irrigation cost for both DTW and STW in the surveyed area except the STWs in the village *Mirrer Betka* which charge 1/4 of the produced crop. This is due to the less area land covered by the STWs.

Village	DTWs/STWs (Cusec)	Irrigated Area (ha)	Run by Electricity/Diesel
Mirrer Betka	DTW 1 No.(2 cusec)	20 ha.	Electricity
	STW 6 Nos.(1/2 cusec)	22 ha.	Electricity
Nandir Betka	DTW 1 No. (2 cusec)	20 ha.	Electricity
	STW 3 Nos. (1/2 cusec)	15 ha.	Electricity
Kaver Betka	DTW 1 No. (2 cusec)	20 ha.	Electricity
	12	Total : 97 ha.	

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Share cropping

The terms of share cropping is the 50:50. Owners do not give any inputs to the share cropper. In case of Irri 1/5 or 1/4 (as per term) of the crop is given as irrigation cost and the rest is divided equally among the owner and share cropper.

Crop damage

Crop damage in the area is caused by both insects/pests and flood and rain water congestion in the area. Almost every year *pumri poka, mazra poka,* grass-hopper etc. damage considerable amount of Irri and deep water Aman. Flood accompanied by rain water is also responsible to damage of mainly TDW Aman and Aus seedlings. Rain water due to heavy shower congested the area and submerge deep water Aman in *Jaistha* and *Ashar.* Water enters the area through the *Jalfai khal. Bajitpur khal* allows water entry from *Lohajang* into *Mirrer Betka.* People requested re-excavation of this outlet. Almost all the lands in the village *Nandir Betka* is low lying area and area remains under much water in rainy season. TDW Aman is heavily damaged in this area. Farmers in this area requested a culvert to drain out excess water.

Livestock

Livestock in the sub-compartment is mainly of local variety. A few hybrid cattle are available with moderate health. The average health situation of the cattles is moderate to poor. No extra grazing field or sufficient fodder is available for them. Almost every year 20-25 cattle die due to cattle disease. Among the disease rinderpest, gastritides, cow pox etc. are common. Medicare is poor. Farmers reported they did not get any treatment for their cattle without money. A.I. is available at *Santigonj and Tangail.* Each A.I. costs Tk.20/-, failure of A.I. also reported. Further maintenance of hybrid calves is expensive. In the area shortage of draft animals costs farmers Tk.40-50/- for hiring a pair of animals to plough one time to 20 decimal of land. Power tillers are occasionally available which costs Tk.3/- per decimal for first ploughing. Extension service on livestock is also poor in the sub-compartment. Milchcows are used as draft animals.

Poultry

Poultry in the area includes mainly chickens of local variety. Some ducks are available in the household near water bodies. Very few farm chickens are available. They mostly live on scavenging around the households and fallow land. Medicare is poor. Mass vaccination in the area is almost absent. Farmers carry their poultry to Tangail for vaccination. Ranikhet, fowlpox, tapeworm etc. are the common disease among the poultry.

Own observation and views

The land in the area generally slopes to east and south. Soil texture ranges from Sicl at the basin edge and Sic in the basin sites. Soils are suitable for growing Irri crops as the water holding capacity is suitable for growing their crop. Only approximately 20% of the land is medium high to high land of the F0 and F1 type. Low lying area are F2, F3 and F3+ type of land. Major part of the area is used for growing Irri/Boro(HYV). Wheat is grown

extensively in the area among the Rabi crops. Mustard also grown on a considerable area. Drainage improvement in the area would facilitate farmers to grow Irri crops timely and secure the deep water aman in the sub-compartment.

4.4 FISHERIES

Water bodies

The available water bodies under the sub-compartment SC-4 with their number, type, area and available fish species are shown below in the table:

Sl. No.	Water bodies	Number	Area (Acre)	Type	Available fish species	Annual	Ownership	Remarks
1.	beel	-	-	-	-	-	-	absent
2.	Ponds: i.Mirrer Betka ii.Nandir Betka	05 01	5.5 acres approx	cultured	Rui, Katla, Mrigal,Tilapia, Carfu etc.	Poor	Individual	Enough scope for pond culture fishery but the practice of pond fish is very poorly developed.
3.	pagars i. Mirrer Betka ii.Nandir Betka	100 10	33 acres approx	cultur-able and derilicts	Koi,magur,sing,taki,shol, gajal,puti,chela,chanda,baim calisha,gutum,chat,etc. Fresh water muscles-including unio and pila. Shrimps and crubs.	300 mts. approxi-mately	Individual	very impor-tant res-ourceful waterbodies for bothfish culture to facilitate other house-hold activi-ties.

Professional fishermen

No household of professional fishermen are found in the visited area.

Subsistence fishermen

There are 2 households of subsistence fishermen in the village *Mirrer Betka*, Union *Karatia*. They are poor Muslim people and manage their family from hand to mouth. One of the subsistence fishermen urged to provide them Bank loan facility to facilitate fishing and improve their maintenance. He was worried about the fish disease.

Fishing periods

There are no perineal waterbodies like *beel* in the sub-compartment except some *pagars* and very few ponds - so fishing period is reported to be for a short duration. The months of *Sravan, Bhadra, Ashwin and Kartik* are generally the fishing periods in the floodplains and

canals under the sub-compartment, while the months of *Falgoon* and *Chaitra* are the peak periods for fishing in the *pagars* of the locality.

Fishing methods

As per report about 70-80% fishing of floodplain fishery is operated by *Shibjal, Karentjal, Scoopnet, Kathijal* and 15-20% fishing is operated by angling and *Jhakijal.*

During the post monsoon period (*Chaitra, Baishak*) about 70-80% fishing of *pagars* and ditches is pumped out by lowlift pump (irrigation) and about 10-15% is carried out by handpicking and castnet.

Flood plain fishery

Floodplain fishery is relevant in the area. As per report the river water, (from *Lohajang* river) starts to enter into floodplain of the sub-compartment through *Jalpai Nagar* khals. Along with this water many small fingerlings of carp fishes (*Nura, Feka, Mrigal*) and other fishes like *Boal, Tengra, Pabda* enter the floodplain. As soon as the floodplain is inundated with water, the *pagars* fishes (*Koi, Magur, Sing, Puti, Taki, Shol, Gajal* etc.) come out of the *pagars* and spread over the floodplains. As per report the *pagars* fishes spawn in the *pagars* before the flood water enters into the floodplain. The carp fingerlings begin to grow quickly and mixes with *pagars* fishes and the whole area becomes a suitable habitat for fishes.

The villagers catch fish in the floodplain and can easily meet their fish consumption demands. The duration of floodplain fishery under the sub-compartment is short and available fishes start going back to river through *Nagarjalpai khal* along with the receding water. Carp and other fish go back to the river whereas *Koi, Magur, Shol, Taki, Gajal, Puthi, Chanda, Chela* etc. do migrate to the *pagars* and is naturally stocked there in the month of Kartik.

Fisheries practices

Both culture and capture fishery is reported under the sub-compartment. The capture fishery is well developed whereas the culture fishery is very poor in the area.

Institutional facility

As per report institutional facility is absent. But there is public demand to help them by training them in the field of fishery to boost up culture fishery.

Fish predation and fish disease

Fish disease is reported and almost all the fishes are attacked with disease in the month of Kartik and Agrahayan. Snake headed fishes are reported to be more severely attacked compred to other groups. The shrimps are reported to be disease free.

Fish migration

As usual fish migration takes place in the area. To and from movement of fish from *Lohajang* river to the floodplain takes place through the *Jalpainagar khal* during early and post monsoon period. People reported that the *Jalpainagar khal* has been silted up due to gradual deposition of sand and soils.

People in the area demand to re-excavate that *Jalpainagar khal* in order to channelize the floodplain with the surrounding *Lohajang* river.

Own observation and views

The sub-compartment has no *beel* but a good numbers of *pagars* of different sizes in addition to a few ponds. Pond culture fishery is very poorly developed in the area. Many villagers in the village *Mirrer Betka* were found re-excavating the homestead pagars. Many road side ditches and *pagars* were found completely dried up. Some *pagars* were found with shallow water. Ducks were found grazing in the pagars, women were found fetching water from the *pagars* of sufficient depth.

Views

The derilicts ponds need to be re-excavated and well maintained by adopting culture fishery which will meet the public fish consumption demands and also creates scope for earning money. Some small *pagars* may be freshly excavated in-side the flood plain to facilitate fish stock during post monsoon period. Public should be encouraged towards culture fishery to remove fish scarcity in the area round the years.

4.5 ENVIRONMENT - MALE

Biological

Arthropods

Crop damage by arthopods including *pathra, peroli, mazra, pamri*, letha, chenga, chat, mantis, grassohoper etc. is reported in the villages under the sub-compartment. The intensity of crop damage varies from 1-2% of the total production and to this effect the farmers are worried. Some of the destructive insect like *pathra* and *pamri* which are reported to be resistant to insecticide and beyond control. Jute is damaged by changa and the trees of homestead garden are reported to be seriously damaged by unknown insects.

Other arthropods include crabs and shrimp are available in the waterbodies and are edible. Crabs population is gradually decreasing.

Farmers urged to check the insect attack to their crops.

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Mollusca

Fresh water muscle including unio (bivalves) and *pila* (snails) are reported in the area. *Pila* population is satisfactory in comprison to unio. Both are available in the waterbodies of the area and are useful animal to mankind and birds.

Annelids

The annelids population which include Leech, Earthworm, Nerries are reported in the area under the sub-compartment.

Fish

Fish the important wealth being present in the *pagars* and ponds. As per report this population is gradually decreasing in the area due to disease and also for many other unknown reasons.

Farmers urged to increase waterbodies in the area for retention of fish during monsoon and also requested to check fish disease as far as possible.

Amphibian

Amphibian population includes toads, frogs, hyla etc. are present satisfactorily though there is a report of frog catching in the rainy season. Toads are edible and economically important animal. Toads consume harmful insects from Irri/Boro fields and also contribute in maintaining ecological balance.

Reptiles

Reptilian population including Tortoise, poisonous and non-poisonous snakes, Anjan, *Guishap*, Lizards etc. are reported. Out of which the tortoise population is significantly decreasing, but other reptilian population are decreasing too. During monsoon snakes from nearby bushes and field take shelter in the public houses and sometime snake bitting is reported. *Guishap* is an economically important animal.

Birds

Common varieties of bird which include crow, shalik, heron, kingfisher, dove, pigeon, cuckoo, kite, rabin, are reported but in reduced number. There is also a report of vultures visit the area when cattle die.Guest birds do not visit the area due to lack of *beel*. Hunting of birds by gun is also reported. People reported that the whole bird population has significantly been decreased since 1988 flood.

Mammals

Terrestorial wild animals

Terrestorial wild animals are few in number at present but the area was rich in wild animals before. As per report the wild animals has been significantly decreased after the flood of 1988.

Whatever wild animals are available now includes jackle, nangar, jungle cats, mongoose, rat, mole etc. Rats are abundantly present and cause serious damage to public property. People in the area requested to eradicate rat problems.

Domestic land animals

Buffalows and horses are totally absent. Cattle are present but in reduced number. The number of draft animals is reducing due to cattle disease. Cattle disease is a common occurrence in the area and goes on round the year. As per report every year about 5/10 cows die because of cattle disease. Now there is a serious scarcity of draft animals in the area and due to which farmers are unable to plough their land. As cow price in the market is very high so farmers cannot afford to purchase it.

Farmers requested to control cattle disease in the area.

Institutional facility

The services from the livestock department is reported to be almost absent in the area.

Afforestation

As per report the activities towards development of afforestation from Govt. agencies is nil in the area. NGOs, like CARE, do minor afforestation work by supplying sapplings of different trees. The people themselves plant trees in their own homestead.

Public requested to supply them quality seeds and sapplings of timber yielding and fruit yielding.

Deforestation

There is no brick field in the area but the practice of deforestation goes on as usual round the whole year in the area. Wood traders by trees from the farmers and use it in the furniture shop and small plants are reported to be used as fire-wood. In this way the afforested area are being deforested and the extent of deforestation in the area varies from 2-3% every year.

Kitchen gardening

Kitchen gardening is well developed in the area. About 80-90% of the villagers under the sub-compartment do kitchen gardening in their homestead areas. They are reported to be extremely benefitted by doing kitchen gardening.

The villagers do meet their vegetables consumption demand and also earn money by selling the surplus vegetables. The cultivated vegetables are *Misti Kumra, Peanach, Chilli, Gourd, Bitterground, Cucumber, Occra, Beet* etc.

Human activities

Human habitation

The growth of new human habitation is reported. About 2-3 new houses covering an average area of 10-15 decimal are being constructed every year and this decreasing the agricultural land in the area. As per report this practice of growth of new human habitation is due to population increase in the area.

Pollution

Both air and water pollution is reported in the area. The stagnent water in the ditches makes the habitat very uncongenial. The dumping of household garbages here and there, leaving dead animals unburried, un-plan-wise construction of *katcha* latrines and open sanitation together makes the area very uncongenial and becomes a health hazards.

Observation and views

Homestead garden is well developed. There is a scarcity of surface water facility and due to which the villagers cannot have their own and cattle bath. They were seen to have shallow water tubewells bath. Road side ditches, derilicts ponds, and *pagars* were seen dried up. The bird population seem to have decreased in the area. The cattle population is reduced in the area.

Views

The surface water scarcity needs to be solved and which can be done by re-excavating the homestead ditches, derilicts ponds, and *pagars* thus creating scope for retention of rain and flood water.

4.6 ENVIRONMENT - FEMALE

Homestead forest

Homestead forest is reported to cover an average area of (.1-.2) acres in the visited area under the sub-compartment. The homestead forest comprison with the most common varieties of trees like *herb, shrubs, mangoo, jackfruit, banana, bamboo bush, palm, date tree, jamboora, berry*. Some hard fruit trees like *tamarin, kori, guava* are also available these kitchen gardens are seen but not so developed.

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Fuel

The main source of fuel is dry leafs and remains of paddy. Middle and well to do family buy firewood from the market. Although electricity facilities is available there but they do not use it for cooking purposes as this is too expensive. Severe fuel scarcity is reported for poor families. Poor women sometimes go for the *chak* to collect straw.

Drinking water

The main source of drinking water are tubewells. Poor people who could not afford tubewells use *kua* water and *pagar* water for drinking purpose. They use mostly *kua* and *pagars* for washing, cleaning, bathing.

Sanitation

Sanitation is poorly develop in this sub-compartment. Most of the people use *katcha* latrines. Only a few rich and well to do families own *pucca* latrines.

Diseases

Diseases like pox, fever, measles, worms occurs here mostly in the month of *Falgoon, Chaitra and Kartik*. According to them the major reason of getting diseases is *katcha* latrines.

Rats

Rats damage paddy wheat, vegetables fruits inside and outside of homesteads as well as household belongings inside homes.

Other wild animals

Fox is reported decreased significantly after the 1988 flood. They are not seen as very frequently as before due to want of bushes in the village area.

Bagdasha, mongoose, bat etc. are present and came damage to chicken,hens, kid and fruits. Mosquito is also a great problem for human type.

4.7 SOCIO-ECONOMIC SITUATION - MALE

Major non-farm activities

The major non-farm activities of the households in the surveyed villages are service, business, transport work, petty and seasonal business, agricultural and other non-agricultural works etc.

About one third of the households of the area are involved in farm activities and the remaining two-third with non-farm activities.

From the total households of the area about 40% are found service holders, about 15% are businessmen about 4% are transport workers and about 8-9% are miscellaneous daily workers.

Social and institutional aspects

Employment patterns

The area mainly depends on hired labour. Family labour is also used but by the marginal farmers. During the lean season of agriculture in the area the local daily labourers engage themselves in transport, earth-cutting and seasonal business. No out-migration of labour from the area is reported. But in migration of labourer is a common and regular phenomena in the area. The agriculture in the area depends on hired labour and in-migrated labour. Hired labourers is collected from Tangail town area, whenever the farmers need them. There are about 15-20 households in the area who keeps yearly basis labourers for their farm activities. Mainly big farm households, big businessmen and service holders posted outside Tangail keep labourers at their houses.

Wage rates

Two different wage rates are found in the area (in two surveyed villages):

Sl.#	Village	Wage Rate		Comment/working hrs.
		Lean Season	Peak Season	
1.	*Mirrer Betka*	Tk.20+ 2 meal	Tk.35+ 2 meal or Tk.25+ 3 meal	6:00 am to 4:00 pm Early morning to evening
3.	*Nandir Betka*	Tk.20+ 1 meal	Tk.35-40+ 1 meal or Tk.35-40+ 2 meal	9:00 am to 5:00 pm 6:00 am to 6:00 pm.

Organized groups

The area has NGO activities and organized groups of Grameen Bank, SDS, *Sanirvar* CARE etc. A KSS group is also there in the area.

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Public facility

All public facilities like post office, Union Council office, health centre/ clinics are easily available from the area.

Transport and communication

The roads of the area are very good and are well connected with important places like *Tangail town, Delduar, Karatia, Pathrail* etc. The roads remains useable by all types of road transports throughout the year.

Markets

The people of the area do their marketing in the hats and bazars of *Karatia, Taratia, Putiajani, Bajitpur* etc. People of the area also do their marketing of non-agricultural items frequently in *Tangail* town only one to one and half km away from the area.

Development needs

The people of *Mirrer Betka*, particularly the farmers pointed out that waterlogging and drainage congestion problem in their *chaks* are the main problem and they need government support to solve this problem in order to boost agricultural production of the area by freeing more land under cultivation. They also requested to dig a couple of ponds in the area for bathing of their cattles during the dry season.

Chaks of *Nandir Betka* village also suffer drainage congestion problem for the last few years, due to construction of unplanned roads and houses in the area. Therefore, they urged to find a solution to this problem as they incur losses by loosing the Rabi crops. It may be mentioned here that *Nandir Betka* people are mostly (about 90%) farmers and depend totally on agriculture. Extension service for livestock, agriculture is also needed in the whole area.

Own observation

Socio-economic condition

The socio-economic condition of the two villages are quite different. In *Nandir Betka* about 90% households are farmers. While households in *Mirrer Betka* are mostly service holders (about 40%) and businessmen (about 20%).

There are quite few large farmers in *Mirrer Betka* while the number of large farmers in *Nandir Betka* are very few. Both economically and educationally the people of *Mirrer Betka* are more advanced than *Nandir Betka*. The housing condition of *Mirrer Betka* village is also better than *Nandir Betka*. *Mirrer Betka* village is a semi-urban area although *Nandir Betka* village is also at a same distance from *Tangail* town and situated on the boundary of *Tangail Paurasava*. About 80-90% households in *Mirrer Betka* use electricity but this is much less so in *Nandir Betka* village. There is only one similarity between the village is found that no out-migration of labourers occurs from either of the village.

Peoples opinion

About the NGOs

The people from the area considers NGO activities, particularly their credit program, quite helpful for the poorer families.

About Functioning of Union Parishad and Upazila

The people of the area supported the existence of union parishads as rural development institution although their expectations and aspirations are not adequately and timely fullfilled by the concerned Union Parishads.

Having no direct contact with the Upazila the people of the area declined to comment on the system (Upazila).

4.8 SOCIO-ECONOMIC SITUATION - FEMALE

Employment patterns and activities of women

The daily wage rates for various type of income generating activities of women in the sub-compartment 2 are shown in following chart:

Name of Village	Type of Occupation	# of Labour	Wage rate with meal		Wage rate without meal	Remarks
			Tk.	meal	Tk.	
Mirrer Betka	Jute work	5-7	-	-	20-25/-	on demand
	Paposh making	7-10	-	-	10-15/-	regular
	Embroidery	10-12	-	-	25-30/-	on demand
	Cane & Bamboo work	7-10	-	-	10-12/-	regular
	Cotton wrapper + Nakshi katha	10-12	-	-	10-15/-	on demand
	Sweing	10			12-15/-	regular
	Wool knetting	15			20/-	seasonal
	Printing	2			15-20/-	on demand
Nandir Betka	Thonga making	10-15			10-12/-	
	Post harvesting	2-3	3-4/-	3 m.		
	Service holder	30	-	-	-	regular
	Sweing	1	-	-	12-15/-	regular

People of this village are economically and culturally well established. The visited village *Nandir Betka* is very small in area. Approximately 20-25 families is reported are living in *Nandir Betka*.

Literacy rate

Literacy rate is *Nandir Betka* is comparatively less than that of *Mirrer Betka*.

Literacy rate is *Mirrer Betka* is about 80%, attendancy rate 65-75% and the % of girls attendance is 30%.

Literacy rate is *Nandir Betka* 20-25%, attendancy rate is 70-80% & of girls is 30%.

Organized groups

In all the visited areas there are different organized groups stated in the following tables is reported present. Activities of these organized groups are mainly aimed at developing the socio-economic condition of the people. A good number of local groups are reported present in this sub-compartment. The list of these organizations and groups are shown below:

Sl. No.	Village	Name of (NGO/Group/Samity	# of Groups	# of Member		Remarks
				Male	Female	
1.	Mirrer Betka	1. BRDB			40	
		2. BURO Bank	-	-	150	
		3. CARE Samity	-	-	45	
		4. Local Boys Club	-	240	-	
		5. Local Shapla Jubo Songha		200	-	
		5. Local Mohila Samity		20	150	
2.	Nandir Betka	1. BRDB	-	-	1	
		2. CARE Samity	-	-	2	
		3. Grameen Bank	-	-	5.8	
		4. SDS	-	4	6	No longer functioning

Public facilities

Public facilities like Union Council office, post office, F.P. clinic and health clinic etc. are available within short distance from the visited villages. People mostly avail health care facilities from *Coalition* clinic.

General needs

The scope of income generating activities for women is very limited. In order to enhance the economic situation, implementation of income generating activities is urged by women. The need for more tubewells to common in respect of both the villages. Excavation of pond will relieve the people from severe water scarcity particularly in the dry season.

Flooding and water congestion over the low lying *chaks* is reported to damage the Aman crop every year in *Nandir Betka*. Re-excavation of existing silted *Nagarjalfai khal* is necessary to drainout this excess rainfall water. Raizing the level of *katcha* road from Delduar (main road) is needed for easy movement of the people particularly in the rainy season.

Existing water related situation

People get scabies, diarrhoea and dysentery due to use of bad water from *pagar*s for bathing washing and cleaning etc. A few people use *Kua* water for drinking purpose. Women carry

tubewell water from other people's house. Severe water scarcity prevails on this sub-compartment on the dry season.

Women stated about 1988 flood caused a severe less of human property.

Own observation

pagars with small water bodies are present near the homestead. The villagers use this water as per their need. Since these *pagars* have no specific banks people throw in homestead garbage and other dirty things. Few latrines were also observed installed these where mosquito and fly grows rapidly and caused health problem for them.

Peoples view

About Union Parishad and Upazila

Few women stated that sometimes they do good of the common people but they do not have clear conception regarding upazila activities. They referred us to male people.

NGO activity

Women appreciated the activities of Grameen Bank because it provides loans with less interest without any corruption/mis-appropriation.