

PART C FEASIBILITY STUDY

CHAPTER 7 FEASIBILITY STUDY FOR THE MODEL AREA IN CHAR

7.1 The Study Area

7.1.1 Location and History

Algar Char gram is located on the left bank of the Jamuna river in Erendabari Union, north-eastern part of Fulchhari Upazila, Gaibandha District. It is bounded by Jigabari gram to the north, Jamalpur District to the east, Dakaitar Char gram to the south, and the Jamuna river to the west.

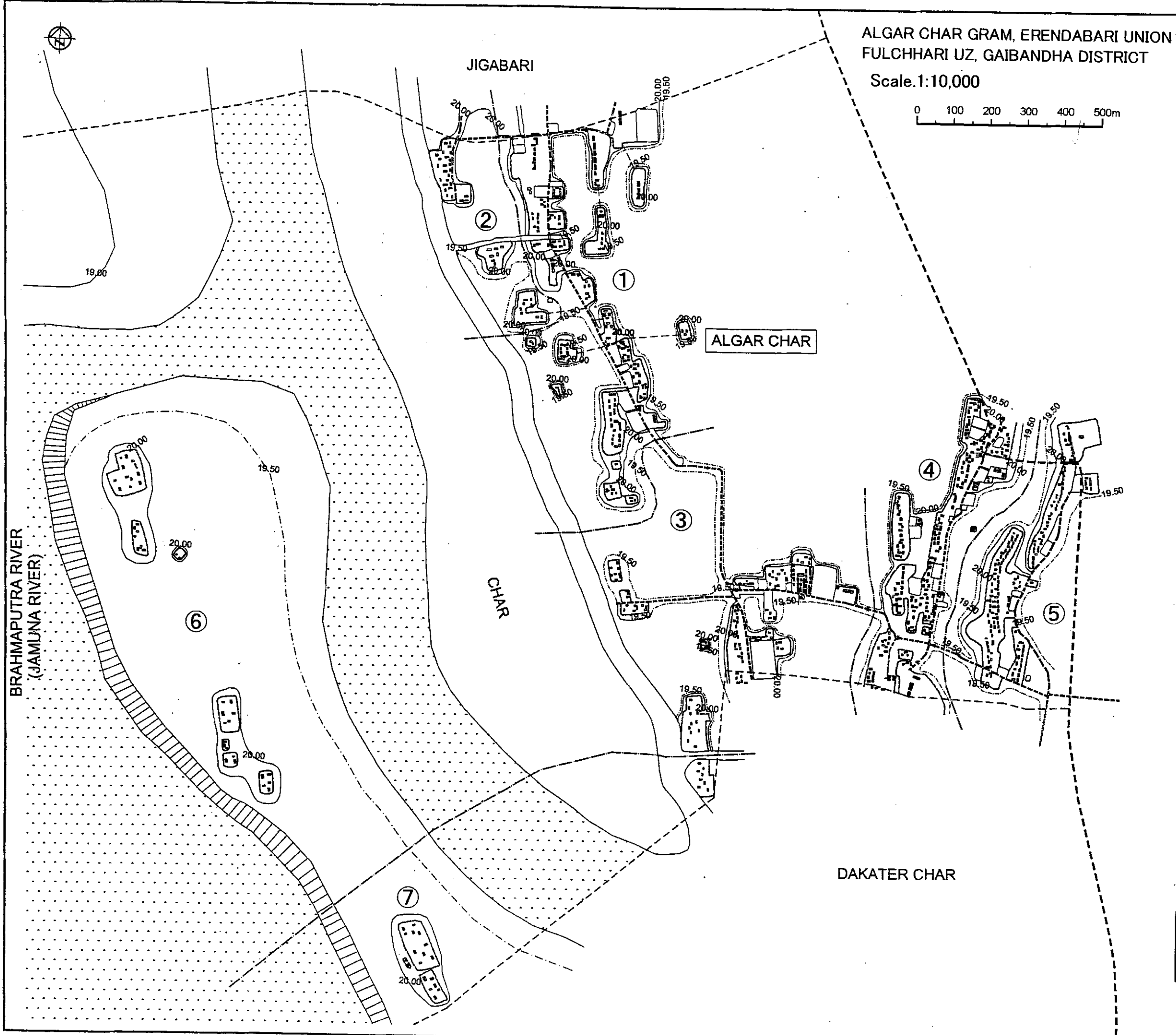
Access to Algar Char is not easy. It is some 35 km away from the Fulchhari Upazila Headquarters and 25 km away from the Gaibandha District Headquarters, both across the Jamuna river.

The gram was established some 100 years ago, when the first settlers came to the place from Sirajganj District. Gradually other families from the same district settled down the area. The gram “Algar Char” was named by a settlement officer during the Land Settlement Survey of the British Government. “Alga”, the Bangla word, means ‘separate’. The char might be separated from the mainland or the river. A brief history of the village is summarized in Table 7.1.

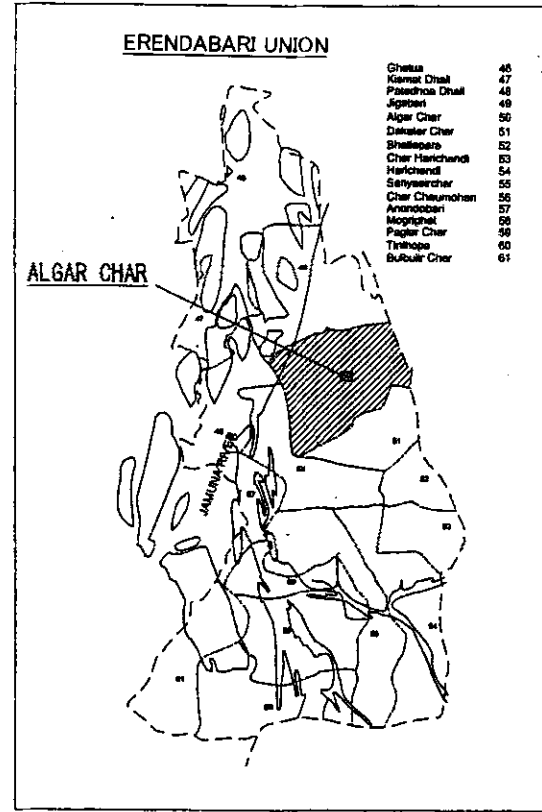
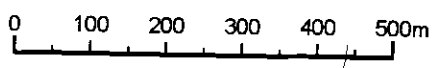
Table 7.1 Chronological Table of Algar Char Gram

| Year | Incident |
|---------|--|
| 1890 | Village established. 10 families have migrated from Sirajganj district in about 10 years. |
| 1917 | Land reclamation survey conducted. |
| 1937 | Change in local government administration. Union based presidential post was created |
| 1938 | A portion of the char was vegetated, wild elephants, wild pigs lived in the forest. |
| 1940 | New land survey carried out. |
| 1947 | Pakistan Government created new local government system. The Jamindari system abolished. |
| 1962 | A primary school was established in the village. |
| 1970 | A conflict between 2 groups regarding land ownership killed 3 people. A case was filed accusing 34 persons and the case continued for 11 years and after that all the accused freed. |
| 1971 | Liberation war. |
| 1972-73 | Two local leader Messrs. Abdur Rahmn Sarker and Momotaj Talukder killed by robbers. |
| 1974 | There was famine that time. Low agricultural production, People spent their days in starvation. |
| 1977 | “Small Pox” claimed 7 persons in the village. |
| 1978 | Crops were destroyed due to drought |
| 1981 | Mr. Aslisuddin Mondle started modern rice cultivation by use of treadle pump (Dheky Kall). |
| 1987 | Mr. Sirajul Islam started modern rice plantation by use of shallow tubewell. |
| 1988 | Land erosion and submergence due to flood caused great damage to people and property. |
| 1989 | Many families left village for Dhaka, Gazipur and other districts. |
| 1998 | Flood caused tremendous damage in economy. |

Source: JICA Study Team based on the results of PRA (2002) by DICS



ALGAR CHAR GRAM, ERENDABARI UNION
 FULCHHARI UZ, GAIBANDHA DISTRICT
 Scale: 1:10,000



| ERENDABARI UNION | |
|------------------|----|
| Ghesia | 46 |
| Kamat Char | 47 |
| Paschim Char | 48 |
| Jigbari | 49 |
| Algar Char | 50 |
| Dakater Char | 51 |
| Shalpara | 52 |
| Char Harichandi | 53 |
| Harichandi | 54 |
| Sahyewerchar | 55 |
| Char Chaudhury | 56 |
| Anandpur | 57 |
| Mogripur | 58 |
| Pagar Char | 59 |
| Talpara | 60 |
| Bulbul Char | 61 |

LEGEND

- DISTRICT BOUNDARY
- PARA BOUNDARY
- EMBANKMENT ROAD
- FOOT PATH
- VILLAGE MOUND
- WATER POND
- RIVER BANK
- STEEP AREA
- CONTOUR FOR EACH METERS
- CONTOUR FOR EACH 50 CENTIMETERS

FULCHHARI U.Z, GAIBANDHA DISTRICT
 ALGAR CHAR, ERENDABARI UNION

- ALGAR CHAR**
- ① JALAL SARKER/HOSSAIN MEMBER PARA
 - ② MOKBUL BAPARIE PARA
 - ③ RAZZAK CHAIRMAN PARA
 - ④ AKLAS MEMBSR/SAMAD FAKIR PARA
 - ⑤ JOYNALMEMBER/HASEN KHALIFA PARA
 - ⑥ ZOLIL DEWANI PARA
 - ⑦ MAHAR MUNSHI PARA

**LOCATION MAP OF
 ALGAR CHAR GRAM**

7.1.2 Area and Population

The Algar Char gram has an area of 713 ha, of which 7.3% or 52 ha are residential, 78.9% or 562 ha agricultural area, and 13.8% or 99 ha water body including pond and river.

The population of the whole gram totals 3,139, consisting of 1,610 male and 1,529 female. As shown in the map of Algar Char, the gram is divided into seven paras or neighbourhoods consisting of group of homesteads: Jalal Sarkar/Hossain member para (Jalal para), Mokbul bapari para (Mokbul para), Razzak chairman para (Razzak para), Aklas member/Samad fokir para (Aklas para), Joynal member/Hassan Khalifa para (Joynal para), Zolil dewani para (Zolil para), and Maher munshi para (Maher para).

Moqbul para was established in the west of the main road, after the 1998 flood. The land is relatively low, and vulnerable to flood. Zolil para and Meher para are located on high lands near the Jamuna river course. In the dry season when the river water level is low, one can go to both paras by land; in the wet season, on the other hand, two paras become island char in the Jamuna river course. Other paras are located in the east of the main road.

Para wise population by sex and households are shown in Table 7.2.

Table 7.2 Para-wise Population by Age Group and Sex, and Number of Households and Average Family Size

| Age Group | Jalal Para | | Mokbul Para | | Razzak para | | Aklas Para | | Joynal Para | | Zolil Para | | Maher Para | | Total | |
|---------------------|--------------|------------|--------------|------------|--------------|------------|--------------|------------|--------------|------------|--------------|-----------|--------------|-----------|--------------|--------------|
| | M* | F** | M | F | M | F | M | F | M | F | M | F | M | F | M | F |
| > 60 yrs | 14 | 20 | 8 | 7 | 10 | 17 | 14 | 11 | 21 | 13 | 1 | 0 | 4 | 3 | 72 | 71 |
| 18-59 | 184 | 187 | 65 | 62 | 219 | 167 | 142 | 148 | 137 | 158 | 38 | 28 | 47 | 47 | 832 | 797 |
| 9-17 | 90 | 93 | 24 | 23 | 39 | 33 | 72 | 55 | 48 | 39 | 26 | 22 | 11 | 20 | 310 | 285 |
| 5-8 | 39 | 37 | 16 | 14 | 42 | 33 | 46 | 27 | 35 | 38 | 7 | 10 | 15 | 12 | 200 | 171 |
| 1-4 | 24 | 24 | 15 | 13 | 34 | 42 | 24 | 26 | 29 | 35 | 10 | 10 | 14 | 10 | 150 | 160 |
| <1 | 17 | 11 | 8 | 7 | 6 | 8 | 9 | 5 | 4 | 6 | 0 | 6 | 2 | 2 | 46 | 45 |
| Total | 368 | 372 | 136 | 126 | 350 | 300 | 307 | 272 | 274 | 289 | 82 | 76 | 93 | 94 | 1,610 | 1,529 |
| G. Total | 740 | | 262 | | 650 | | 579 | | 563 | | 158 | | 187 | | 3,139 | |
| Nos. HH*** | 142 | | 51 | | 127 | | 114 | | 111 | | 31 | | 35 | | 611 | |
| Family size | 5.2 | | 5.1 | | 5.1 | | 5.1 | | 5.1 | | 5.1 | | 5.3 | | 5.1 | |
| Area (ha) | 14.9 | | 3.0 | | 6.6 | | 11.1 | | 9.5 | | 4.1 | | 2.9 | | 52.1 | |
| Pop. density | 4,933 | | 8,733 | | 9,848 | | 5,216 | | 5,926 | | 3,854 | | 6,448 | | 6,025 | |

Remarks: *:Male; **:Female; ***:Household

Source: JICA Study Team based on the PRA by DICS, 2002

Jalal para has the largest population with 740, followed by Razzak para with 650, Aklas para with 579, Joynal para with 563, Mokbul para with 262, Maher para with 187 and Zolil para with 158. Average family size in the whole gram is 5.1. All paras show similar family size between 5.1 and 5.3.

Residential area based population density is 6,025 people/km² on average, but it varies much from

para to para. Razzak para shows the highest population density with 9,848 people/km², followed by Mokbul para with 8,733 people/km², Maher para with 6,448 people/km², Joynal para with 5,926 people/km², Aklas para with 5,216 people/km², Jalal para with 4,933 people/km², and Zolil para with 3,854 people/km².

The gram is Muslim dominant. There are only four Hindu families whose heads are all working as cobblers. Being very minor and of lower cast, they are almost disregarded. No conflict between two religious groups has been reported.

At the early stage of settlement, migrants settled in the eastern part of the gram. Gradually, in the course of time, they settled all over the village. Eastern part of the gram is already densely populated. If any migrants come in the area, they first settle in the western part, close to the river and sparsely populated.

7.1.3 Natural Conditions

(1) General description

The physiographic unit falls under Agro Ecological Zone 6a and active Brahmaputra-Jamuna Flood plain (Ba). This sub unit, which underlines Agro Ecological Region 7, comprises young, stratified, alluvial land within and adjoining the shifting channels of the Brahmaputra and Jamuna rivers, the old Brahmaputra river and the Dhaleswari-Kaliganga river. The land formations are liable to change in shape each year as river banks are eroded, new alluvium is deposited within/alongside channels, and older deposits are buried by layers of new alluvium. The relief varies from smooth to irregular, with differences in elevation of 2-3 meters or more between adjoining ridges and depressions. The depth of flooding varies from shallow to deep at different sites and the maximum depth may vary by a meter or more from year to year.

Fulchari Upazila covers the Tista Meander Estuarine flood plain and the active Brahmaputra-Jamuna flood plain with the area of 75.18 km² and 241.18 km², respectively. The deposits comprise alternating layers of sand and silt. Extensive areas of sand are often deposited in high flood years, especially in the north, whereas silty material is more extensive in years of lower floods and in the south. Brahmaputra sediments are grayer in color than Ganges sediments. They are rich in weatherable minerals, especially micas, and are neutral or moderately alkaline in reaction, but not calcareous.

(2) Surface water quality

The JICA Study Team collected three water samples for surface water quality analysis. The sampling was done on random basis with two samples from pond, and one from the river Bramaputra within the Study Area. The data shown in Table 7.3 indicate that pH varies from 6.91 to 7.54, electrical conductivity (EC) varied between 326 to 356 μ S/cm and total dissolved solids

(TDS) between 153 to 167 mg/l. The surface water quality is within Bangladesh and WHO guideline values and suitable for irrigation.

Table 7.3 Surface Water Quality in Algar Char

| Water Quality Parameters | Unit | Bangladesh Standard | WHO Standard | Algar Char | | |
|----------------------------|--------|---------------------|--------------|-------------------------------------|---|---|
| | | | | Location -1 | Location -2 | Location -3 |
| | | | | Jamuna River Middle-west Algar Char | Open pond Md. Rafiqul Islam; North Algar Char | Open pond Md. Hasen Khalifa East Algar Char |
| pH | | 6.5-8.5 | | 7.54 | 7.41 | 6.91 |
| EC | μ S/cm | | | 325 | 356 | 326 |
| TDS | mg/l | 1000 | 1000 | 153 | 167 | 156 |
| Chloride (Cl) | mg/l | 600 | 250 | 1.5 | 14.0 | 1.5 |
| Nitrate (NO ₃) | mg/l | 10 | 50 | 0.9 | 7.9 | 0.9 |

Source: JICA Study Team

(3) Groundwater quality

The sampling was done on random basis with two samples from a hand tube well and one from a shallow tube well within the Study Area. The data shown in Table 7.4 indicate that pH varies between 7.05 to 7.99, EC varies between 326 to 818 μS/cm, arsenic contents 0.00 to 0.06 mg/l, iron contents between 0.78 to 12.8 mg/l, sulphate contents 0.3 to 5.0 mg/l and phosphate contents between 0.0 to 5.0 mg/l in the Algar Char gram. The data indicate that arsenic and iron content in one tube-well are higher than Bangladesh and WHO guideline values for drinking purposes.

Table 7.4 Groundwater Quality in Algar Char Gram

| Water Quality Parameters | Unit | Bangladesh Standard for Drinking Water | WHO Standard for Drinking Water | Algar Char | | |
|------------------------------|--------|--|---------------------------------|--|---|--|
| | | | | Location-1 | Location-2 | Location-3 |
| | | | | Md. Jahirul Islam East Algar Char, Depth: 17m; Hand Tubewell | Md. Azgar Munshi Middle Algar Char, Depth: 26m', Shallow Tubewell | A. Samad Mondal North Algar Char, Depth: 14m', Hand Tubewell |
| PH | | 6.5-8.5 | | 7.99 | 7.5 | 7.05 |
| EC | μ S/cm | | | 818 | 584 | 326 |
| Iron (Fe) | mg/l | 0.3-1.0 | 0.3 | 12.8 | 0.78 | 5.4 |
| Arsenic (As) | mg/l | 0.05 | 0.01 | 0.06 | 0 | 0.008 |
| Chloride (Cl) | mg/l | 600 | 250 | 40.0 | 13.0 | 50.0 |
| Manganese (Mn) | mg/l | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 |
| Sulphate (SO ₄) | mg/l | 400 | 250 | 0.0 | 0.3 | 5.0 |
| Phosphate (PO ₄) | mg/l | 6 | | 0.5 | 0.0 | 0.0 |
| Nitrate (NO ₃) | mg/l | 10 | 50 | 0.0 | 0.0 | 1.8 |

Source: JICA Study Team

(4) Ecological resources

Wetland flora

The Study Area supports two types of wetland: a) permanent wetland and b) seasonal wetland.

The permanent wetland includes rivers, canals, beels, perennial water bodies and fishponds. The permanent wetland provides refuge and shelter for the most of the aquatic flora and fauna, the seasonal wetland serves as the breeding ground for fish and other aquatic animals like fresh water turtles. The changes in the physical characteristics of wetland have a direct impact on its dependent flora and fauna. The fluctuation or changes in the population dynamics of the bio-diversity define the biomass productivity of the wetland.

The natural vegetation in chars prevents soil erosion from wind and channel cutting. These chars support cultivation of paddy and dry season vegetables. The char land vegetation is classified into pioneer, closed herbaceous, middle mixed and bushy zones. The open pioneer zone constitutes the first in the supratidal region. In this zone, the vegetation is rather sparse with a few plants like Paspalum vaginatum, Panicum repens, and Zoysia matrella. The herbaceous zone where the vegetation attains little more density with some mat formation herbs such as Fimbristylis chaeteria, and Eragrostis coarctata, succeeds this zone.

Wetland fauna

The Study Area is quite different from Haor area but rich in biodiversity. It supports faunal habitat and also plays an important role as a fish breeding ground during the rainy season. The areas have very few or no trees but bushes and the ground soil act sometime as a habitat for some amphibia, reptile, birds and mammals. Some endangered wildlife is identified.

Terrestrial fauna

The Study Area is a suitable habitat for some terrestrial wildlife. It also supports two types of wildlife in two different seasons as the area inundates for six months of the year. In the rainy season, some local migratory birds come here, stay for some months to breed, and then leave. Some endangered wildlife is identified.

7.1.4 Socio-economic Conditions

(1) Land use

Land use of the Algar Char gram is largely determined by elevation of land. In higher land including artificially raised land, people enjoy ordinary life. Homesteads with useful trees and garden, road, school, hat/bazaar, etc. are usually seen on highland. Medium land is utilized for homesteads and crop field. Lower land is utilized for temporary settlement, seasonal crop field, seasonal fish farming/rice cum fish farming, fishing, seasonal boat activities, etc. Water bodies are used for pisciculture.

Major crops grown are rice, wheat, jute, groundnut, chilli, sweet potatoes, potatoes, garlic, onion, coriander, sesame, mustard, safflower, pulses, lady's finger, pumpkin, egg plant, snake gourd, etc. Fruit trees grown include: mangoes, black berry, jackfruit, coconut, banana, guava, lemon, dates, betel nut, papaya, etc. Trees grown on the homesteads and along road sides are: mahogany,

Dalbergia sisso, eucalyptus, neem, bamboo, etc.

(2) Land ownership and land tenure system

Land holding size

Situation of land ownership by holding sizes and occupation by land size category are shown in Table 7.5.

Table 7.5 Households by Land Holding Size Category

| Land size (in acre) | Category | Nos. of male headed HH | Nos. of female headed HH | Total HH | Occupation |
|---------------------|---------------------|------------------------|--------------------------|-------------------|--|
| 0 | Absolute landless | 174 | 34 | 205 (33%) | VGF card holder, day labour, agric. labor, fishermen, rickshaw puller. |
| 0-0.04 | Functional landless | 17 | 0 | 17 (3%) | Absolute landless +share cropper. |
| 0.05-0.49 | Landless | 188 | 5 | 193 (32%) | Share cropper, fishermen, agriculture |
| 0.50-0.99 | Marginal | 59 | 2 | 61 (10%) | Share cropper, agriculture |
| 1.00-2.49 | Small | 78 | 1 | 79 (13%) | Agriculture and business |
| 2.5-7.49 | Medium | 41 | 1 | 42 (7%) | Agriculture, service and business |
| 7.5 & above | Larger | 11 | 0 | 11 (2%) | Agriculture, business and service |
| Total | | 568 | 43 | 611 (100%) | - |

Source: PRA by DICS, 2002.

The absolute landless shares 205 households or 33% of the total households. A broad category of landless (combining the absolute landless, functional landless and landless) accounts for 415 households or 68% of the total. Larger farmers with 7.5 or and larger land are 11, 1.8% of the total households. More than 90% of female headed households fall in the broad category of landless. Some landless people and marginal farmers lease in the land from landowners for agricultural and homestead purposes. After flooding of 1988, nearly 200 households leased in from the landlords to establish their homesteads.

People in the absolute landless and functional landless categories work as day laborers, agricultural laborers, fishermen, rickshaw puller, etc. Landless and marginal farmers tend to be engaged in agriculture only by cultivating their own land and share-cropping. Small, medium and large farmers have more occupations such as service and business, other than agriculture.

Land tenure

Land tenure systems prevailing in the gram include: landownership, share cropping, land lease and land mortgage.

Both sons and daughters obtain land by inheritance as per Muslim law and custom. One son inherits land twice as large as what one daughter inherits. By inheritance a wife also gets one eighth of the total land and other properties of her husband. In reality, however, female have little chance

to inherit land.

Village landlord or large farmers only lease out lands to borrowers in the form of share cropping. This practice is seen in case of borrowing a piece of land with less than one acre. In the share cropping, share cropper bears all the costs necessary for cultivation (ploughing, seeds/seedlings, weeding, irrigation, pesticides, harvesting and all labor costs) and carry the harvested crops to the landlords home to share at 50:50.

The land lease system prevails in a large scale. Landlord gives land lease to the lessee for homestead and cultivation purposes. For the homestead purpose in high land, the lessee will pay Tk.50,000 per acre to landlord for lease, and Tk.45,000 per acre for medium and low land. The lessee is entitled to enjoy all the facilities of the land but he/she is not eligible to build permanent structure on the land nor dig ponds.

The land mortgage system is also practiced in the gram. When a land owner needs certain amount of money for family purposes such as marriage, education, housing, medical treatment, capital raising for business, etc., he/she offers land mortgage to the rich. Generally the land owner can get Tk.50,000 to Tk.60,000 per acre in the eastern part of the gram where the land is fertile with three cropping a year, and Tk.25,000 to Tk.30,000 per acre in the western part where land is less fertile with one or two cropping a year.

A mortgage taker enjoys the land and production under his/her control until the land owner pays back the money. The mortgage deeds is usually prepared, and payment is done in the presence of some witness like local matabbors, UP members or UP chairman.

(3) Social structure

Social norms and customs

Social customs and events in the gram are much related to the religion. Various ceremonies such as Khatna (circumcision), Milad (a socio-religious ceremony), Chehlum (spcial pray for departed soul of dead body), Eid-ul-Fitr (celebration after one month fasting), Eid-ul-Azha (sacrificing ceremony), Oaz (Preaching for Islamic life style), etc., are Muslim based events.

Cases of mutual cooperation are very rare in the gram. Some cooperative activities are found such as: (i) funeral activities of some poor people, (ii) marriage of a poor person's daughter, and (iii) assistance to poor during flood.

Women and girl children suffer discrimination against men due to socio-cultural norms. Islamic and Hindu inheritance laws distribute the land unevenly to sons, daughters and wife. The practice of dowry from the bride's family to the groom and early marriage of young girls still prevail. Being regarded as "low" in social status, women and girl children have limited access to resources including education, health and finance throughout their life cycle.

Power structure

In the local society, a leader, referred to as a matabbar, has a power in terms of economy, politics, and judiciary. Matabbars exist in every para. They are generally rich landowner and very influential in decision making, judicial matters, etc. In Algar Char gram, each para is named after their name or names of their forefathers. In many cases they are elected Union Parishad members. Basically their power lies with their wealth. They keep a powerful brigade of followers who work for him as stalwarts. Usually villagers obey and follow the advice and instruction of the matabbars.

At the gram level, the Union Parishad Chairman of Erendabari Union, who lives in the Algar Char gram takes leadership and make decision. At the ward level, members of Union Parishad (UP), elected representatives of the ward, are considered as the leaders of a ward. Exercise of power of UP members are undoubtedly confined in a ward. Some para matabbars are so influential and powerful that UP members do not confront with them. Generally female UP members cannot play any significant role in the ward.

At the Union level, the UP Chairman is the chief executive of the lowest level governmental body. The UP Chairman, usually rich businessman or large agricultural producer, is the most influential person in the union. Being local government representative, they have ties with the political parties.

At the Upazila level, Upazila Nirbahi Officer (UNO) appointed by the Government has the power to hold and chair the meetings of Upazila Parishad. In addition, all related Upazila level officers such as LGED engineers, education officers, bank officers, land ministry officers, police officers in charge, etc., hold the power to influence the villagers before serving them any assistance.

Table 7.6 shows the power structure from para level up to national level.

Table 7.6 Power Structure by Level of Society

| Level | Exerciser of power | Their role |
|--|--|---|
| Para level (an informal sub-division of a village, but very important for every day course in village) | Local matabbar (leader), (100% male) is very influential, generally rich landowner. Each para is named after their name or names of their forefathers. Each para has a matabbar who generally is unopposed in his para. They are not necessarily elected Union Parishad members. Basically, their power lies with their wealth. They keep a powerful brigade of followers who work for him as stalwarts. Usually villagers obey and follow the advice and instruction of the matabbars. They also respect them. | <ul style="list-style-type: none"> • Decision maker in all the issues of a para. • Performs act of judicial matters. (Shalish) the local incidents, Nearly 95% disputes are mediated by matabbar. • Provides informal institutional support to the Union parishad. • Advices the people in their any problems or matter concerning marriage, education, divorce, housing, purchase of properties and other related issues . |

| | | |
|---|---|--|
| <p>Village level (village is a conceptual term. There is no village level local government administration)</p> | <p>There is no formal leadership for village. In a village, someone may be union parishad member or chairman, emerges as decision maker. Sometimes, a matabbar is considered as village chief.</p> | <ul style="list-style-type: none"> • Roles are similar to the matabbar. • Sometimes his advice and orders are carried by the matabbar. |
| <p>Ward level (a unit of local government administration)</p> | <p>Members of Union Parishad are considered as the leaders of a ward. He/she is the elected representative of the ward. Exercise of power of UP members are confined in a ward. But that does not take place everywhere. Some para matabbars are so influential and powerful that UP members do not confront with them. Generally, female ward members cannot play any dominant role in the village.</p> | <ul style="list-style-type: none"> • Participate in Union Parishad programs and meetings • Select Vulnerable Group Development (VGD) card holders • Select list for the elder allowance receiver • Mediation for any local level quarrel • Participate in flood preparedness, rescue and rehabilitation activities • Advise the people in their any problems or matter concerning marriage, education, divorce, housing, purchase of properties and other related issues. |
| <p>Union level</p> | <p><u>Union Parishad Chairman</u> is the chief executive of the lowest level local government body. He is elected through direct vote and accomplishes his term for 5 years. UP Chairmen are most influential persons in a union. They are rich businessmen or agricultural producer. Being local government representatives, they have tie with the political parties.</p> | <ul style="list-style-type: none"> • Participate in Union Parishad programs and meetings • Work as mediator for union level judiciary system. If people fail to get judgment in Para or ward level, they run for Union Parishad. • Participate in any development program launched by the Parishad • Advices the community members in any social issues. |
| <p>Upazila</p> | <p>Upazila Nirbahi Officer (UNO) appointed by the Government is in the power to hold and chair the meetings of Upazila Parishad. Besides UNO, all related Upazila level officers (such as LGED engineer, upazila education officer, bank officer, land ministry officer and the Upazila police officer-in-charge, etc.) hold the power to influence the villagers before serving them any assistance.</p> | <p>UNO:</p> <ul style="list-style-type: none"> • Coordinate with the government program for the village • Ensure law and order situation in the village <p>Officer-in-charge at Upazila:</p> <ul style="list-style-type: none"> • Ensure law and order situation in the village • Mediate any quarreling and disputes • Assist UNO in performing development program for the village <p>Upazila Level Government Officers:</p> <ul style="list-style-type: none"> • Provide government services to the villagers |
| <p>District level</p> | <p>District Judge Court is the popularly known authority for district level. If the dispute is more than normal nature (murder, abduction etc.) the dispute is referred to district court. Besides, villagers have less orientation on the district judicial and legislative authority.</p> | <ul style="list-style-type: none"> • If the dispute is more than normal nature (murder, abduction etc.) the dispute is referred to district court |
| <p>National</p> | <p>Member of Parliament (MP) is still distantly influenced person for Algar Char.</p> | <ul style="list-style-type: none"> • Law maker in the parliament |

(4) Gender balance

Female perform almost all domestic activities including washing utensils and clothes, cleaning up rooms and yards, taking care of children, poultry and livestock, maintaining foodstuffs, preparing fuels, cooking meals, etc., all of which are valuable support for the economic activities of a household. They also sometimes participate in the economic activities in the field as daily laborers or agricultural laborers, to augment their livelihood.

Male are the main players outside houses. They are mainly engaged in economic activities and marketing all day long. Their houses are the places for them to relax by taking rest, taking food, listening radio, and sleeping.

The life of pregnant mothers is always full of death risk but male do not either pay respect or care female. Even in term of food intake female always are deprived. They willingly give more and valuable foods to her husband and male children, let them take meal first, and eat the remaining last.

Although male and female sometimes do same works such as agricultural labor, there exists a big difference in wage, as shown in Table 7.7.

Table 7.7 Difference in Wage between Male and Female by Type of Job

| Job | Average wages | |
|--|---|-----------------|
| | Female (Taka/day) | Male (Taka/day) |
| Agricultural labor (without food) | 50 – 55 | 70 – 80 |
| Agricultural labor (with food) | 25 – 30 | 50 – 60 |
| Non- Agricultural labor (without food) | 50 – 55 | 70 – 80 |
| Non- Agricultural labor (with food) | 25 – 30 | 50 – 60 |
| Any labor during rainy season (without food) | 20 – 25 | 35 – 40 |
| Any labor during rainy season (with food) | 10 – 15 (or equivalent 1 kg rice only) | 25 – 30 |

Source: PRA by DICS, 2002

Male's wage always surpasses that of female, irrespective of the type of job. The difference varies from Tk.15 to Tk.30 per day depending on the job.

(5) Occupation

Table 7.8 provides the type of occupation and the number of people in each occupation by sex.

Table 7.8 Working Population by Sex by Occupation

| Occupation | Male | Female | Total |
|--------------------------------|--------------|--------------|--------------|
| Farming in own field | 725 | 688 | 1,413 |
| Share cropper | 800 | 0 | 800 |
| Daily labor/agricultural labor | 676 | 642 | 1,318 |
| Tailor | 3 | 0 | 3 |
| NGO worker | 0 | 1 | 1 |
| Garments worker | 26 | 25 | 51 |
| Carpenter | 5 | 0 | 5 |
| Gold smith | 1 | 0 | 1 |
| Business | 70 | 2 | 72 |
| Village doctor | 4 | 0 | 4 |
| Fishing | 10 | 0 | 10 |
| Cobbler | 10 | 0 | 10 |
| Teacher | 6 | 2 | 8 |
| Boatmen | 5 | 0 | 5 |
| Handicraft | 2 | 8 | 10 |
| Family welfare agent | 0 | 2 | 2 |
| Barber | 1 | 0 | 1 |
| Care-taker | 0 | 2 | 2 |
| Total | 2,344 | 1,372 | 3,716 |

Source: PRA by DICS, 2002

Economically active population with the age of over 13 years, may be some 1,050 for male, and 1,000 for female. Most male seem to have more than two occupations. Assuming that not all female possess occupation, female who are involved in economic activities also have more than two occupations. Main occupations are self-employed farming, daily labor and agricultural labor, and share croppers. Agriculture related activities are by far dominant occupation in Algar Char gram. Other occupations include includes business, garments, fishing, cobbler, etc. for men, and garments, handicraft, etc., for women.

In the dry season, agricultural work is the main profession, but not sufficient to accommodate all people's employment. Some people go out the village to search jobs. In the wet season, employment opportunities in the gram decrease, due to submergence of agricultural field by raised water level of the Jamuna river. Only jute and aman paddy remain in the field.

(6) Cottage industry

There are several cottage type industries: (i) bamboo and cane base cottage industry; (ii) cloth and jute based cottage industry; (iii) gold and silver based cottage industry; (iv) rice husking mill; and (v) tailoring. All the raw materials for each of the industries are available in the local market. They acquire those skills from their ancestors, elder people of the family, etc. All industries are family based.

(7) Income and expenditure

Annual average income and expenditure by occupation are presented in Table 7.9.

Table 7.9 Annual Average Income and Expenditure Profile by Occupation

Unit: Taka/year

| | Occupation | | | | | | | | | |
|-------------|--------------|--------------|--------------------|--------|-------------|--------------|------------|---------|--------------------|----------------|
| | Large farmer | Small farmer | Daily labor | FWA* | Shop keeper | Agric. labor | Fisher-men | Teacher | Caretaker of road* | Village doctor |
| Income | 190,000 | 30,000 | 19,000/ 9,600 | 68,432 | 30,000 | 25,550 | 31,300 | 55,872 | 14,400 | 50,000 |
| Expenditure | 174,250 | 29,850 | 26,000 | 70,192 | 41,600 | 34,200 | 37,375 | 53,800 | 35,150 | 53,800 |
| Difference | +15,750 | +150 | -7,000/ -16,400 | -1,760 | -11,600 | -8,650 | -6,075 | +2,072 | -20,750 | -3,800 |

Note: Two different figures for daily labor are for male and female respectively.

Remarks: *: female's occupation (family welfare assistant)

Source: Verbal communication with villagers through Focus Group Discussion under PRA by DICS, 2002

Large farmer's earning is the largest with an annual income of Tk.190,000, followed by FWA with Tk.68,400, teacher with Tk.56,000, village doctor with Tk.50,000, etc. On the other hand, daily labor earns the least with an annual income of Tk.9,600 for female, and Tk.19,000 for male.

In most cases, the expenditure surpasses the income. The deficit is filled by credit obtained from different sources, according to the interview to the villagers.

Expenditure by item and by occupation is shown in Table 7.10.

Table 7.10 Distribution of Expenditure by Item by Occupation

Unit: %

| Expenditure item | Large farmer | Small farmer | Daily labor | Family welfare assistant | Shop keeper | Agric. labor | Fisher-men | Teacher | Care taker of road | Village doctor |
|-------------------------|--------------|--------------|-------------|--------------------------|-------------|--------------|------------|---------|--------------------|----------------|
| Food | 45.9 | 77.1 | 84.6 | 66.4 | 74.5 | 73.1 | 72.2 | 72.7 | 65.4 | 65.1 |
| Housing | 7.5 | 5.7 | 2.9 | 12.2 | 4.4 | 6.9 | 7.0 | 5.0 | 7.4 | 12.1 |
| Education | 6.1 | 4.7 | 1.9 | 7.9 | 5.3 | 3.2 | 4.1 | 5.6 | 7.1 | 4.3 |
| Clothes | 11.5 | 3.2 | 2.9 | 5.7 | 5.8 | 5.8 | 6.4 | 6.5 | 6.3 | 6.1 |
| Health care & Medicines | 11.5 | 3.4 | 2.9 | 2.7 | 4.2 | 3.9 | 4.0 | 3.4 | 3.7 | 2.6 |
| Cooking energy | 3.2 | 2.3 | 1.9 | 1.9 | 2.2 | 3.2 | 2.6 | 2.0 | 4.0 | 2.8 |
| Transportation | 14.4 | 3.7 | 2.9 | 3.2 | 3.6 | 3.9 | 3.7 | 4.8 | 6.1 | 7.1 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

Source: JICA Study Team based on PRA by DICS, 2002

Food expenditure is much larger than other expenditures. It ranges from 46% for large farmer to 85% for daily labor. It is observed from the above two tables that food expenditure rate is higher when total expenditure is lower. Other large expenditures are for housing, education, clothes, etc.

The expenditure pattern does not change much by season although expenditure for housing increases before the rainy season and expenditure for transportation also increases in the rainy season. Other expenditures generally decrease a little during the rainy season, suggesting this season's inactive economy.

(8) Education

Literacy rate in Algar Char is 35% for male and 40% for female. Higher literacy rate in female may be due to recent primary education program putting more emphasis on girls.

There are 1,567 school-aged children in the gram, of which 46% or 719 are enrolled. There are two primary schools (government and registered) in Jalal para and Aklas para, one NGO school and one Madrasha in Aklas para and one girls junior high school in Razzak para. In the two primary schools, children – teacher ratio is 65:1. Schools do not have enough capacity to accommodate all school-aged children due to lack of facilities as well as insufficient number of teachers. Drop-out rate as of 2001 was 15%. The causes of drop-out are: (i) early marriage of girls; (ii) poor economic conditions of their families; (iii) lack of communication; and (iv) lack of awareness on value of education by their guardians.

In the girls junior high school, there are 159 girls enrolled. Children-teacher ratio is 26:1. Drop out rate as of 2001 was as high as 40%. The same causes as reported for the primary schools apply to this high rate.

The NGO school has 30 pupils of which 10 are boy, with one teacher. No drop out has been reported. The Madrasha has 70 pupils of which 50 are boy, with one teacher. No drop out has been reported either.

(9) Health, nutrition and sanitation

Food intake

Most villagers take rice as staple food. Side dishes include beans, potatoes, sweet potatoes, and some vegetables. Due to poverty, however, food intake is generally not sufficient in terms of both nutrition and calories, which make them physically weak and susceptible to malnutrition.

About 25 to 30% of people cannot take three meals a day. Meat is too expensive for most of them to take. They take it only once a year at Eid-ul Azha, when cattle is slaughtered. Those who raise poultry, duck and milk cow, sell eggs and milk in the market to purchase essential commodities and to meet other expenses.

Nutritional disorders observed in the gram are anemia, night blindness, etc.

Diseases

Major diseases reported are fever, dysentery, jaundice and diarrhea. Seasonal changes in the number of cases of these diseases are shown in Table 7.11.

Table 7.11 Seasonal Change in Occurrence of Diseases

Unit: Number of cases

| Diseases | Winter | Autumn | Rainy season | Summer |
|-----------|--------|--------|--------------|--------|
| Fever | 1,000 | 700 | 700 | 350 |
| Dysentery | 200 | 200 | 200 | 800 |
| Jaundice | 50 | 60 | 60 | 120 |
| Diarrhea | 180 | 200 | 400 | 700 |

Source: PRA by DICS, 2002

Cases of fever increase in winter, while other diseases increase in summer after the rainy season.

Available health services

Health services utilized by the villagers are shown in Table 7.12.

Table 7.12 Health Services and Their Utilization

| % population | | Name of Health Service | Distance from the village | Name of the service | Remarks |
|--------------|--------|---|--------------------------------|--|---|
| Male | Female | | | | |
| 34 | 26 | Village Quack | Within village | <ul style="list-style-type: none"> Treatment Prescription On general ailments common diseases | Available all the time on payment |
| 18 | 11 | Village Quack at Jigabari | 2 km away from center | <ul style="list-style-type: none"> Treatment Prescription On general ailments common diseases | Available all the time on payment |
| 2 | 40 | FWA | Center of the village | <ul style="list-style-type: none"> Family planning EPI | |
| 6 | 4 | Sanandabari Union health Center | 6 km | <ul style="list-style-type: none"> General disease | Available all the time on payment |
| 15 | 3 | Gaibandha Government Hospital | 25 km across the Jamuna river | <ul style="list-style-type: none"> Delivery Other disease | Service available but expensive and long distance |
| 10 | 3 | Rabeya Clinic, gaibandha. A private concern | 25 km across the Jamuna river | <ul style="list-style-type: none"> Delivery | Service available but expensive and long distance |
| 1 | 1 | Rangpur Medical College | 138 km across the Jamuna river | <ul style="list-style-type: none"> Emergency & serious patients | Service available but expensive and long distance |
| 0 | 2 | Traditional Birth Attendants | Within village | <ul style="list-style-type: none"> Delivery | Done in the village |
| 4 | 6 | Left without any health service | | Moulana religious preacher | Moulana religious preacher |

Source: PRA by DICS, 2002

More than 50% of people receive health services within the gram or nearby gram. Village doctors are the most accessible health services for the majority of villagers. More female go to Family Welfare Assistant in the gram. In case of emergency or serious diseases, patients have to go to hospitals in Gaibandha or Rangpur to receive high quality medical services. It takes long time to go there and treatment generally costs much, which makes access to those facilities difficult. There are several cases reported where patients died on the way to the hospital on the boat crossing the Jamuna river.

Sanitary conditions

Sanitary conditions in the gram are largely good in terms of access to drinking water and hand washing practices. The sanitary latrine has yet to be introduced. Sanitary conditions are summarized in Table 7.13.

Table 7.13 Sanitation Conditions

| Sanitation Practices | | Rate of user | Remarks |
|---------------------------------|------------|--|--|
| Type of latrine used | Hanging | 88.0% | <ul style="list-style-type: none"> • 88% people use hanging latrine. • There are 14 latrines in public places, 10 at schools, 2 at Algar Char Bazaar, and 2 in Jalil Dawani para (both out of order). There is no sanitary latrine. • Woman and adults use latrine during dry season. Some children use latrine while others use open field. • But in the wet season, the total sanitation system break down, they use highland, boats and vela for defecation. Women defecate in the night. They faced enormous trouble. • It costs Tk.100 to 125 to make hanging latrine. In rainy season and flood all of latrine goes under water. All of them disrupted. |
| | Sanitary | 0.5% | |
| | Open field | 10.5% | |
| Drinking Water | | Nos. of tube well is approximately 150 | <ul style="list-style-type: none"> • People are aware of pure drinking water • Per 4 family 1 tube well is accessible on average • Since water is not available in the ponds, tube well is the available water in the village. |
| Hand washing before taking food | | | Awareness level is high due to CARE's intervention. |

Source: JICA Study Team based on PRA by DICS, 2002

Practice of hand washing has been promoted as a part of CARE's FPP. The FPP has trained four women as Community Based Volunteer (CBV) who extended acquired knowledge on sanitation and diseases diagnosis to other village women. As a result, with the free distribution of soaps, hand washing has been practiced widely. One CBV interviewed told that case of diarrhea has not been reported since hand washing was introduced.

(10) Energy

Cooking energy sources used by the villagers include: fuel wood, Dhaincha (*Sesbania spp.*), Kaisha, cow dung cake, wheat straw, jute stick, bamboo and its leaves. They collect them within their homestead area, in the field after harvest crops, and along the river side. When the materials are

short, villagers buy them in the market. They store fuel in the dry season for use in the wet season. When they face shortage of cooking fuel in the flooding time, they reduce the cooking time.

(11) Credit

Various credit facilities are available in the gram. There is one private bank, four registered NGOs, and nine unregistered local samitees, which extend loans. More borrowers apply for loans to local samitees, as the bank needs collateral for application and as NGOs confine borrowers to members only. Some 1,000 villagers get loan from local samitees, 93 from registered NGOs and 20 from the bank. Objectives of loan application are mainly for production activities such as poultry, livestock, agriculture, shallow pump, etc., as well as land lease and mortgage.

Credit schemes available in Algar Char is shown in Table 7.14.

Table 7.14 Credit Facilities Available in Algar Char

| Sources of Credit | Name of Credit provider | Nos. of Borrowers | | Rate of Interest | Utilization of Credit |
|--|--|-------------------|-----|------------------|--|
| | | F | M | | |
| Bank | Agrani Bank Ltd. | 2 | 18 | 12.5 % yearly | Agricultural, education, business, land leasing, etc. |
| Registered NGOs | Prodipon | 33 | 0 | 15 % yearly | Poultry, livestock & land leasing. |
| | Gana chetona | 20 | 0 | 10 % yearly | Poultry, livestock & land leasing, housing. |
| | Gana unnayan sangstha | 20 | 0 | 12 % yearly | Poultry, livestock & land leasing, house repairing. |
| | Swadhin bangla bahumukhi sangstha | 0 | 20 | 15 % yearly | House hold works, education, land leasing, agricultural works. |
| Un-registered local level samitees (organizations) | Algar Char Bazaar Businessman Samitee | 5 | 295 | 4 % monthly | Purchasing of machine, land purchase, land mortgage, land lease, business, house repairing, crops production, flood damaged etc. |
| | Krishi Unnayan Samabaya Samitee | 0 | 116 | 5 % monthly | Same as above |
| | North Algar Char -Jigabari Fishermen's Society | 0 | 116 | 10% monthly | Same as above |
| | Jubo Unnayan Samitee | 190 | 30 | 10% monthly | Same as above |
| | Satata Samabaya Samitee | 23 | 10 | 5 % monthly | Same as above |
| | Priti Bandhon Samabaya Samitee | 21 | 12 | 8 % monthly | Same as above |
| | Garib Bandhu Samabaya Samitee | 42 | 0 | 6 % monthly | Same as above |
| | Jigabari Bazar Bonik Samitee | 20 | 5 | 10% monthly | Same as above |
| | West Algar Char Krishi Unnayan Samitee | 116 | 0 | 10% monthly | Same as above |

Source: PRA Study by DICS, 2002

7.1.5 Agriculture and Marketing

(1) Agricultural land use and crop yield

Agricultural land use in Algar Char gram is presented in Table 7.15, based on the sample survey. Agricultural land accounts for 78.9% of the total area with cropping intensity of 1.32.

The farm land is divided into the paddy field occupying 355 ha or 63% of the agricultural land and the upland field with 207 ha or 37%.

The average yield of cereals (Boro HYV) is 4.23 ton/ha in Gaibandha district but higher at 5.13 ton/ha in the Study Area.

Table 7.15 Agricultural Land Use of Algar Char by Para

| Para : | 1. Jalal Sarkar & Hossain Member | 2. Mokubul Bapari | 3. Rezzak Chairman | 4. Eklas Member & Samad Fakir | 5. Jovnal Member & Hsan Khalifa | 6. Abdul Jalil Dewali | 7. Mehar munshi | TOTAL |
|-----------------------|----------------------------------|-------------------|--------------------|-------------------------------|---------------------------------|-----------------------|-----------------|--------|
| Gross Area : (ha) | 153.10 | 112.40 | 35.40 | 92.60 | 153.20 | 93.10 | 72.90 | 712.60 |
| Farm Land : (ha) | 137.00 | 109.00 | 28.00 | 81.00 | 143.00 | 34.00 | 30.00 | 562.00 |
| Paddy : (ha) | 97.00 | 75.00 | 13.00 | 58.00 | 84.00 | 15.00 | 13.00 | 355.00 |
| Up-land : (ha) | 40.00 | 34.00 | 15.00 | 23.00 | 59.00 | 19.00 | 17.00 | 207.00 |
| Crops and Area (ha) | | | | | | | | |
| Aus (LV) | | | | | | | | 0.00 |
| Aus (HYV) | | | | | | | | 0.00 |
| Aman (LV) | 20.00 | | 4.00 | | | 4.00 | 13.00 | 41.00 |
| Aman (HYV) | | 30.00 | | | 4.00 | | | 34.00 |
| Boro (LV) | 20.00 | | 4.00 | | | | | 24.00 |
| Boro (HYV) | 20.00 | 28.00 | 4.00 | 3.00 | 80.90 | | | 135.90 |
| Wheat | 20.00 | 30.00 | 5.00 | 20.00 | 4.00 | 4.00 | 4.00 | 87.00 |
| Jute | 20.00 | 30.00 | 5.00 | | 9.60 | 3.00 | | 67.60 |
| Pulses | 7.00 | | 2.50 | | | 6.00 | | 15.50 |
| Potato | | 1.00 | 0.50 | | | | | 1.50 |
| Sweet Potato | 20.00 | | 0.50 | | | 0.50 | | 21.00 |
| Vegetable | 1.00 | | 0.23 | | | 0.50 | 0.50 | 2.23 |
| Suger Cane | 3.00 | | 0.25 | | | | | 3.25 |
| Spices | 1.00 | 2.00 | 0.13 | 2.00 | 0.80 | 0.25 | | 6.18 |
| G.Nut | 9.00 | 2.00 | 4.00 | 3.00 | | 16.00 | | 34.00 |
| Water Melon | | | | | | | | 0.00 |
| Oil Seed | 3.00 | 28.00 | 0.10 | 20.00 | 40.40 | 0.50 | 3.00 | 95.00 |
| China | 10.00 | 60.00 | 10.00 | 20.00 | | 31.00 | 20.00 | 151.00 |
| Otbhers | | | | 20.00 | | 1.00 | | 21.00 |
| Total Area | 154.00 | 211.00 | 40.21 | 88.00 | 139.70 | 66.75 | 40.50 | 740.16 |
| Cropping Intensity | 1.12 | 1.94 | 1.44 | 1.09 | 0.98 | 1.96 | 1.35 | 1.32 |

Source: JICA Study Team

(2) Copping calendar

The cropping calendar of Razzak Chairman para is taken as the typical cropping calendar in Algar Char gram (Figure 7.1). Based on this, the following are observed.

Cropping season in Bangladesh is divided into three: Kharif I, Kharif II and Rabi. Kharif I corresponds to pre-monsoon cropping season from mid-March to mid-June. Kharif II is the cropping in the wet season from mid-June to mid-October. Rabi crops are cultivated in the post-monsoon period or dry season which lasts for five months from mid-October to mid-March. Cropping pattern in Algar Char gram, generally follows this schedule.

Crops cultivated in the Kharif season are limited mostly to rice and jute, while in the Rabi season, various kinds of crops including rice, wheat, pulses, groundnut, vegetable, etc. are cultivated. Sugarcane is cultivated throughout a year.

| Name of Crops | (ha) | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|------------------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Aus (LV) | | | | | | | | | | | | | |
| Aus (HYV) | | | | | | | | | | | | | |
| Aman (LV) | 4 | | | | | | | | ● | — | — | — | ● |
| Aman (HYV) | | | | | | | | | | | | | |
| Boro (LV) | 4 | ● | — | — | — | ● | | | | | | | |
| Boro (HYV) | 4 | | ● | — | — | | ● | | | | | | |
| Wheat | 5 | | | ● | — | | | | | | | | |
| Jute | 5 | | | | ● | — | — | — | ● | | | | |
| Pulses (Lentils) | 2.5 | | | ● | | | | | | | | ● | — |
| Potato | 0.5 | | ● | | | | | | | | | ● | — |
| Sweet Potato | 0.5 | | ● | | | | | | | | | ● | — |
| Vegetables | 0.1 | | ● | | | | | | | | | ● | — |
| Sugar Cane | 0.25 | ● | — | — | — | — | — | — | — | — | — | — | ● |
| Spices | 0.13 | | ● | | | | | | | | | ● | — |
| G. Nut | 4 | | | ● | | | | | | | | ● | — |
| Water Melon | | | | | | | | | | | | | |
| Oil seed | 0.1 | | | ● | | | | | | | ● | — | — |
| Othersb (China) | 10 | | | ● | | | | | | | | ● | — |

Source: JICA Study Team

Figure 7.1 Cropping Calendar of Razzak Chairman Para

(3) Agricultural input

Use of various agricultural input materials is summarised in Table 7.16. The application of fertilizer is generally poorer except for cereals.

Table 7.16 Agricultural Input

Unit: kg/ha

| Crops Input | HYV (BR-8) | L.V Aman | Wheat | Jute | Sweet potato | Mustard | Groundnut | Sugarcane | Onion |
|-----------------|---------------|-------------|--------------|--------------|------------------|--------------|-----------|-----------|-------|
| (1) Seed | 127 (30) | 155 (85) | 137 (120) | 57 (30) | 1,533 (2,500) | 18 (10) | 111 | 883 | 11.5 |
| (2) Fertilizers | | | | | | | | | |
| Urea | 253 (210) | 175 (70) | 170 (170) | 121 (121) | 21 (63) | 108 (108) | - | 125 | 13 |
| TSP | 137 (125) | 0 (0) | 119 (119) | 3 (0) | 0 (0) | 69 (69) | - | 73 | 77 |
| MP | 39 (70) | 0 (0) | 40 (40) | 6 (0) | 0 (0) | 6 (12) | - | 10 | 153 |

Source: JICA Study Team

() by DAE

(4) Irrigation

For farming in the Char area the irrigation facilities are required in the dry season. In the area, the pump facilities are provided for the irrigation covering the paddy field. Table 7.17 shows the typical pump facilities.

Table 7.17 Typical Irrigation Facilities

| Para | Items | Paddy (ha) | Irrigated Area (ha) | Irrigated System | Pump Facilities | | | | |
|------|-------------------------------------|----------------|---------------------------|---------------------|-----------------|------|-------------|----|------|
| | | | | | Q (l/s) | (mm) | Head (m) | HP | Unit |
| 1. | Jaynal Member & Hasan Khalila | (IRRI) 0.05 | 0.05 | Pump | 3.5 | 100 | 26 | 12 | 1 |
| 2 | Jala Sarker & Hosain Member | (IRRI) 0.65 | 0.65 | Pump | 4.0 | 100 | 26 | 12 | 1 |
| 3 | Jala Sarker & Hosain Member | (BR9) 0.13 | 0.13 | Pump | 3.5 | 100 | 25 | 12 | 1 |
| 4 | Eklas Member & Samad Fakir | (BR8) 0.29 | 0.29 | Pump | 4.0 | 100 | 29 | 12 | 1 |
| 5 | Eklas Member & Samad Fakir | (BR8) 0.80 | 0.80 | Pump | 3.0 | 100 | 29 | 16 | 2 |
| 6 | Razzak Chairman | ((BR8) 0.66 | 0.66 | Pump | 4.0 | 100 | 32 | 16 | 1 |
| 7 | Jala Member & Hosain Khalila | (BR8) 0.18 | 0.18 | Pump | 4.0 | 100 | 38.5 | 12 | 1 |

Source: JICA Study Team

(5) Extension works

Extension activities are organized through regular visits by the Block Supervisors to the village and para. Block Supervisors are responsible for distribution and adoption of modern technologies by farmers. Block Supervisors services, however, are insufficient in the project area because of

limited staff.

(6) Fishery

Fishery is considered one of the most important sources of cash-income. Table 7.18 summarizes the production in natural fishing and the fish culture respectively.

In Algar Char gram, the Jamuna river is the most important for natural fishing. On the other hand, the fish ponds are controlled by private owners with the net-income of Tk. 40,000 per year with a typical pond of 1.0 ha surface area.

Table 7.18 Fish Production in Natural and Cultural Conditions

| Area & Para Items | CHAR Jala Sarker & Hosain Member (1) | | | | | | | | |
|----------------------|---|--------------------------|-------------------------|----------------|------------------------|--------------------------|-------------------|-----------|--|
| Natural Fishing | Selling Amount (Kg/Year) | | Selling Price (Tk/Year) | | Unit Price | Others | | | |
| (1) Lui (L) | - | | - | | 40 Tk/kg | 1. Place of Fishary: N/A | | | |
| (2) Lui (S) | - | | - | | | 1) Dry Season N/A | | | |
| (3) Milka | - | | - | | | 2) Wet Season N/A | | | |
| (4) Katura | - | | - | | | 3) All the Year N/A | | | |
| (5) Irisi | 400 kg/year | | 16,000 Tk/year | | | 2. Fishing License: N/A | | | |
| (6) Putty Carp | - | | - | | | 3. Type of Caught: N/A | | | |
| (7) Shrimp | - | | - | | | 4. Marketing: River Bank | | | |
| (8) Club | - | | - | | | | | | |
| (9) Others | - | | - | | | | | | |
| Fish Culture | 1. No. of Pond 1 | | 2. Area (ha) 1.0 | | 3. Water Depth (m) 3.0 | | 4. Owner: Private | | |
| 5.Name of Fish | Amount of Finger lings | Price of Finger lings | Feed Sources | Amount of Feed | Price of Feed | Production | Selling Price | Harvest C | |
| (1) Lui (L) | 27 kg/ha | 217 Tk/kg | Oil cabe & Husk | 263 kg/year | 2,104 Tk/year | 800 kg/ha | 40,000 Tk/year | 12 month | |
| (2) Lui (S) | | | | | | | | | |
| (3) Milka | 26 kg/ha | 183 Tk/kg | Husk | 870 kg/year | 2,610 Tk/year | 608 kg/ha | 18,240 Tk/year | 12 month | |
| (4) Katura | 13 kg/ha | 163 Tk/kg | Husk·floor, oil cake | N/A | N/A | 605 kg/ha | 21,175 Tk/year | 12 month | |
| (5) Irisi | | | | | | | | | |
| (6) Putty Carp | 13 kg/ha | 263 Tk/kg | Husk | 460 kg/year | 1,380 T/year | 279 kg/ha | 10,462 Tk/year | 12 month | |
| (7) Shrimp | | | | | | | | | |
| (8) Club | | | | | | | | | |
| (9) Silver Cup | 24 kg/ha | 200 Tk/kg | Shacola | 750 kg/year | 938 Tk/year | 550 kg/ha | 15,125 Tk/year | | |
| Note | Survival Rate: 65~75% | | | | | | | | |

Source: JICA Study Team

(7) Livestock and poultry

According to the questionnaire survey at each para in Algar Char gram, there are many kinds of livestock, namely cattle, goat, sheep, chicken and duck. Number of cattle, goat, and sheep are 1,230, 1,300 and 340, respectively. Generally, about 80% of all animal feed comes from cultivated land and 20% from other sources such as embankment and road sides. No managed forage production is available.

(8) Marketing

There are three bazaars in Erendabari Union: Jigabari bazaar, Algar Char bazaar and Horiehandi

bazaar, and Algar Char bazaar is located in Razzak Chairman para.

Algar Char bazaar is a public market, managed by Union Parishad. The market opens three times per week, with some 75 permanent and 150 temporary shops engaging. Middleman, so called “Paikari”, and shopkeeper themselves, transport most of commodities, such as food and other daily necessities. They bring them from neighbouring markets, such as Sanandabari (6 km away), Jigabari (1 km), Fulchhari (32 km) and Gaibandha (22 km).

Bazaar tax is collected from shop owners in proportion to the sales amount. Usually, the tax is collected not by Union Parishad, but by a specific person, called auction bidder. The Revenue Department, under the Ministry of Finance select the auction bidder for bazaar tax collection through bidding. Only the person who makes a successful bid can collect the tax at local market. According to Erendabari Union, the auction bidder collects around Tk.20,000 to Tk.25,000 per year at Jigabari bazaar, and he pays around Tk.8,000 to Tk.9,000 per year to Union Parishad. The balance becomes profit for the auction bidder.

Characteristics of the three markets in Erendabari Union are summarized in Table 7.19.

Table 7.19 Characteristics of the Three Markets in Erendabari Union

| Name | 1. Jigabari bazaar | 2. Algar Char bazaar | 3. Horiehandi bazaar |
|------------------------|-----------------------|----------------------|-----------------------|
| Place | Jigabari | Algarchar | Horiehandi |
| Distance (km) from UP | 0.0 | 2.0 | 9.0 |
| Area (m ²) | 10,940 | 11,320 | 16,264 |
| Owner | Union Parishad | Union Parishad | Union Parishad |
| Frequency (days/week) | 3 | 3 | 2 |
| Number of user | 5,000 | 3,000 | 5,000 |
| Number of tenant | P: 100, T: 200 | P: 75, T: 150 | P: 150, T: 250 |
| Tenant Fee | Tk. 6,000/person/year | Tk.3,500/person/year | Tk. 9,000/person/year |
| Taxation system | Collected by bidder | Collected by bidder | Collected by bidder |

Source: Fulchhari Upazila Office.

Note: P: Permanent Tenant, T: Temporary Tenant

Main crops grown in the Study Area are rice, wheat, tomatoes, chillies, garlic, onions, potatoes, sweet potatoes, mustard, jute and ground nuts. Livestock and poultry products include cattle, goat, chicken, duck, chicken eggs, duck eggs and milk. Fish species caught are Rui, Irish, Puty Carp, Katra, Silver Carp and Milka. Most products for selling are shipped to local bazaar, such as Algar Char bazaar, Sanandhabari and Jigabari bazaar, through middlemen, or sold directly by farmers.

Most agricultural input, such as seed, fertilizer, manure and insecticide, are available in Jigabari bazaar and Algar Char bazaar, and farmers living in the Study Area purchase them from the local market directly. As for fishery production, fingerling of such species as Lui, Milka, Katra, Puty Carp and Silver Carp, are available in Gaibandha (20km away from the Study Area) or Naogaon (135km away), and some kinds of fingerling are sold also at Jigabari and Algar Char bazaars. Oil

cake, husks and cow dung are used as feed in the area, and farmers buy them from villagers and/ or local markets.

Most rice produced in the Study Area is marketed. Farmers sell their paddy products, such as IRRI BR8, a high yielding variety of Boro, at Tk.7.4 per kg on average to their landowner or middleman. Weight of paddy is reduced to about 68% after milling rice, and thus, price of paddy at farm gate is equivalent Tk.10.9 per kg of rice. On the other hand, retail price of Boro rice at local bazaar is around Tk.14 per kg. Shipping cost, including cost for parboiling, drying, milling and transportation, is estimated at Tk.3.1 per kg on average, and retail price of Boro rice is about 1.3 times of farm gate price in the Study Area. According to the key informant survey conducted by the JICA Study Team on March 2002, average cost of parboiling is Tk.0.12 per kg, and average drying and milling cost are Tk.0.25 per kg and Tk.0.2 per kg respectively. The balance of Tk.2.53 per kg, 18 % of retail price of Boro rice, is considered to be profits, including transportation cost, of parboiling facility's owner and/or local traders.

7.1.6 Rural Infrastructure

(1) NGO's activities for rural infrastructure development

CARE Bangladesh has implemented various physical measures for rural development in Algar Char gram as shown in Table 7.20, in cooperation with a partner NGO (SKS: Samaj Kallayan Sangstha) through FY2000/01.

Table 7.20 NGO's Activities for Rural Infrastructure Development

| No. Name of Para | Item | Component |
|----------------------------------|---|---|
| 1. Jalal sarker/ Hossain member | Primary school | Plinth raising with slope protection by vegetation, providing tin building, hand tubewells, community latrines |
| 2. Mokbul bapari | None | |
| 3. Razzak chairman | 1)Algar Char bazaar 2)Girls secondary school | 1)Plinth raising, providing bazar Sheds, community latrines 2)Plinth raising, providing tin building, hand tubewells, community latrines |
| 4. Aklas member/ Samad fokir | Madrasha | Plinth raising, providing tin building, hand tubewells, community latrines |
| 5. Joynal member/ Hassan khalifa | None | |
| 6. Zolil dewani | None | |
| 7. Maher munshi | None | |
| Others | Village trunk road | Vegetation along both road edge (approximately 1 km) |

Source: Erendhabari Union Parishad office

A primary school, a madrasa and a girls' secondary school are renovated by CARE funded project with raising of plinth and provision of hand tubewells and community latrines. No intervention, however, has been done to government primary school existed at Joynal member/ Samad fokir para due to CARE's policy to give priority to the private sector.

A local bazaar located at Razzak chairman para, namely Algar Char bazar was improved by raising plinth with a height of about 1.5 m. The earth for plinth raising was borrowed by digging paddy land near the bazaar. The borrow pit is utilized as a fish pond organizing a market samittee of Algar Char bazaar.

The partner NGO (SKS) provided trees and grasses along the main trunk road with length of 1 km against bank erosion, namely Rain tree, Mahogany, Sissoo trees and Dolkonbi, Binna supa grasses, etc, and also engaged one woman as care taker of those trees and grasses for maintenance.

(2) Rural communication

(a) Village roads

One main village trunk road categorized as R2 (Rural Road Class 2), running from north to south within the Algar Char gram, connects to Jigabari where union parishad office is located about 1 km north from the center of the gram. Katcha (without pavement) roads with length of 5.82 km exist while there is no pucca (with pavement) within the gram as shown in Table 7.21. Of the total road length, 3.1 km are elevated, which were not submerged during the 1998 flood. Remaining 2.7 km length of the road are submerged even during the normal flood. Zolil Dewani (No.6) and Maher Munshi (No.7) paras located at the west side of the gram have no village road excepting footpaths as these paras were formed after the 1998 flood. The villagers of the paras are forced to go through the sand dune to public facilities such as bazaar and school.

Table 7.21 Length of Village Road in Algar Char Gram

| No | Name of para | Population (no.) | Homestead area (ha) | Length of village road (m) | | Road density | |
|------------------------|----------------------------------|---------------------|---------------------------|-------------------------------|--------------|--------------|------------|
| | | | | Total | (Elevated) | (m/people) | (m/ha) |
| 1. | Jalal Sarker/ Hossain member | 740 | 14.9 | 1,720 | (1,300) | 2.3 | 115 |
| 2. | Mokbul bapari | 262 | 3.0 | 400 | (130) | 1.5 | 133 |
| 3. | Razzak chairman | 650 | 6.6 | 1,450 | (1,140) | 2.2 | 220 |
| 4. | Aklas member/ Samad fokir | 579 | 11.1 | 1,150 | (270) | 2.0 | 104 |
| 5. | Joynal member/ Hassan Khalifa | 563 | 9.5 | 1,100 | (260) | 2.0 | 116 |
| 6. | Zolil dewani | 158 | 4.1 | - | (-) | - | - |
| 7. | Maher munshi | 187 | 2.9 | - | (-) | - | - |
| Total (Average) | | 3,139 | 52.1 | 5,820 | 3,100 | 1.9 | 112 |

Source: Questionnaire survey and topographic survey by the JICA Study Team

While the above elevated roads are used as sheltering places, about 200 households of refugees from Zolil Dewani Para (No.6) and Maher Munshi Para (No.7) within Algar Char gram and other unions located at unstable chars, lived on the main trunk road of the gram and other higher plinth sheltering places for three to four months during the 1998 flood.

Those roads were raised by LGED in the last decade with villagers contributing earth work labor with a remuneration of about Tk.100 per day. However, there is no community organization for

road maintenance works. Erendabari Union Parishad office has engaged 10 women selected from poor families as road maintenance labors covering 20 km length including the road within Algar Char gram with a remuneration of Tk.450 per two weeks with four years contract.

(b) Water transport

Boat landing place is available at Jigabari gram of Erendabari Union next to Algar Char gram to the north. Villagers go to Gaibandha municipality, which is their administrative district for government services crossing the Jamuna river about 25 km away from Algar Char gram by taking three hours in the dry season and 2.5 hours in the rainy season, respectively. Villagers, however, have a marketing occasionally at Sanandhabari growth center in Jamalpur District, located at 6 km away from the gram by taking about 1.5 hours on foot in the dry season and one hour by boat in the rainy season respectively. Table 7.22 shows the number of boat users a day for going to Sanandhabari growth center during the rainy season.

Table 7.22 Number of Boat Users in Algar Char Gram

| No. | Name of Para | Population (no.) | No. of boat users a day for Sanandhabari during rainy season (no./day) |
|-----|-------------------------------|------------------|--|
| 1. | Jalal Sarker/ Hossain member | 740 | 35 |
| 2. | Mokbul bapari | 262 | 55 |
| 3. | Razzak chairman | 650 | 20 |
| 4. | Aklas member/ Samad fokir | 579 | 25 |
| 5. | Joynal member/ Hassan Khalifa | 563 | 35 |
| 6. | Zolil dewani | 158 | 40 |
| 7. | Maher munshi | 187 | 80 |
| | Total | 3,139 | 290 |

Source: Questionnaire survey by JICA Study Team

(c) Telecommunications

Telecommunication facilities are not available in Algar Char gram. For emergency, villagers go to Sanandhabari 6 km away on foot during the dry season and by boat during the rainy season by taking more than one hour. Generally they communicate with outside by post mail.

(3) Marketing facilities

One local market, namely Algar Char bazaar improved by CARE in year 2001, is available in Razzak Chairman para (No.3), which open on Saturday, Monday and Wednesday. Area of market is about 5,000 m² with 140 m² of market sheds, one hand tubewell and two community latrines. Villagers belonging to No.3, No.4, No.5 and No.7 usually go to this market. On the other, villagers lived in No.1, No.2 and No.6 go to Jigabari bazaar located at next northern gram for their convenience. Occasionally, once a month, they go to Sanandhabari growth center belonging to Jamalpur District 6 km away and/or Gaibandha growth center 25 km away, by boat and on foot taking more than 2 ~ 3 hours.

(4) Rural water supply by hand tubewell

Present status of tubewells are summarized by para in Table 7.23. There are 62 tubewells including both government and private ones in Algar Char gram, out of which 16 were inundated in the 1998 flood. Coverage by the flood condition shows that population service ratio by existing tubewells which shows Razzak Chairman para (No.3) is insufficient with coverage of 163 population per one tubewell in comparison with other paras.

Table 7.23 Existing Numbers of Hand Tubewell in Algar Char Gram

| No | Name of Para | Population (no.) | Numbers of tubewell (no.) | | | Coverage by the flood condition (popul./well.) |
|------------------------|----------------------------------|------------------|---------------------------|---------------------------------|---|--|
| | | | Total nos.of tubewell | Nos. of inundated in 1998 flood | Nos.of tubewell available during flood season | |
| 1. | Jalal Sarker/ Hossain member | 740 | 20 | 10 | 10 | 74 |
| 2. | Mokbul bapari | 262 | 5 | 0 | 5 | 52 |
| 3. | Razzak chairman | 650 | 4 | 0 | 4 | 163 |
| 4. | Aklas member/ Samad fokir | 579 | 12 | 0 | 12 | 48 |
| 5. | Joynal member/ Hassan khalifa | 563 | 15 | 0 | 15 | 38 |
| 6. | Zolil dewani | 158 | 4 | 4 | 0 | - |
| 7. | Maher munshi | 187 | 2 | 2 | 0 | - |
| Total (Average) | | 3,139 | 62 | 16 | 46 | (68) |

Source: Questionnaire survey by JICA Study Team

While DPHE is supporting villagers to have safe water, if they prepare amount of Tk.750 for one tubewell, DPHE subsidizes the remaining construction cost including materials which costs Tk.2,700 on average. Then, all tubewells existed in the gram are maintained by benefited villagers. Average depth of existing tubewells in the gram is 17 m, and iron and arsenic are detected from some of these tubewells.

(5) Sanitary latrine

Table 7.24 shows the number of sanitary latrines and coverage rate by household. There exist 17 sanitary latrines with coverage of 2.6% in Algar Char gram. All sanitary latrines available in Algar Char gram is constructed on the project basis by DPHE, NGOs, etc. While construction cost including materials is about Tk.2,000 per latrine, villagers who are benefited, contribute labor for construction.

Table 7.24 Sanitary Latrine in Algar Char Gram

| No | Name of Para | Household (no.) | Nos. of sanitary latrine (no.) | Coverage (no./HH) |
|------------------------|------------------------------|-----------------|--------------------------------|-------------------|
| 1. | Jalal Sarker/Hossain member | 142 | 2 | 1.4% |
| 2. | Mokbul bapari | 51 | 1 | 2.0% |
| 3. | Razzak chairman | 127 | 0 | - |
| 4. | Aklas member/Samad fokir | 114 | 8 | 7.0% |
| 5. | Joynal member/Hassan khalifa | 111 | 6 | 5.4% |
| 6. | Zolil dewani | 31 | - | - |
| 7. | Maher munshi | 35 | - | - |
| Total (Average) | | 661 | 17 | (2.6%) |

Source: Questionnaire survey by JICA Study Team

As it is quite difficult to maintain sanitary latrines as villagers avoid to dispose feces and urine of unrelated persons, so that DPHE recommends not to provide community latrines except public facilities such as school and local bazaar.

(6) Rural electrification

Algar Char gram is not electrified while electricity line is available up to Sanandhabari Union next to Erendhabari Union.

(7) Education facilities

Some schools are available in Algar Char gram, one primary school (class 1 to 5) at Jalal para (No.1), one Secondary girls' school (class 6 to 8) at Razzak para (No.3) and a Madrasha at Aklas para (No.4) of which plinth level was raised by the CARE project. Furthermore, another one government primary school exists at Aklas para (No.4) with 270 students and 8,200 m² of ground area, which are inundated every year during flood. Table 7.25 shows education facilities existed in the gram with detailed data.

Table 7.25 School/ Madrasha of Algar char Gram

| No. | Name of Para | School | Total space (sq.m) | No.of student | No.of teacher |
|--------------|-----------------------------|-----------------------------|--------------------|---------------|---------------|
| 1. | Jalal Sarker/Hossain member | 1)Primary school | 1,174 | 190 | 4 |
| 3. | Razzak chairman | 2)Secondary girls' school | 2,960 | 159 | 6 |
| 4. | Aklas member/Samad fokir | 3)Government primary school | 8,200 | 270 | 3 |
| | | 4)Madrasha | 4,200 | 70 | 1 |
| Total | | | 16,534 | 689 | 14 |

Source: Questionnaire survey by JICA Study team

7.1.7 Floods

(1) Flood environment

The Algar Char gram is situated in the active floodplain on the left bank of the Jamuna river. In the course of time the Algar Char gram has become an Attached Char to the left bank. The gram stretches about 2.0 km in the north-south and 2.5 km in the east-west direction. Due to its location in char areas of the Jamuna river, the Algar Char gram is essentially flood-prone and experiences flood of some magnitude every year. The villagers of Algar Char gram are beset with manifold problems during the flood season. On the one hand, they are to survive in the face of inundation of homesteads, on the other, to stay alive, food is to be procured within their meagre resources in a scarce situation. Damage to their household properties, particularly the livestock and homesteads, is a regular feature in every flood.

People of Algar Char have to take preparation to meet the annual flood by procuring 'chira', 'muri', 'gur' and other rural food items with the scanty means they have. They seem to be destined to live on flood prone and eroding chars without a flood warning system in place. They are to depend on natural symptoms to understand about an approaching flood and look for a shelter when their houses are inundated or eroded. There are not enough rooms in the three schools cum shelters of the village during a flood season. Many evacuee families pass days and nights in open-air refuge places or on the unsubmerged roads. Even if a family gets space in a shelter there are many other problems they have to overcome. Inadequate food, problems of sanitation, scarcity of drinking water and medicine, lack of safety and security are some of the distressing problems the villagers confront in shelters/refuge places.

Some paras of the village are situated on the erosion prone Jamuna channel banks. In case of immediate threat to the homesteads due to the approaching erosion, villagers are to shift their houses to a safe distance.

Villagers of Algar Char gram have a continuous struggle for a survival throughout the monsoon. This dominates most of their activities and drains their resources leaving little scope for any productive works during the period. The flood related problems together with their economic insolvency make life of the people of Algar Char absolutely miserable. Obviously, they do not have the resources to cope with the problems.

(2) Inundation

Vulnerability of Algar Char gram to inundation has been obtained by questionnaire surveys and is summarized in Table 7.26. The Table shows the percent area of the village/paras including the farmland and the homestead areas that suffered inundation during 1988, 1998 and 1999.

Table 7.26 Inundation of ‘paras’ (homestead+farmland) in 1988, 1998 and 1999

| SI No. | Village/ ‘paras’ | Total area (ha) | Inundation in 1988 | | | Inundation 98 | | | Inundation 99 | | |
|--------------|------------------|-----------------|--------------------|-------------|-----------------|----------------|------------|-----------------|----------------|------------|-----------------|
| | | | Inundated area | | Duration (week) | Inundated area | | Duration (week) | Inundated area | | Duration (week) |
| | | | (ha) | % | | (ha) | % | | (ha) | % | |
| 1 | Jalal para | 151.9 | 151.9 | 100% | 2-3 | 117.0 | 77% | 8-12 | 59.2 | 39% | 2 |
| 2 | Mokbul para | 112.0 | 112.0 | 100% | 2-4 | 112.0 | 100% | 3-12 | 53.8 | 48% | 3 |
| 3 | Razzak para | 34.6 | 34.6 | 100% | 1-2 | 34.6 | 100% | 0-12 | 29.1 | 84% | 2 |
| 4 | Aklas para | 92.1 | 92.1 | 100% | 3-8 | 81.0 | 88% | 5-15 | 35.0 | 38% | 4 |
| 5 | Joyal para | 152.5 | 152.5 | 100% | 1-3 | 152.0 | 100% | 12 | 47.3 | 31% | 1-2 |
| 6 | Zolil para | 38.1 | 38.1 | 100% | 4-12 | 38.1 | 100% | 7-13 | 32.8 | 86% | 2-3 |
| 7 | Maher para | 32.9 | 32.9 | 100% | 4-12 | 32.9 | 100% | 3-12 | 16.8 | 51% | 2-3 |
| Total | | 614.1 | 614.1 | 100% | | 567.6 | 92% | | 239.5 | 39% | |

Source: JICA Study Team

It shows that 100% village area as a whole was inundated in 1988 (severe flood) for one to six (1-6) weeks, 92 % was inundated for one to eight (1-8) weeks in 1998 (severe flood), while 39% of the farmland with homestead areas were inundated in 1999 (normal flood). Farmland accounts for about 70% of the total village area and even in a normal flood about 60% of the farmland area goes under floodwaters. This is why 39% of the areas of farmland plus homestead combined were inundated in the normal flood of 1999.

Table 7.27 shows the percent of ‘homestead areas only’ that suffered inundation during the years 1988, 1998 and 1999.

Table 7.27 Inundation of ‘paras’ (homestead only) in 1988, 1998 and 1999

| SI No. | Village/ ‘paras’ | Total Homestead Area (ha) | Inundation 88 | | | Inundation 98 | | | Inundation 99 | | |
|--------------|------------------|---------------------------|----------------|-------------|-----------------|----------------|------------|-----------------|----------------|------------|-----------------|
| | | | Inundated area | | Duration (week) | Inundated area | | Duration (week) | Inundated area | | Duration (week) |
| | | | (ha) | % | | (ha) | % | | (ha) | % | |
| 1 | Jalal para | 14.9 | 14.9 | 100% | 3 | 7.3 | 49% | 5 | 1.5 | 10% | 2 |
| 2 | Mokbul para | 3.0 | 3.0 | 100% | 3 | 1.9 | 62% | 3 | 0.6 | 19% | 2 |
| 3 | Razzak para | 6.6 | 6.6 | 100% | 3 | 5.9 | 90% | 3 | 0.5 | 8% | 1 |
| 4 | Aklas para | 11.1 | 11.1 | 100% | 3 | 6.5 | 59% | 5 | 1.0 | 9% | 1 |
| 5 | Joyal para | 9.5 | 9.5 | 100% | 3 | 9.5 | 100% | 3 | 1.1 | 12% | 1 |
| 6 | Zolil para | 4.1 | 4.1 | 100% | 5 | 4.1 | 100% | 7 | 1.0 | 25% | 2 |
| 7 | Maher para | 2.9 | 2.9 | 100% | 4 | 2.9 | 100% | 3 | 1.7 | 57% | 2 |
| Total | | 52.1 | 52.1 | 100% | | 38.1 | 73% | | 7.4 | 14% | |

Source: JICA Study Team

From the above, it is seen that 100% of the homesteads were submerged in 1988, while 73% of them went under water in 1998, while some 14% were inundated in the normal flood year of 1999. It can be observed that the last two paras (Zolil dewani para and Maher munshi para) are situated in low-lying areas which are most flood-prone. These two paras are very close to the eroding channel bank of the Brahmaputra-Jamuna river and are more flood-prone than the remaining paras.

Table 7.28 shows the varying depths of inundation on the house courtyards in Algar Char gram.

Table 7.28 Number of Houses with Depth and Duration of Inundation

| No. | Name of para | Year | Total nos. of houses | No. of houses with maximum range of depth of flooding (cm) | | | | | No. of houses with duration of flooding (weeks) | | | |
|---------------|--|-------------|----------------------|--|------------|------------|------------|------------|---|------------|-----------|----------|
| | | | | 0 | 0-50 | 50-100 | 100-150 | >150 | <2 | 2-3 | 4-5 | >5 |
| 1 | Jalal sarkar/ Hossain member | 1988 | 235 | 0 | 40 | 118 | 77 | 0 | 181 | 54 | 0 | 0 |
| | | 1998 | | 120 | 27 | 88 | 10 | 0 | 0 | 27 | 88 | 0 |
| | | 1999 | | 212 | 23 | 0 | 0 | 0 | 23 | 0 | 0 | 0 |
| 2 | Mokbul bepari para | 1988 | 59 | 0 | 15 | 29 | 15 | 0 | 22 | 37 | 0 | 0 |
| | | 1998 | | 22 | 22 | 15 | 0 | 0 | 0 | 22 | 15 | 0 |
| | | 1999 | | 48 | 10 | 1 | 0 | 0 | 0 | 10 | 1 | 0 |
| 3 | Razzak chairman para | 1988 | 130 | 0 | 16 | 57 | 57 | 0 | 43 | 87 | 0 | 0 |
| | | 1998 | | 12 | 115 | 3 | 0 | 0 | 0 | 115 | 3 | 0 |
| | | 1999 | | 120 | 10 | 0 | 0 | 0 | 10 | 0 | 0 | 0 |
| 4 | Aklas member/ Samad fokir para | 1988 | 238 | 0 | 60 | 66 | 52 | 60 | 60 | 118 | 60 | 0 |
| | | 1998 | | 97 | 19 | 62 | 60 | 0 | 19 | 82 | 40 | 0 |
| | | 1999 | | 216 | 12 | 10 | 0 | 0 | 12 | 10 | 0 | 0 |
| 5 | Joynal member/ Hassan khalifa para | 1988 | 225 | 0 | 0 | 0 | 56 | 169 | 1 | 224 | 0 | 0 |
| | | 1998 | | 0 | 101 | 113 | 11 | 0 | 101 | 113 | 11 | 0 |
| | | 1999 | | 197 | 14 | 14 | 0 | 0 | 14 | 14 | 0 | 0 |
| 6 | Zolil dewani para | 1988 | 52 | 0 | 0 | 0 | 39 | 13 | 0 | 42 | 10 | 0 |
| | | 1998 | | 0 | 20 | 32 | 0 | 0 | 0 | 39 | 13 | 0 |
| | | 1999 | | 39 | 10 | 3 | 0 | 0 | 10 | 3 | 0 | 0 |
| 7 | Maher munshi para | 1988 | 36 | 0 | 0 | 5 | 31 | 0 | 5 | 31 | 0 | 0 |
| | | 1998 | | 0 | 12 | 4 | 20 | 0 | 15 | 21 | 0 | 0 |
| | | 1999 | | 15 | 14 | 7 | 0 | 0 | 14 | 7 | 0 | 0 |
| TOTAL: | | 1988 | 975 | 0 | 131 | 275 | 327 | 242 | 312 | 593 | 70 | 0 |
| 1998 | 251 | 316 | | 307 | 101 | 0 | 135 | 419 | 170 | 0 | | |
| 1999 | 847 | 93 | | 35 | 0 | 0 | 83 | 44 | 1 | 0 | | |

Source: JICA Study Team

The Table 7.28 indicates that while more no. of houses were inundated under higher depths in 1988, the overall duration of submergence was less than that of 1998.

(3) Flood damages

Table 7.29 shows the flood damages in Algar Char during the same floods in 1988, and 1998 and 1999.

Table 7.29 Damages in 1988, 1998 and 1999 Floods

| Sl. No. | Algar char Gram/ 'paras' | Farm land area (ha) | Crop damage | | | | | | Damaged Cattle | | | Damaged House | | | Human life lost | | | |
|---------|------------------------------|---------------------|-------------|------------|-------------|------------|-------------|-----------|----------------|------------|-----------|---------------|------------|------------|-----------------|-----------|----------|----------|
| | | | Crop | 1988 | | 1998 | | 1999 | | 1988 | 1998 | 1999 | 1988 | 1998 | 1999 | 1988 | 1998 | 1999 |
| | | | | Area (ha) | Prod. (ton) | Area (ha) | Prod. (ton) | Area (ha) | Prod. (ton) | No. | No. | No. | No. | No. | No. | No. | No. | No. |
| 1 | Jalal sarker/ Hossain member | 137 | Aman | 75 | 146 | 35 | 68 | 0 | 0 | 90 | 35 | 0 | 300 | 100 | 0 | 3 | 0 | 0 |
| | | | Jute | 21 | 38 | 10 | 18 | 0 | 0 | | | | | | | | | |
| 2 | Mokbul bepari | 109 | Aman | 109 | 213 | 109 | 213 | 0 | 0 | 13 | 0 | 0 | 50 | 19 | 2 | 0 | 0 | 0 |
| | | | Jute | | | | | 0 | 0 | | | | | | | | | |
| 3 | Razzak chairman | 28 | Aman | 13 | 25 | 13 | 25 | 0 | 0 | 17 | 0 | 0 | 175 | 150 | 0 | 0 | 0 | 0 |
| | | | Jute | 4 | 7 | 4 | 7 | 0 | 0 | | | | | | | | | |
| 4 | Aklas member/ Samad fokir | 81 | Aman | 43 | 84 | 40 | 78 | 0 | 0 | 18 | 9 | 0 | 150 | 0 | 0 | 0 | 0 | 0 |
| | | | Jute | 15 | 27 | 10 | 18 | 0 | 0 | | | | | | | | | |
| 5 | Joynal member/Hassan khalifa | 143 | Aman | 80 | 156 | 20 | 39 | 0 | 0 | 240 | 0 | 0 | 30 | 7 | 3 | 4 | 0 | 0 |
| | | | Jute | 1 | 2 | 1 | 1 | 0 | 0 | | | | | | | | | |
| 6 | Zolil dewani | 34 | Aman | | | 15 | 29 | 0 | 0 | 0 | 0 | 0 | 100 | 50 | 10 | 0 | 0 | 0 |
| | | | Jute | | | 20 | 36 | 0 | 0 | | | | | | | | | |
| 7 | Maher munshi | 30 | Aman | 13 | 25 | 13 | 25 | 0 | 0 | 55 | 35 | 0 | 50 | 40 | 15 | 10 | 4 | 0 |
| | | | Jute | | | | | 0 | 0 | | | | | | | | | |
| | Total | 562 | Aman | 333 | 650 | 245 | 478 | 0 | 0 | 433 | 79 | 0 | 855 | 366 | 30 | 17 | 4 | 0 |
| | | | Jute | 41 | 74 | 45 | 80 | 0 | 0 | | | | | | | | | |

Source: JICA Study Team

Table 7.29 indicates that the crop damages are due to the floods of 1988 and 1998, and that there was no damage in the normal flood year of 1999. The farmers generally do not grow crops in the low lying areas of the chars which are most likely to be inundated in monsoon by normal yearly floods.

Damage to cattle, as is observed from the table, occurs only during the severe floods. During the severe floods of 1988 and 1998 cattle were lost to the tune of 433 and 79 respectively, while in 1999 normal flood there was no loss.

Loss of human life in the village Algar Char occurred mostly in 1988 with 17 deaths and also in 1998 with four deaths. However, in the normal flood year of 1999 there was no death.

(4) Existing flood shelters and sheltering facilities

Table 7.30 presents the present situation of shelters and sheltering facilities.

Table 7.30 Present Situation of Existing Flood Shelters

| Para No. | Name of the Shelter | Para | Type of the building | Floor area (m ²) | Accommodation capacity of the building | Area of open space (m ²) | Capacity in open space (people)* | Elevation of the Shelter |
|----------|---|----------------------------------|-----------------------|------------------------------|--|--------------------------------------|----------------------------------|--------------------------|
| 1 | Paschim Algar char Pry School cum Flood Shelter | Jalal sarker/Hossain member para | Tin walled and roofed | 139 | 120 people | 1,035 | 350 | Above 1988 flood level |
| 1 | Road from Erendabari to Care Bridge | Jalal sarker/Hossain member para | Open air | | | 2,000 (4m wide and 500m long) | 670 | Above 1998 flood level |
| 3 | Road from Jigabari to Razzak chaiman para | Razzak chairman para | Open air | | | 800 (4m wide and 200m long) | 270 | Above 1998 flood level |
| 3 | Algar char Girls High School Cum Flood Shelter | Razzak chairman para | Tin walled and roofed | 160 | 130 people | 2,800 | 930 | Above 1988 flood level |
| 4 | Algar char Madrassa cum flood shelter | Aklas member/ Samad Fokir para | Tin walled and roofed | 100 | 90 people | 2,100 (35m wide and 60 m long) | 700 | Above 1988 flood level |

Source: JICA Study Team

* 3m²/person

Although there is no proper flood shelter with all the possible facilities in the village, three existing schools/madrassa are so remodelled as to serve for flood shelters with raised lands. Besides, two rural roads are commonly used by the flood affected people as refuge place for themselves and their cattle. As they come generally late to take shelter probably due to delayed decision, the flood affected people of the last two paras, namely Zolil dewani para and Maher munshi para, get shelter in the open air refuge place in front of the school-cum-shelter compounds and also on the roads by erecting improvised huts for themselves.

(5) Flood warning and dissemination, evacuation and sheltering

As revealed from the questionnaire survey and from the discussions with the villagers there is no systematic flood warning system at work in any of the seven paras of Algar Char as can be observed from Table 7.31. People decide to evacuate by observing the rise of water level and other natural symptoms when the flood is already in their doorsteps. Not that all members of the family evacuate to a safer place, rather in most cases some may decide to stay on at their premises to look after the belongings by surviving on raised platforms (macha).

Table 7.31 Evacuation and Sheltering in Paras of Algar Char

| Sl. No. | Name of Para | Name of the nearest flood shelter | Distance of the nearest flood shelter | Transportation during flood | Flood warning dissemination system | How villagers decide to evacuate |
|---------|-----------------------------------|---|---------------------------------------|-----------------------------|------------------------------------|---|
| 1 | Jalak sarker/Hossain member para | Algar char Girls' School cum flood shelter | 1.25 km | On foot and wading | No | Observing rise in water level and other natural symptom |
| 2 | Mokbul bepari para | Algar char Primary School cum flood shelter | 1.5 km | On foot, banana boat | No | Do |
| 3 | Razzak chairman para | Algar char Girls' School cum flood shelter | 0.20 km | On foot | No | Do |
| 4 | Aklas member/Samad Fokir para | Do | 0.20 km | Banana boat, on foot | No | Do |
| 5 | Joynal member/Hassan khalifa para | Do | 0.50 km | On foot | No | Do |
| 6 | Zolil dewani para | Algar char Girls' School cum flood Shelter | 1.5 km | Engine boat & banana boat | No | Do |
| 7 | Maher munshi para | Do | 1.25 km | On foot and banana boat | No | Do |

Source: JICA Study Team

From the government or NGO side, advanced evacuation of the flood affected people is not done; more exactly the marooned people are rescued by the government and non-government agencies only under extreme circumstances. As collected during reconnaissance, the people of Zolil dewani para and Maher munshi para were rescued by government effort as they had been marooned in their raised platforms (machas) during the floods of 1988 and 1998.

Algar Char gram is one of the several thousands villages in the country where flood warnings do not reach in time. The weather forecast that is transmitted through the radio and other media are not very much intelligible to the villagers as the broadcasted rise/fall of the water levels are not area-specific.

The FFWC is now implementing a pilot project for assessing a feasible and effective dissemination procedures. In 2001, three Upazilas (Lohajang, Shudarganj and Chauhali) have been selected as pilot centres for dissemination of flood warnings through the UZ Disaster Management Committees(UZDMC). The committees interpret the rise/fall in terms of area inundation in the Union level and disseminate to the concerned unions-level Disaster Management Committee. The Union Level Disaster Management Committee informs the villagers using the UP Members/ Imams / Schools Teachers and other members of the Committee and arranges to announce by drum beating in the local markets. By the year 2004, all flood prone areas are expected to be included under FFWC's flood forecasting and warning as well the dissemination system in the model of the 3 present pilot UZs.

(6) Overall constraints in Algar Char

From the Table 7.32 presented below it appears that main problems in Algar Char are inundation of homesteads and lack of adequate number of shelters.

Table 7.32 Constraints and Mitigation Measures as Considered by Villagers

| Constraints | Suggested measures | Degree of priority (%) suggested for mitigation by para | | | | | | |
|---|---|---|----|----|----|----|----|----|
| | | 1* | 2* | 3* | 4* | 5* | 6* | 7* |
| a. Homestead inundation | Raising homesteads by earthworks | 40 | 63 | 16 | 62 | 70 | 12 | 0 |
| b. Erosion of the Char land | Provide protection char against erosion of char | 5 | 0 | 0 | 0 | 0 | 2 | 0 |
| c. Erosion of the homestead area by current | Provide protection char against erosion of homesteads | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| d. Lack of flood shelters for people and cattle | Construction of shelters for people and livestock | 10 | 22 | 0 | 22 | 4 | 0 | 40 |
| e. Lack of flood warning and flood preparedness | Installation of workable flood warning and dissemination system | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| f. Others (lack of roads etc) | Construction of roads and embankment | 45 | 15 | 84 | 16 | 26 | 84 | 60 |

Remarks: * the numbers show the paras in the gram: 1: Jalal sarker/Hossain member para; 2: Mokbul bepari para; 3: Razzak chairman para; 4: Aklas member/ Samad Fokir para; 5: Joynal member/Hassan khalifa para; 6: Zolil dewani para; 7: Maher munshi para.

Source: JICA Study Team

As it can be observed from Table 7.32, villagers of Algar Char (four out of seven paras) think inundation of households is the most troublesome problem. However, reason for low percentage (16%) in favour of inundation of households by Razzak chairman para is probably due to the raising of homesteads by CARE in 2001. People in Zolil Dewani para (12%) and Mehar Munshi para (0%) do not think homestead inundation is their most serious problem although most of their houses have the maximum inundation every year. These two paras are most vulnerable to erosion as well as inundation due to their location and relatively lower elevations. Apprehending the homestead raising there is infeasible, the villagers might have opined for some other items.

7.1.8 Existing Organization and Government Support Services**(1) Existing Organizations**

There are several organizations in Algar Char established with different purposes. Type of organizations, number, objectives, and activities are summarized in Table 7.33.

Table 7.33 Existing Organizations

| Type of the organization | Number | Name of the organizations | Objectives | Activities | Members |
|-----------------------------------|--------|---|--|--|--|
| Businessmen's organization | 02 | a. Jigabari Bazar Banik Samity, b. Algar Char Bazar Businessmen's Samity | Socio-economic development | Credit for various activities | Businessmen, village leaders |
| School Committee | 04 | a. Government primary school b. Non government registered primary school c. Junior Girls high school d. Kheli Pori (NGO) school | To help educate children and to build up the children as real man and self depended. | | Businessmen, UP members, UP Chairman, and Local Elites |
| Madrasha Committee | 01 | Hafezia Madrasha | To provide religious education to the children of the village. | | Businessmen, UP Member, Chairman, Local Elites |
| Mosque Committee | 05 | a. East Algar Char Jame Mosque at Eklas para b. Same as a. in the House of Dr. Shahjahan c. Same as a. in the House of Jahurul d. West Algar Char Jame Mosque at Hossain para e. Same as d. at Jalil para | To lead religious pray. | To perform daily 5 times prayer with Jumma prayer on Friday and provide religious education to the children. | Businessmen, UP member, Chairman, Local Elites |
| Fishermen's Association | 01 | North Algar Char - Jigabari fishermen cooperative society | Socio-economic development of the members | Credit for various activities | Fishermen |

Source: PRA by DICS, 2002

Members of the organizations on businessmen, schools and madrasha, and mosques are village leaders, UP members, UP chairman and local elites. Fishermen are united to cooperate one another through credit. These organizations are largely active, but securing fund for sustaining their activities is the major issue.

(2) Government support services

Although several development activities and support services are provided by the Government, villagers are generally not satisfied with them. Services available and their coverage reported by the villagers are presented in Table 7.34.

Table 7.34 Available Government Support Services and Their Coverage

| Support received | Provider | Distributor | Recipients | % of population benefited | Villagers' opinion |
|---|---|--|--|---------------------------|---|
| Health & family planning | (1) FWA (2) HA | (1) FWA (2) HA | All the villagers specially woman and children | 25% | Insufficient & less quality of service. In need of Health & Family Planning materials/medicines |
| Road, Bridge, Culvert building and repairing. | LGED staff and workers assisted by UP chairman & members, | - | All the villagers | 100% | Insufficient & less quality service. |
| Supply of seeds, fertilizer, and insecticide | Block supervisor | Block supervisor | Farmers | 20% | Insufficient service & supply. Visit the village once or twice a month |
| Relief | Staff of relief department | UP chairman and members | Vulnerable group & affected person. | 2% | There is some corruption on distributing relief. |
| Allowance for elderly people | Staff of social service | Staff of social service, assist by UP chairman & members | Old men & old women (2 man). | 10 people | |
| Allowance for widows | Staff of social service | Staff of social service, assist by UP chairman & members | Widows | 16 people | |

Source: PRA by DICS, 2002

7.1.9 Non-governmental Organizations' (NGOs) Activities

There are four NGOs active in Algar Char. They are all targeting socially weak segment of the society like landless poor, daily laborers, women, etc., with the objective of uplifting their living standard through the provision of credit for IGAs and training on agriculture, health, education, etc. A total of 370 people participate in the activities.

Although villagers expect more support from NGOs in the fields of health, water and sanitation, education, credit, relief, agriculture, etc., they appreciate the activities of NGOs and feel benefited from them so far.

Each NGO and their activities are shown in Table 7.35.

Table 7.35 NGOs Active in Algar Char

| Name of NGOs | Activities | # of target group Beneficiaries | Type of beneficiaries | Organizers | Source of fund |
|---|--|---|--|---|--|
| PRODIPON | To provide credit support to the group members for IGAs. To provide training on various issues like health awareness, marriage and IGAs. | Beneficiaries:194 All are female Number of group: 10. | Agriculture labour, Daily labour, and house wife. | Dhaka based national NGO. They have supervisors locally. | They obtain fund from “Save the children (UK).” |
| GANO CHETONA | Credit program for IGAs, environment awareness, agricultural, disaster preparedness, water supply & sanitation. | Beneficiaries: 40 All are female. Number of group: 02. | Agriculture labour, daily labour, and house wife. | Local based NGO, personalities locally they have supervisors. | They get fund from “UNDP” |
| GANA UNNAYAN SANGSTHA | Education, health water supply & sanitation, training to the beneficiaries, disaster preparedness, savings, credit support for IGAs. | Beneficiaries:117 All are female. Number of group: 06. | Agriculture labour, daily labour, and house wife. | Local based NGO, own organizations own supervision. | They get fund from UST (Unnayan Sahajogy Team) and CONCERN. |
| SWADHIN BANGLA BAHUMUKHI KALLAYAN SANGSTHA | Credit support to the group members for income generation, agriculture. | Beneficiaries:48 Female: 02 & Male: 46. Number of group: 2. | Farmer, agriculture labour, business person and housewife. | Local based NGO, own support and supervision | They get fund from savings, local contribution and service charge. |

Source: JICA Study Team based on PRA by DICS, 2002

7.2 Problems and Constraints

As part of the master planning, problems faced by the local people in the Study Area were analyzed, and constraints to rural development in flood-prone Char and Haor areas clarified as reported in Chapter 4. More specific problems existing in the selected model project area in Char are analyzed in this section to identify constraints to development of the Char area. A participatory approach is taken to reflect views and opinions of various stakeholders who are more familiar with the area. Two methods are used: project cycle management (PCM) workshops and participatory rural appraisal (PRA). The results of the PCM workshops and the PRA are summarized in Section 7.2.1 and 7.2.2, and based on them the constraints to be overcome by the planned rural development are identified in Section 7.2.3.

7.2.1 Problems Identified by the PCM

(1) PCM workshop results

A series of PCM workshops were organized and held in Erendabari Union during the second fieldwork period. The objectives were to enumerate the existing problems for sharing by all the stakeholders and to clarify more important problems through discussions and mutual learning. The participants of the workshops included representatives of LGED, Fulchhari Upazila, DAE, NGOs, and local governments as well as villagers and the JICA Study Team (as the facilitators).

The target group for problem identification was defined broadly as the “villagers of Alga Char gram” and the core problem as the “people in the Char becoming poorer.” Through discussions, three main problems were identified as directly explaining the causes of the core problem: (1) repeated loss of property, (2) decreased agricultural production, and (3) high birth rates. Further, the causes of the three problems were identified as follows.

Repeated loss of property is perceived to result from erosion by river flow, inundation of homesteads, lack of embankment, sands filling up fertile land, crop damage, and insufficient flood shelters. Decreased agricultural production is due to low agricultural technology, lack of agricultural training, lack of crop diversification, loss of cultivable land, inadequate use of agricultural input, and low market prices. High birth rates are the outcome of various traditional and social factors. They include religious resistance against family planning and inadequate knowledge thereof, early marriage, high illiteracy rates, inadequate knowledge on negative effects of early marriage, preference of male children and discrimination against girls/women, as well as lack of regular visits by family planning workers and insufficient supply of contraceptives.

(2) Problem structure analysis

The causal relationships between various problem factors identified for the core problem of aggravating poverty have been analyzed, and the problem structure constructed as shown in Figure 7.2. This is the problem structure of aggravating poverty as perceived by the villagers in Algar

Char.

As seen from the figure, the main problems of repeated loss of property and decreased agricultural production are inter-related involving such problem factors as crop damage by flooding and loss of cultivable land by erosion. A more subtle relationship is crop damage discouraging investments for enhancing agricultural productivity, resulting in the lack of crop diversification. At the root of these combined phenomena lies the sense of risk or uncertainty on the part of villagers due to habitual flooding and erosion.

The other main problem of high birth rates is a reflection of inadequate knowledge on family planning, early marriage and low social status of women. These are all deeply rooted in socio-cultural norms of the traditional value system.

7.2.2 Problems Identified by the PRA

Participatory rural appraisal (PRA) of the existing conditions in Alga Char gram was conducted by a local consulting firm under the JICA Study Team's guidance. The results, as presented in Section 7.1, largely confirm the PCM workshop results but additional information and insights have been obtained as well. In addition to the problems more directly related to flood, the major problems identified by the PRA include the following:

- Low income levels,
- Low literacy rates,
- Dominance of small and landless farmers,
- Lack of income/employment opportunities in the rainy season,
- Discrimination against girls/women,
- Local power structure dominated by the rich, often tied with political system,
- Widespread malnutrition,
- Poor access to health services,
- Low enrollment and high dropout rates at schools,
- Poor transport and communications infrastructure, and
- Low utility service coverage.

These problems are inter-related and also associated with those problem factors identified in the previous section. For instance, low enrollment and high dropout rates at schools are due to (i) early marriage of girls, (ii) poor economic conditions of families, (iii) lack of communication means, and (iv) lack of awareness on the value of education. The discrimination against girls/women shows in wage rates, land inheritance, and other social customs such as dowry, early marriage and polygamy.

7.2.3 Constraints to Rural Development in Algar Char

The problem structure analysis based on the PCM workshop results has clarified that religious resistance against family planning, early marriage and preference of male children, all rooted in the traditional value system, are among the fundamental problem factors causing high birth rates that contribute to aggravating poverty. Discrimination against girls/women, another societal problem, has been revealed by the PRA in the form of lower wages, smaller size of land for inheritance, and social customs related to marriage.

Another root cause of various inter-related problems, clarified by the PRA, is the local power structure dominated by the rich, often tied with the political system. This problem, in fact, also has a social/traditional dimension as represented by the dominance of patron-client ties to a prominent/influential man in a village neighborhood (para). Most local people are trapped in this hierarchical socio-political problem structure. Within this structure, the people face the transient and unstable nature of their livelihood due to habitual flooding and erosion as analyzed in Section 7.2.1. They are severely constrained by limited political power as well as limited resources to overcome flood-related problems, and their meager efforts often turn out to be futile against next floods.

Despite the existing problem structure outlined above, the PRA notes some positive changes. For instance, literacy has improved more for women as a result of the recent emphasis on the importance of primary education for girls. Recent efforts to improve the living conditions of rural people have changed their priority needs. For instance, villagers have expressed their needs for more sanitary latrines, reflecting their heightened awareness of sanitation. Hand washing has been promoted by distribution of free soaps as part of the FPP by LGED-CARE. Also, homestead inundation is now perceived by villagers as less of a problem in Razzak chairman para as a result of homestead raising by CARE in 2001.

The problem structure would only be dissolved slowly if continued efforts are made to address to those various aspects identified in this section, including literacy education, health and sanitation, training for livelihood, land tenure improvement, and others as well as physical/structural measures for flood mitigation. Villagers' perceptions and needs would change through their involvement in planned development efforts as manifested in the recent projects. NGOs would be instrumental in involving villagers through organizing and training. In Algar Char, there are four NGOs active in livelihood development. Their efforts would only need to be augmented and continued.

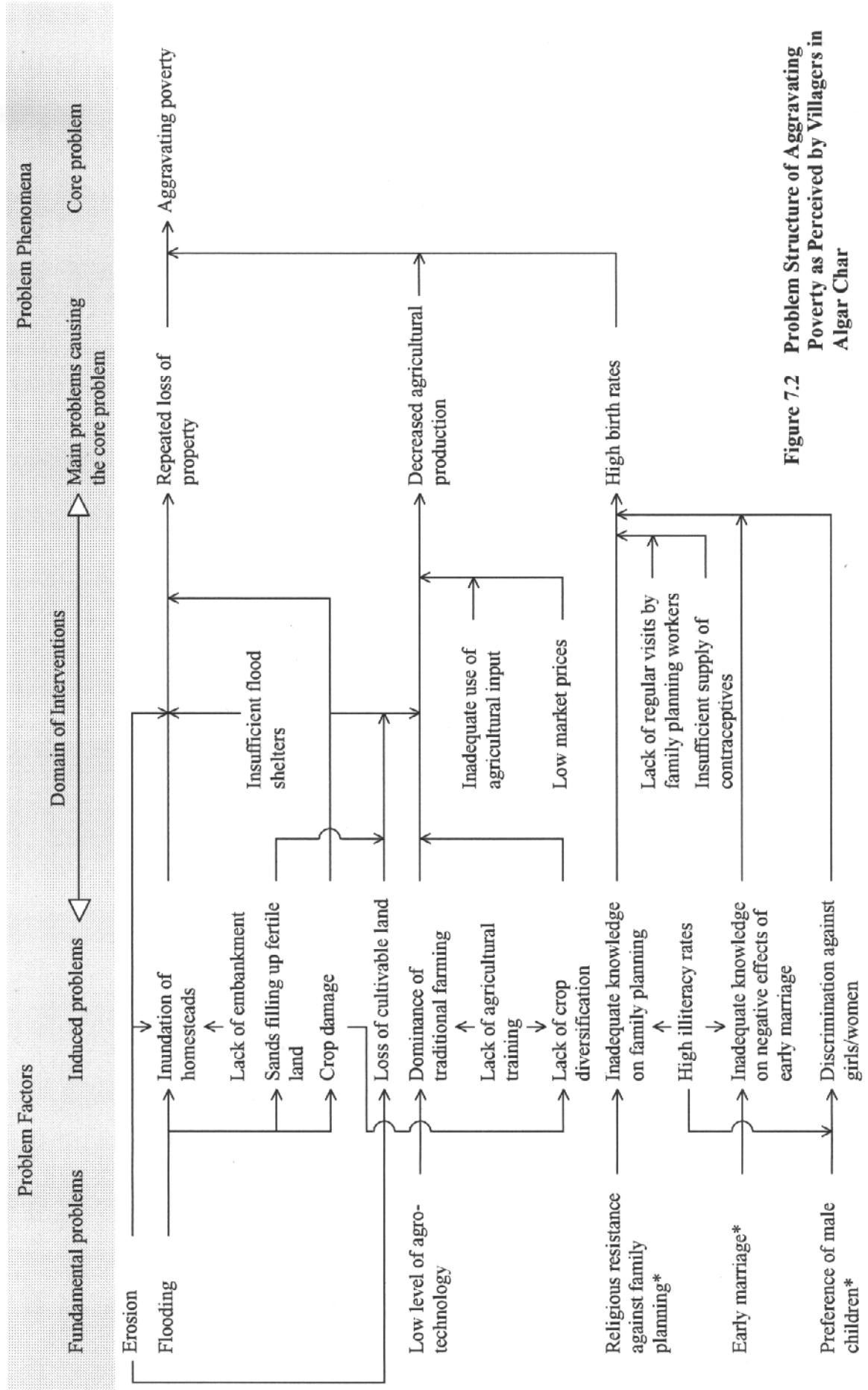


Figure 7.2 Problem Structure of Aggravating Poverty as Perceived by Villagers in Algar Char

*Due to traditional value system