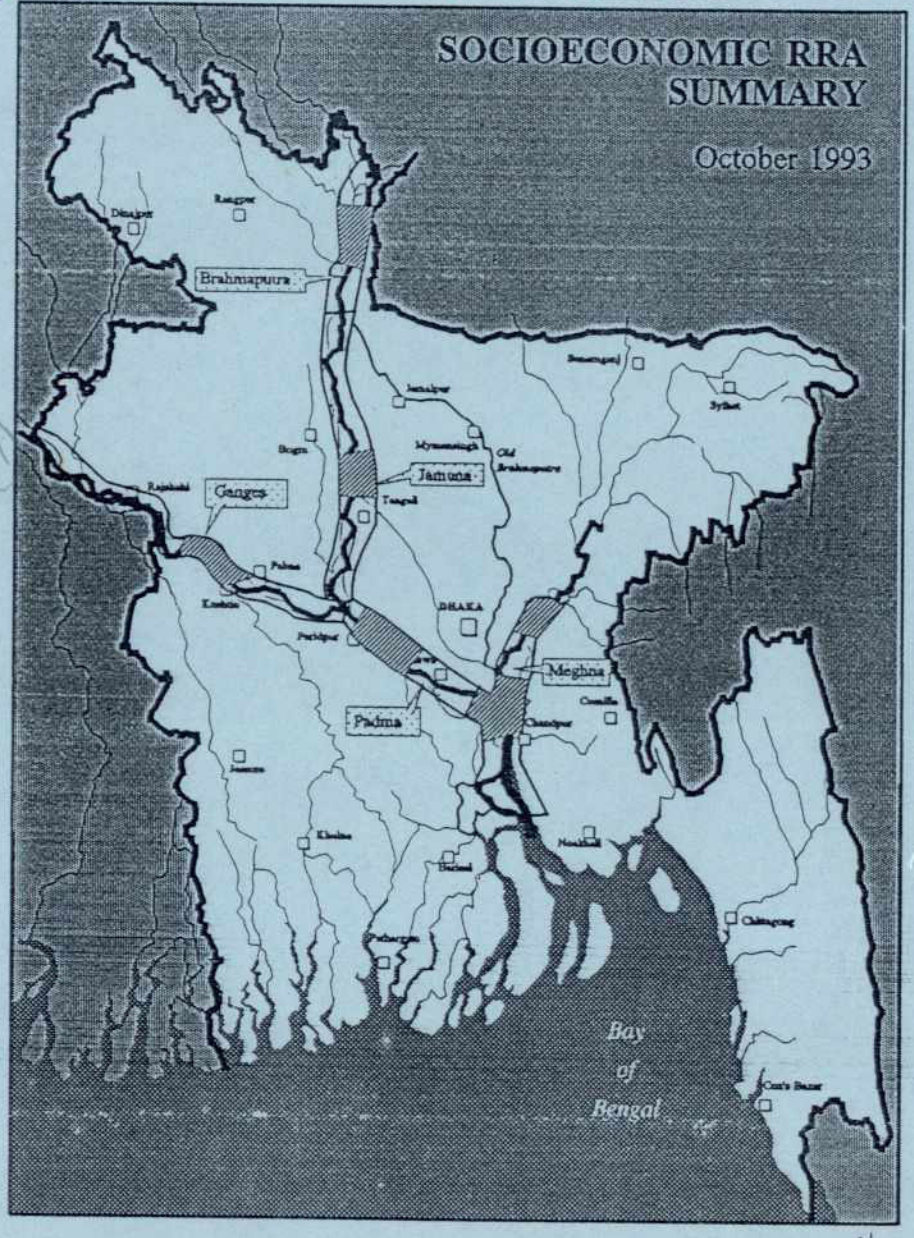
BANGLADESH FLOOD ACTION PLAN

Prepared for
The Flood Plan Coordination Organization (FPCO)
of the
Ministry of Irrigation Water Development and Flood Control

CHARLAND STUDY OVERVIEW



Environmental Study (FAP 16)
Geographic Information System (FAP 19)

ISPAN
IRRIGATION SUPPORT PROJECT FOR ASIA AND THE NEAR EAST
Sponsored by the U.S. Agency for International Development

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CHARLAND STUDY OVERVIEW:

SOCIOECONOMIC RRA SUMMARY

ENVIRONMENTAL STUDY (FAP 16)
GEOGRAPHIC INFORMATION SYSTEM (FAP 19)

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PREFACE

This report is one in a series of reports covering the immediate riverine lands of the major rivers of Bangladesh—the Jamuna, Ganges, Padma, and Meghna. Riverine charlands are defined in this study as areas frequently subject to erosion and accretion within and adjacent to the main rivers of Bangladesh and unprotected by embankments. The study was carried out by ISPAN under Flood Action Plan Supporting Study FAP 16 (Environmental Study). This report summarizes the findings of rapid rural appraisals (RRAs) conducted in six locations distributed among the four major rivers. The objective of the RRAs was to examine the socioeconomic aspects of life in the charlands and identify development priorities for those areas. This summary draws upon the findings of the RRAs as well as the Charland Inventory.

The full set of reports is shown in the table below.

Overview Reports	Inventory Reports	Supporting Reports
Summary Report		
Summary Report: Charland Socioeconomic Study		
	The Dynamic Physical and Socioeconomic Environment of Riverine Charlands: Brahmaputra-Jamuna	Upper Jamuna (Brahmaputra) RRA Middle Jamuna RRA
	The Dynamic Physical and Socioeconomic Environment of Riverine Charlands: Meghna	Upper Meghna RRA Meghna Confluence RRA
	The Dynamic Physical and Socioeconomic Environment of Riverine Charlands: Padma	Padma RRA
	The Dynamic Physical and Socioeconomic Environment of Riverine Charlands: Ganges	Ganges RRA
	Charland Flood Proofing	

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The study was jointly coordinated by Dr. Mustafa Alam and Dr. Suzanne Hanchett. It involved very intensive fieldwork under rather difficult circumstances, and those who performed this work are gratefully acknowledged. The contents of the report are based primarily on information obtained from people living in the charlands, all of whom were extremely helpful in patiently providing the necessary information. Interviews were also held with government officials and NGO field workers. The cooperation of all these participants is also gratefully acknowledged.

We are grateful to the Flood Plan Coordination Organization and to its Panel of Experts for providing overall direction to this study.

GLOSSARY

acre	-	Acre = 0.4047 ha
aman	-	Late monsoon season paddy planted before or during the monsoon and harvested November-December
amin	-	Land surveyor
arat	-	Wholesale shop
aratdar	-	Wholesale trader with warehouse
aus	-	Early monsoon paddy planted in March-April and harvested in June-July
B. aman	-	Broadcast aman paddy, usually grown in deeper water
bangsha	-	Lineage-mates
BARC	-	Bangladesh Agricultural Research Council
bari	-	A homestead, usually consisting of more than one structure arranged around a central common area
BBS	-	Bangladesh Bureau of Statistics
BDR	-	Bangladesh Rifles
beel	-	An area of open water away from a river
bhatiya	-	People from downstream
BIDS	-	Bangladesh Institute of Development Studies
bigha	-	A local unit of area most commonly equalling 0.33 acre or 0.14 ha
bir	-	Stable
boro	-	Dry season paddy transplanted in December-January and harvested in April-May
BRAC	-	Bangladesh Rural Advancement Committee
BTM	-	Bangladesh Transverse Mercator (map projection)
BUET	-	Bangladesh University of Engineering and Technology
bustee	-	Slum
BWDB	-	Bangladesh Water Development Board
chaura	-	Original settlers in the Ganges char areas
china	-	*Panicum miliaceum*, a variety of millet
chowki	-	Bed/platform
cumecs	-	Cubic meters per second
dacoit	-	Bandit
dal	-	Any of a variety of pulses (lentils); a high-protein food staple usually eaten with rice
decimal	-	Unit of area equal to 0.01 acre
denga	-	Land near a river
desh	-	State
deshi	-	Original settlers in Ganges char area
DEM	-	Digital elevation model
dhaincha	-	*Sesbania aculeata*, a nitrogen-fixing plant used as live fencing, fuel, and building material
diara	-	The low bank of a river
district	-	A large administration unit under the authority of a Deputy Commissioner, now known as a zila
doba	-	Submerged
EIA	-	Environmental Impact Assessment
FAP	-	Flood Action Plan
FCD/I	-	Flood Control and Drainage or Flood Control, Drainage, and Irrigation

fitkiri	-	Alum
FPCO	-	Flood Plan Co-ordination Organization
FWC	-	Family Welfare Centre
GIS	-	Geographic Information System
GPS	-	Global Positioning System
goala	-	Person trading in dairy products
gur	-	Locally produced molasses
gushti	-	Lineage-mates
haor	-	Deeply flooded basin of NE Bangladesh
hat	-	Periodic market
hectare (ha)	-	Hectare = 2.4711 acres
hogla	-	A bulrush (*Typhus angustata*) used for making mats
HSC	-	Higher Secondary Certificate
HTW	-	Hand tubewell
HYV	-	High Yielding Variety
ISPAN	-	Irrigation Support Project for Asia and the Near East
jangal	-	Ground cover shrubs used for fuel and as herbs
jhau	-	Tamarisk bush used as fuel and an herb
jotdar	-	Landlord
JPPS	-	Jamalpur Priority Project Study
kabiraj	-	Traditional healer
kaisha	-	A variety of catkin grass (*Saccharum spontaneum*) giving three cuttings a year
kani	-	Local unit of measure equal to .13 ha (.33 acres)
karati	-	Saw operator
kash	-	*kaisha*
kayem, kayemi	-	Permanent, old, or established
kaon	-	Fox-tail millet
khas	-	Publicly owned
kheya	-	Local boat landing point
khal	-	A drainage channel or canal either natural or man-made
kharif	-	Summer/wet season
kilogram (kg)	-	Kilogram = 1.11 sheer
kilometer (km)	-	Kilometer = 0.625 miles
kutcha	-	Flimsy construction of a temporary nature, in the chars usually of grass, bamboo, straw, or similar materials
lathiyal	-	A stick-wielding private army employed to carry out the will of a locally powerful leader
macha	-	A raised platform
mashkalai	-	A type of pulse (lentil); see *dal*
matbar	-	Leader of the local community
maund	-	A unit of weight, 1 Maund = 40 sheer = 37.5 kilograms
mauza	-	A village revenue collection and cadastral mapped unit
MCSP	-	Multipurpose Cyclone Shelter Program
mile (mi)	-	Mile = 1.6 kilometers
MPO	-	Master Plan Organization (of Ministry of Irrigation Water Development and Flood Control), now called WARPO (see below)
MSS	-	Multi-Spectral Scanner (Landsat satellite sensor)
musur	-	A type of pulse (lentil); see *dal*

nara	-	Straw
NGO	-	Non-Government Organization
PACT	-	Private Agencies Collaborating Together
paiker	-	Wholesale trader
para	-	Neighborhood
PoE	-	Panel of Experts (of FPCO)
pourashava	-	a municipality, usually the urban center of a district
pucca	-	Sturdy construction of a permanent nature, usually of such materials as brick, concrete, or corrugated iron sheets
rabi	-	Winter/Dry Season
RDRS	-	Rangpur Dinajpur Rural Service (an NGO)
REIS	-	Riverbank Erosion Impact Study
return period	-	average interval in years between floods of a given magnitude
RRA	-	Rapid rural appraisal
sadar	-	The urban core (administrative headquarters town) of a thana or district
salish	-	local informal court
samaj	-	Society, community; a formal arrangement between members of a community whereby each member has certain rights and privileges
sarik	-	Lineage-mates
SCI	-	Service Civil International (an NGO)
shabuk	-	Ancient
sheer	-	A unit of weight = 1/40 maund = 0.94 kg
shon	-	A variety of grass (*Imperata cylindica*) giving one cutting a year; also a generic term for thatching grass
SPARRSO	-	Space Research and Remote Sensing Organization
SPOT	-	System Pour Observation de la Terre
SRDI	-	Soil Resources Development Institute
SSC	-	Secondary School Certificate
tahsil office	-	Local land record and survey office
Taka (Tk.)	-	Bangladesh currency, US$ 1 equalled approximately Tk. 40 in late 1992-early 1993
T. aman	-	Transplanted aman paddy
thana	-	A sub-division of a zila, or district
til	-	Sesame (*Sesamum indicum*)
tishi	-	Linseed
TM	-	Thematic Mapper
ton	-	An imperial ton = 1,016 kg
union	-	Sub-division of a thana
upazila	-	Previous name for a thana (subdivision of a zila or district)
ustha	-	Bitter gourd (*Momardica charantia*)
uthuli	-	An informal contract between a landholder and a temporary migrant, under which the migrant is allowed to shelter on the landowner's property in exchange for labor services
WARPO	-	Water Resources Planning Organization
WHO	-	World Health Organisation
zamindar	-	Landlord
zila	-	A large administration unit formerly known as a district

EXECUTIVE SUMMARY

The chars and mainland adjacent to the main rivers are prone to the twin hazards of floods and erosion, which destroy crops, homesteads, and land, and bring death and suffering to their inhabitants. In 1992 the Irrigation Support Project for Asia and the Near East (ISPAN), on advice from the Flood Plan Coordination Organization (FPCO) and through a joint effort of the Environmental Study (FAP 16) and Geographic Information System (FAP 19), undertook an inventory of resources and people in the chars of the Brahmaputra-Jamuna, Ganges, Meghna, and Padma rivers.

Parallel to this inventory, ISPAN conducted focused interviews, using rapid rural appraisal (RRA) methods, in groups of chars at six locations in the major rivers between April and July 1993. These RRAs investigated social and economic conditions in island chars; attached chars; unprotected mainland; and detached mainland. This report highlights some of the main socioeconomic findings and issues emerging from these RRAs and draws upon data collected by the Charland Inventory.

The principle finding of this study is that the social and economic lives of char dwellers, some 4.3 million people according to the Inventory Survey, are in large part determined by the ever-changing nature of the lands upon which they live. Erosion and accretion, migration forced by changing circumstances, and perpetually difficult communication with the mainland effect the structure of char societies and the livelihoods of their people. While the charlands are not easily protected from the impact of flooding, their circumstances can be measurably worsened by disregarding them in flood protection planning.

This study demonstrates that charlands are not all alike and the social structures of char people vary somewhat from people in the rest of Bangladesh. Char people therefore need to be understood within their own context. Table 1 is a checklist of information that will enable planners to understand the factors that are likely to affect the outcome of planned activities in and around char areas.

The recommendations presented in this report are of five types: information resource development, flood and erosion assistance, basic services, development issues, and policy improvements.

Information Resource Development

The baseline data compiled in the Charland Study inventories needs to be updated periodically, combined with 1991 census data, and refined as development agencies and departments make use of the data for planning purposes. Using the inventory, strategies need to be developed that better utilize the resources available in the chars.

Flood and Erosion Assistance

The study found that people living in chars have developed strategies for coping with flooding and erosion to the best of their limited abilities. To help them in these efforts the report recommends:

- Improved flood warning
- Provision of shelter for people and their animals
- Transportation assistance
- Water purification
- Resettlement services for those displaced by erosion

Basic Services

Char people, by virtue of their changing circumstances and relative isolation, have particular need for special assistance with basic services. The report makes recommendations in the following areas:

- Agricultural extension services
- Health and sanitation services
- Schools
- Institutional credit

Table 1 Important Factors in Charland Planning - A Checklist

- ☐Type of Char
  - ☐Attached
  - ☐Island
  - ☐Detached mainland
  - ☐Unprotected mainland
- ☐Age of Char
  - ☐New
  - ☐Old
- ☐Stage of Char Development
  - ☐Cultivated
  - ☐Settled
  - ☐Cultivated and settled
- ☐People's Estimate of the Char's Stability
- ☐Settlement History
  - ☐Long-established local group
  - ☐Recent immigrants
  - ☐Motives for settling
  - ☐Ties to other locations
  - ☐Local conflicts
- ☐Community Composition and Social Structure
  - ☐Families
  - ☐Societies (*samajes*)
  - ☐Nature of leadership
  - ☐Long-term associations between people likely to remain interdependent
  - ☐Terms and conditions of land grants to destitute settlers
  - ☐Nature of ties to public officials
- ☐Type of Household
  - ☐Female-headed percentage
  - ☐Joint families able to pool resources and diversify employment options
- ☐Erosion Displacement Experiences
  - ☐Number of moves
  - ☐Timing of moves
  - ☐Cohesion of migratory groups
  - ☐Problems caused by displacement
  - ☐Current and future needs
- ☐Occupational Patterns
  - ☐Previous work experiences
  - ☐Perceived opportunities for employment
  - ☐Primary occupation
  - ☐Secondary occupation
  - ☐Temporary occupation(s)
- ☐Local Skills in Exploiting:
  - ☐Land resources
  - ☐Animal resources
  - ☐Natural vegetation
  - ☐Agricultural crops
- ☐Main Assets
- ☐Gender Division of Labor
- ☐Perceptions of Problems and Needs

Development Issues

Policies and procedures that assume a stable land mass and settled populations need to be modified to accommodate the typically changeable charland situations in most river reaches. For example, infrastructure creation (such as road building) must be viewed quite differently for charlands than for mainland areas.

Conflicts between chars can often be traced back to confusions over administrative boundaries. Such lack of administrative clarity also leaves many of chars without public services. The inventory reports highlight many of these problems. Accurate surveys would help efficient administration.

Local government agencies can play an important role in keeping updated inventories of charlands for their respective areas. Such a role also would be useful in making damage assessments following floods and erosion, as well as in developing rehabilitation and resettlement strategies.

Existing social groups (kin groups, neighborhoods, and societies) should form the core of program development to the extent possible, as these groups tend to be interdependent and/or remain together when moving. If leadership is not exploitative, local leaders with the respect of char residents can help to promote innovative ideas and analyze program plans.

Participatory program development (planning done in close consultation with beneficiary groups) is likely to yield the best results in the chars, because it can minimize the chances of setting up unworkable charland programs. Alternative types of earthwork, such as raising flood shelter mounds for cattle and people, are needed in charlands and could be accommodated within existing programs.

Policy Improvements

Major improvements are required in policies relating to land law and the utilization of land. There is a great deal of confusion about the land laws pertaining to alluvion and diluvion, and the existing laws are subverted by a variety of means to the benefit of the local elite. The inventory and RRA surveys found that although vast amounts of land in the chars are technically government-owned *khas* land, such land is mostly under the unauthorized control of locally influential people. In fact, in many chars, the question of land access more often involves "control of land" than "ownership of land". The report makes recommendations about the ways laws may be improved to achieve greater equity in the ownership and use of land in the chars.

Chapter 1

INTRODUCTION

1.1 Background

The islands of the great rivers of Bangladesh are formed from massive sand and silt deposits or when new river channels carve islands out of mainland areas. These riverine islands, called *chars* in Bengali, tend to change their form over time, occasionally disappearing altogether and reappearing later at or near the same places. Such processes are variously called "diluvion and alluvion," or, as in this study, "erosion and accretion." Rennell's 1793 description captures the drama of this action:

> *"Tracts of land are swept away in the course of one season, as would astonish those who have not been eye-witnesses to the magnitude and force of the mighty streams, occasioned by the periodical rains of the tropical regions."* (p.341). ... *"Next to earthquakes, perhaps the floods of the tropical rivers, produce the quickest alterations in the face of our globe."* (p.345).

In addition to changes in chars, there are regular changes in riverbanks, which also are prone to erosion and accretion as the strong currents of the rivers dig into the soft soils of Bangladesh. The Bengali language distinguishes alluvial lands on riverbanks from those in mid-channel, but their formation processes are similar:

> *"By* ***Diara****, generally means, the low bank of a river. Here it is used for any alluvial accretion on the banks....* ***Char****, usually means, any accretion in a river....In such a large river as the Ganges,* ***Diaras*** *and* ***Chars*** *are plentiful. These accretions are, however, very rarely permanent, for courses of rivers in low alluvial plains are very liable to shift across their flood-plains. These* ***Diaras*** *and* ***Chars*** *often first appear as thin slivers of sand. On this is deposited layers of silt till a low bank is consolidated. Tamarisk bushes, a spiny grass, establish a foot-hold and [accelerate] deposition."* (Rashid, 1991:17).

In island chars, annual increases in river water levels regularly cause floods that submerge fields and settlements.

Over the centuries, riverine island chars have been settled by people from different parts of the country. Char people often live on the margins of administrative boundaries, their land base changes, and whole settlements may shift locations several times in a single generation. Mainlanders regard them in various ways, some are disdainful, some envious of their freedom from the constraints of society, some are in awe of their reputation for violence. Char communities have parallel myths and images about their way of life and how it differs from that of those who live on firmer ground. However they are viewed, few would disagree that char people are a group apart wherever they live.

Table 1.1 General Information on RRA Areas

RRA Area	No. of Mauzas	Total Area (km^2)	Area/ Mauza (km^2)	Island Char			Attached Char			Unprotected Mainland		
				No. of Mauzas	Total Area (km^2)	Area/ Mauza (km^2)	No. of Mauzas	Total Area (km^2)	Area/ Mauza (km^2)	No. of Mauzas	Total Area (km^2)	Area/ Mauza (km^2)
Upper Jamuna	6	51.06	8.51	5	41.45	8.29	1	9.61	9.61	-	-	-
Middle Jamuna	6	25.91	4.32	5	24.65	4.93	1	1.26	1.26	-	-	-
Upper Meghna*	8	27.84	3.48	5	18.41	3.68	1	4.77	4.77	1	0.77	0.77
Meghna Confluence	9	30.91	3.43	6	17.44	2.90	2	13.27	6.63	1	2.29	2.29
Ganges†	6	27.08	4.51	3	13.00	4.33	2	14.08	7.04	1	7.03	7.03
Padma (Middle)	6	34.40	5.73	3	17.37	5.79	3	17.03	5.67	-	-	-
Total/Average	41	197.00	4.80	27	132.32	4.90	10	60.02	6.00	3	10.09	3.36

Source: Charland RRA and Bangladesh Bureau of Statistics Small Area Atlas

*One mauza (area = 3.88 km^2), located within detached mainland, is not reported.

†RRA covers middle Ganges and a small segment of the upper part of the lower Ganges reach.

Despite their vulnerability to flood damage, until recently chars have not received much attention in the Bangladesh Flood Action Plan (FAP). The FAP regional studies used the main rivers as their study boundaries and concentrated on areas for which structural flood protection was feasible. Structural flood protection measures are unlikely to benefit the char dwellers of Bangladesh, and embankments may even raise flood levels within their settlements.

FAP 3.1, the Jamalpur Priority Project, undertook the first large-scale FAP char study in a group of chars along the middle reach of the Jamuna. To further promote discussion about the nature of flood problems in chars and the most effective ways the Flood Action Plan might address them, in 1992 the Irrigation Support Project for Asia and the Near East (ISPAN), on advice from the Flood Plan Coordination Organization (FPCO) and through a joint effort of the Environmental Study (FAP 16) and Geographic Information System (FAP 19), undertook an inventory of resources and people in the chars of the Brahmaputra-Jamuna, Ganges, Meghna, and Padma rivers.

Parallel to this large-scale inventory, ISPAN conducted focused interviews in groups of chars at six locations (Figure 1.1) in the major rivers between April and July 1993. To increase understanding of char life, these interviews used rapid rural appraisal (RRA) methods. This report highlights some of the main socioeconomic findings and issues emerging from these RRAs. While the report mainly draws on the findings of the RRAs, it also draws upon data collected by the Charland Inventory. Table 1.1 summarizes some general information about the RRA areas covered in this report.

The ISPAN Charlands Study has expanded the definition of charland to include not only islands and partially attached alluvial bank deposits but also strips of unprotected mainland adjacent to rivers, which are prone to floods and/or erosion damage similar to that affecting island and attached chars. Since there are no plans to protect these areas from floods, their people face many of the same problems as the true char dwellers. The scope of the ISPAN study was limited to riverine charlands, although Bangladesh also has numerous coastal chars.

Table 1.2 shows the distribution of charland categories (water, sand, and cultivated/vegetated) in the river reaches covered by the RRAs. As the table indicates, island char mauzas in the Meghna confluence and the middle reach of the Padma have the highest proportion of underwater area. In these reaches chars are prone to frequent erosion and accretion. The island chars in the Upper Meghna, by comparison, are stable land masses,

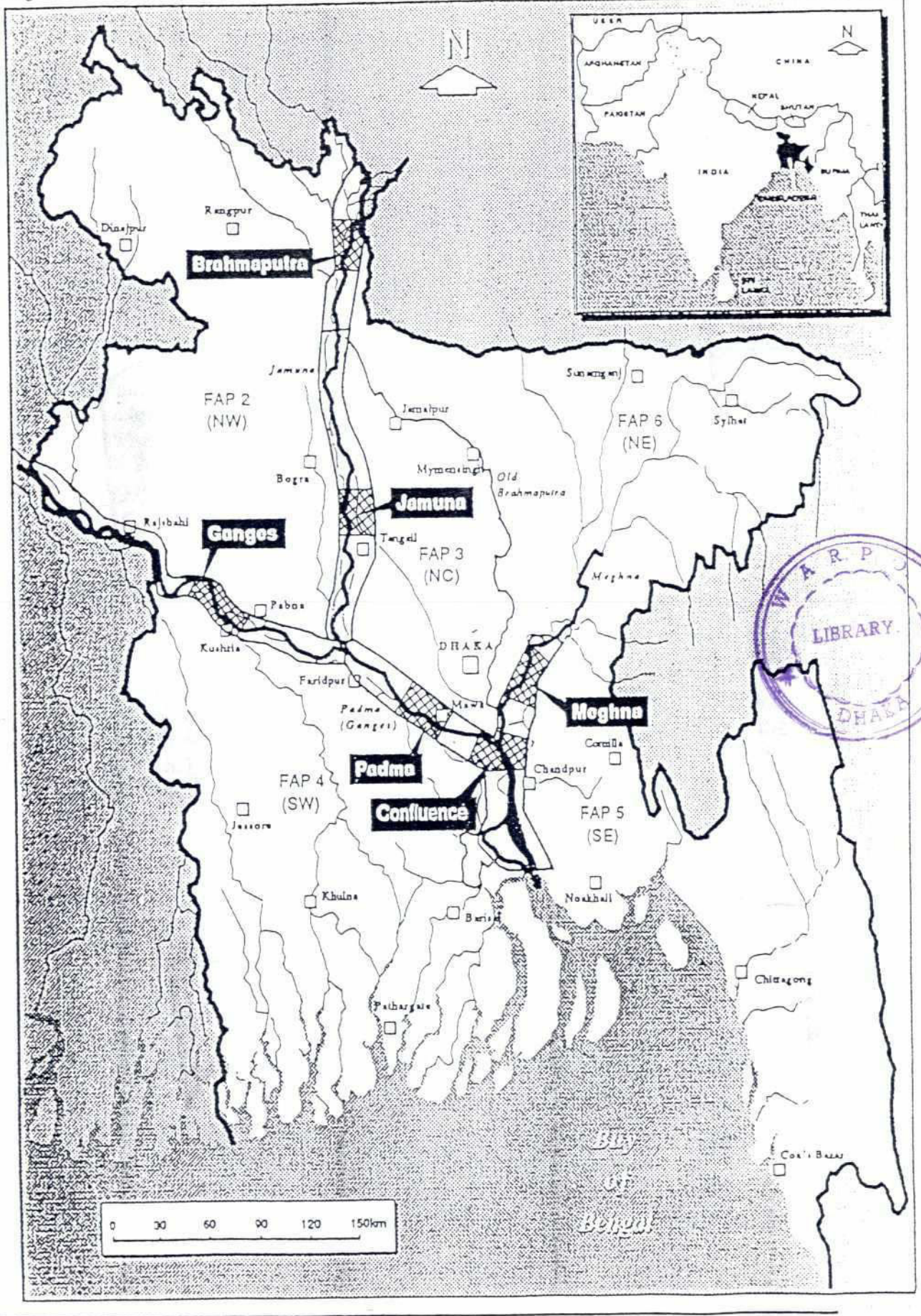
Table 1.2 Land Category Distribution in the Charlands Covered by RRAs

	Island Char			Attached Char		
River Reach	Water	Sand	Vegetated/Cultivated	Water	Sand	Vegetated/Cultivated
Upper Jamuna	30	22	48	22	20	58
Middle Jamuna	25	19	56	18	10	72
Upper Meghna	36	3	61	29	2	69
Meghna Confluence	50	9	41	26	3	71
Ganges (Middle)	20	37	43	15	21	64
Padma (Middle)	45	27	28	28	11	61

Source: Charland Inventory

Figure 1.1

Charland RRA Study Location



and have much a higher percentage of vegetated/cultivated area than is found in other river reaches. Sandy land is highest in the Ganges River. In the attached chars of all river reaches, vegetated/cultivated land constitutes a higher percentage of land than it does for the island chars; the difference being particularly significant for the middle reach of the Padma. Relatively sandy areas of attached char were found in the upper Jamuna and the Ganges.

1.2 Literature Review

Most writing about chars emphasizes either the fertility of their lands, the violence of their people, the quasi-utopian coherence of their communities, or their lowly and neglected status in the national planning framework.

The fertility of chars has long been recognized. In the mid-17th century Francis Bernier described the deltaic islands as very fertile, but uninhabited because of the danger of pirate attacks (Nicholas 1962:65-66). Rennell mentioned that floods contribute to the growth of an island, providing "mould enough on it for purposes of cultivation," (1793:347) and described the islands of the Meghna below the (then) junction with the Ganges and Brahmaputra as rivaling "in size and fertility, our Isle of Wight" (1793:358). As Carstairs said, "...A newly formed island, though next season might see it swept away again, might also become a rich estate, of good land." (1895:242-243, quoted in Zaman 1991:553). W.W. Hunter, writing in the late 19th century, described how midstream islands benefit from the silt depositions that coat the country after floods with "a top-dressing of virgin soil, brought free from the Himalayas...a system of natural manuring which defies the utmost power of over-cropping to exhaust its fertility" (Hunter 1894:1-2).

The agricultural value of some of the charlands led to the development of increasingly complicated laws about rights to them from the early 19th century onward. For example, it was necessary early on to develop a special body of law relating to island chars that were submerged at the time of the Permanent Settlement (or Decennial Settlement) of 1793.

> *Where [a] river was included within the limits of an [zamindari] estate, and chars were thrown up in its bed after the Decennial Settlement, the question was not free from controversy till...1921.*
>
> *...Section 4(1) of [the Bengal Alluvion and Diluvion Regulation XI of 1825] lays down that where the char is an accretion to riparian estate, the proprietor of the estate is entitled to settlement of the accretion as if it were an increment to his tenure; but where the char is an island in the midst of a river and the channel between it and the river is not fordable, it would be at the disposal of the Crown (section 4(3)); that is to say, that Government may settle it with any person they consider proper, or keep it under direct management.* (Gupta, 1940:258-259).

Because of their changeable nature and typical remoteness from the mainland, chars always have been treated differently in law, and in many places have been governed informally more than formally. They even were affected by zamindari abolition and land reform legislation differently than other parts of the country; and special laws relating to land rights in the chars have not always had their intended effects.

The emergence of chars can occasion conflict as competing parties try to claim them. Numerous scientific and journalistic reports about such situations have given chars a reputation for violence. Zaman and others have made detailed analyses of island char society, especially legal and violent struggles over land rights. Zaman (1989) has compared Brahmaputra-Jamuna char areas around Kazipur to parts of southern Italy and Sicily where the Mafia is the effective local government:

> *"Few people in Bangladesh have heard of cases of poor peasants*

getting their due shares of land in the newly emerged chars. On the contrary, the use of violence, dispossession, murder, rape and confiscation of crops and livestock have become local, and almost, established practices of char life. The selective use of violence by local jotedars who act as patrons of the lathiyals [aggressive, stick-wielding bands of muscle-men] work as the ultimate arbitrator of dispute over new char lands." (Zaman, 1987:8).

Strong internal power relationships are part of the quasi-military situations described above. There are reports of displaced people being forced to serve as *lathiyals* for those who provide them with shelter.[1] Crow and Murshid (1990) described a credit system in one char area that led to debt servitude for many and diminished the capacity of marginal farmers to profit from their crops.[2]

Another group of reports highlights the supposedly strong internal cohesion of char communities and their mutually supportive economic activities, such as sharing of supplies and even living areas as family fortunes shift. The North West Regional Study (FAP 2) draft final report, for example, says that "[Char people]...have individual and collective strength to survive in situations which many would find impossible;" and "...There is a degree of collective endeavor on the chars that is not much in evidence in villages elsewhere." (Bangladesh Flood Action Plan 1992: 2-23). One report, apparently written by an NGO (Service Civil International?, n.d.), argues that people of the Bhuapur area in the lower reach of Brahmaputra-Jamuna know they may need help from others someday, so they take care of each other "simply because they share a common understanding of the river and [its] unpredictability." "Life in the char," as this source describes it, "is difficult but the social and cultural adaption of this sizeable population, and in a sense, their evolution along with their environment, has created a cultural interchange and a communal spirit that has adapted to the viciousness of the river. The people who inhabit char villages have developed a unique coping mechanism and adaption to their environment. The Jamuna serves as both the common link, as well as, the common nemesis."

Other FAP studies that have looked into socioeconomic aspects of char life in varying degrees are: the Jamalpur Priority Project (FAP 3.1) mentioned above, the Flood Response Study (FAP 14), and the Flood Proofing Study (FAP 23). The Jamalpur Priority Project study (FAP 3.1) gathered information on social and economic characteristics of a sample of households in 63 villages in the Brahmaputra-Jamuna middle reach. A basic concern of the study is the potential of embankment construction to increase the flood risk on chars and setback (unprotected mainland) lands while improving flood protection to the mainland. On a smaller scale, other FAP studies have addressed the characteristics and needs of char populations in specific areas. The Flood Response Study (FAP 14), for example, included five island char settlements in its sample of 30 villages. The Flood Proofing Study (FAP 23) also made some general recommendations for flood proofing programs in chars. All of these have emphasized, to one degree or another, the difficulty of life on island chars, their vulnerability to floods, the great variability in (and common inadequacy of) public services, and the serious economic disruption caused by losses of land and other assets to erosion.

A major piece of related work done outside the Flood Action Plan was the Riverbank Erosion Impact Study (REIS), which was a joint project of Jahangirnagar University and Manitoba University covering three areas affected by erosion—Bhola Island (deltaic), Kazipur (Jamuna), and Chilmari (Brahmaputra). The emphasis of the socioeconomic side of the REIS project was on displacement of populations and concomitant resettlement patterns and needs. In conjunction with this project, some in-depth analyses were done of social organization and land tenure in specific char and erosion-affected populations of three regions. Having covered the deltaic Bhola area, this was the only comprehensive study to date to go into any depth on land

and life in the coastal chars. Important differences were identified between settlement of river islands and deltaic chars. This project emphasized the urgent need to address land tenure issues, such as land-grabbing in newly accreted lands, and has recommended that a national commission be formed for this purpose. The comprehensive study report included several complex suggestions about ways to improve char people's lives. Among its recommendations was a new system of floodplain zoning (Elahi and Rogge 1990; Elahi *et al.* 1991).

Char people have attracted a certain amount of public attention in the local and international media, which tends to represent them as very deprived and needy of social services.

> *"Remote, isolated and inaccessible the world of the Char people is haunted by unemployment, malnutrition, superstition and above all uncertainty. Public facilities such as markets, clinics or schools are few and far between, even the hand of government extends only weakly into these backwaters."* (M. Khan, *Daily Star*, 13 September 1993).

A French film on char life, in which the NGO Service Civil International (SCI) collaborated, was viewed by a large foreign public. This film critically reviewed several development initiatives, including river training works that might have negative consequences for char people, whose life was depicted as very difficult. A recent article in the magazine *National Geographic* used charlands as an example of how in Bangladesh, "the power of the water to destroy is almost equally matched by its power to create." (Cobb, 1993:120).

The chars and surrounding areas have indeed been the object of concentrated attention by a few NGOs and other service providers (including PACT/PRIP). The most comprehensive study associated with such efforts is a baseline study of nutrition and socioeconomic indicators in Chilmari Thana by Bruce Currey. This study involved one review in 1979 and a follow-up project in 1985.

In the northern Jamuna, Rangpur Dinajpur Rural Service (RDRS), an NGO, has set up a large program for 12,000 char families living in 12 areas, who have been organized into small self-help groups. The characterization of char life in a 1993-1997 proposal by this organization reflects some of the same views found in the media (which philanthropic funding agencies are likely to use as their source of information):

> *"Chars are normally very remote and accessible only by country-boats. Unemployment, severe malnutrition, poor health, abandonment of women and superstition are endemic. Public facilities and government services are very sparse. Char land is entirely sandy with little organic matter resulting in poor productivity."* (RDRS, 1992).

1.3 Demographic Profile of Charlands

1.3.1 Population

The Inventory Survey estimated the 1992-93 population of all charlands—islands, attached chars, and unprotected mainland areas combined—in the four rivers at 4.3 million.[3] This population is unevenly distributed among river reaches, as might be expected, and population density is lower on the less stable island masses than on lands attached to or part of the mainland. Among the most densely populated areas surveyed were: the upper reach of the Meghna, where some islands (detached mainland) and unprotected mainland areas had densities exceeding 1,000/km^2, more than the national average of 763/km^2. In most river reaches, in fact, unprotected mainland areas were more densely populated than islands, as would be expected. In the Brahmaputra-Jamuna, for example, unprotected mainland areas have

Table 1.3 Charland Population Densities in 1993 (per km²)*

River Reach	Island Char	Attached Char	Unprotected Mainland	Total
Upper Jamuna	245	331	740	479
Middle Jamuna	371	545	810	470
Upper Meghna	934	851	1082	1027
Meghna Confluence	516	470	1311	665
Ganges (Middle)	134	241	596	289
Padma (Middle)	111	269	1047	599

Source: Charland Inventory
*Jamuna data is for 1992. Data is for RRA study reaches, not entire rivers.

average population densities of 776/km², whereas that of island chars is only 346/km².

As the biggest river, the Brahmaputra-Jamuna has the largest population of char settlers: approximately 1.8 million. The rank order of other rivers in terms of estimated total charland population is: Meghna[4] (1,165,787), Ganges (695,890), and Padma (620,467). Each river's population has increased over the past decade; in some cases, such as the Brahmaputra-Jamuna, where it was 48 percent, the increase exceeded the national rate of 26 percent, while in others, such as the Padma, where it was 6 percent, it was much less than the national rate.

Population densities by char type in the river reaches covered by RRA are shown in Table 1.3. In each char category, population density is the highest in the relatively stable chars of Upper Meghna. The density is quite low for all categories in the Ganges, as it is for island and attached chars in the Padma.

Table 1.4 shows the change in char population density for each RRA area. Population densities have increased in all char categories in the Upper Meghna. In the middle Padma, population in island and attached chars has become less dense during the period, while in the middle Ganges there density has declined in the island chars and

Table 1.4 Change in Charland Population Density 1981-93 (per km²)*

River Reach	Island Char	Attached Char	Unprotected Mainland	Total
Upper Jamuna	115	88	142	119
Middle Jamuna	29	-19	116	37
Upper Meghna	328	166	261	253
Meghna Confluence	276	-86	115	79
Ganges (Middle)	-20	10	-265	-92
Padma (Middle)	-31	-69	249	89

Source: Charland Inventory
*Jamuna data is for 1981-92.

unprotected mainland. Overall, only the middle Ganges has had a decline in population density.

1.3.2 Household Size and Type

The Inventory Survey obtained mauza-by-mauza[5] estimates of population and numbers of households, so these data on household size are only rough estimates. More precise information is available from limited household surveys done by the Flood Response Study (FAP 14) and the Jamalpur Priority Project (FAP 3.1).

All three sources suggest that household size in chars is larger than the national average of 5.44 (BBS 1992:38). The inventory found average household size to range from 5.38 in the Padma to 6.38 in the Jamuna, and whole-river averages to be higher than the national average for three of the four rivers. The Jamalpur Priority Project (FAP 3.1) found average household size in the middle Jamuna to be 6.1 in island chars and 5.1 in unprotected mainland (setback land) areas. The five char villages covered by the Flood Response Study (FAP 14) had a mean household size of 5.79.

The REIS study found char and embankment zones to "have nearly three times as many female-headed households as the [mainland] zones." This report explained that, "Most of the female-headed households are headed by wives of men temporarily absent for labour." The largest percentages of such households were located in the middle Jamuna (Elahi and Rogge 1990:40).

1.3.3 Education

The Jamalpur Priority Project study found that 83.1 percent of island char people had no formal education, as did 82 percent of those in attached chars or adjacent unprotected mainland areas. Similar results came out of the Flood Response Study's five char villages, where the majority of adults also had no formal education.

Attempts are made to educate char children, although they are seriously limited by inadequate resources, travel problems during monsoon and floods, and erosion-forced migration. The inventory found that slightly more than half of all inhabited mauzas in each river had primary schools: 50-53 percent in the Padma and Ganges; and 56-61 percent in the Meghna and Brahmaputra-Jamuna.

The chance of having schools in charlands increases greatly with the aging of the land and stability of the population. In the Jamuna, the average age of settlements in mauzas with schools is 21.4 years, about 50 percent older than settlements in mauzas without schools, which is 14.8 years. This pattern is characteristic of all reaches of the river.[6]

Table 1.5 Educational Facilities in Mauzas of the RRA Study Region (percent)

	Island Char		Attached Char	
Area	Primary School	High School	Primary School	High School
Upper Jamuna	85	15	58	11
Middle Jamuna	62	10	42	8
Upper Meghna	57	7	71	29
Meghna Confluence	50	12	69	18
Ganges	26	5	32	0
Padma (Middle)	31	7	75	50

Source: Charland Inventory

Data on educational institutions in mauzas covered by the RRAs is summarized in Table 1.5. The data show that for the Jamuna and Upper Meghna locations 50 percent or more of the mauzas in island chars have primary schools. Isolated char people are often very eager to set up, on their own initiative, some kind of a primary school (most rather modest in size and facility) for the education of their children, finding it extremely difficult to send them to more distant schools. Many char schools do not always function properly due to lack of teachers and problems caused by flooding and other natural calamities.

Erosion has a negative impact on education levels mainly by physically destroying schools and forcing settlements to disband and temporarily stop educating their children. A more subtle effect, pointed out in a PACT/PRIP (1993) manual, is that over time children lose interest in learning and divert their attention to income-generating activities, which can result in "the maximum of [displaced] children not ever returning to school".

1.3.4 Sex Ratio

The 1991 national sex ratio (number of males in the population for every 100 females) was 105.9 (BBS 1993:38); but the one study that systematically investigated this point in the chars, the Jamalpur Priority Project study (FAP 3.1), found it to be much higher in those areas: 112 in island chars and 111 in attached and mainland areas. According to this source, the sex ratio in the Brahmaputra-Jamuna middle reach rises to 120-124 in the over-44 age group.

1.4 Stages of Char Development

1.4.1 Physical Changes

Once they emerge, chars change; and human populations make use of them in differing ways as they develop. One progression takes a char from sand deposition to siltation, and then to some kind of vegetation (usually grasses), followed after a period of years by cultivation and, eventually, human settlement. Given the vagaries of river morphology, the process can be aborted at any point, and the prospects of change in a given char is a major topic of conversation in afternoon gatherings of char men or women. Several settlements visited by the RRA team were set up on a temporary basis as people waited to see whether their islands would survive that year's erosion.

Typical patterns of physical development and human land use differ from one reach to another and among the four rivers surveyed by the inventory.[7] Relevant information and data are presented in Figures 1.2 and 1.3 and in Appendix Tables A.1, A.2, and A.3.

In the Brahmaputra-Jamuna the majority of chars (56 percent) are settled and cultivated at the same time, although many (39 percent) are cultivated for some time before being settled. In this river the intervals between formation and subsequent developments—natural vegetation, cultivation, and settlement—are on average shorter than in the Meghna or Padma; but there are important differences between sections of each river. Once a char is formed in the Upper Meghna, for example, it seems to take twice as long for vegetation to appear than in other areas of the same river or in the Brahmaputra-Jamuna. The rates of development in the Ganges are different from those of the other rivers, in that natural vegetation appears on average more slowly (after 1.9 years). Cultivation, on the other hand is subsequently initiated more rapidly, in less than two years.

In the upper and middle reaches of the Brahmaputra-Jamuna it takes nearly three years for cultivation to begin after natural vegetation has appeared, but in the lower reach of the same river the average is closer to two years, as it is in the Padma. Cultivation is initiated more quickly (about two years after the appearance of natural vegetation) in Meghna confluence chars than in those of either the upper or lower reaches (3.5 and 2.6 years, respectively) of the same river.

Jamuna chars are settled nearly two years sooner after the beginning of cultivation than are Meghna

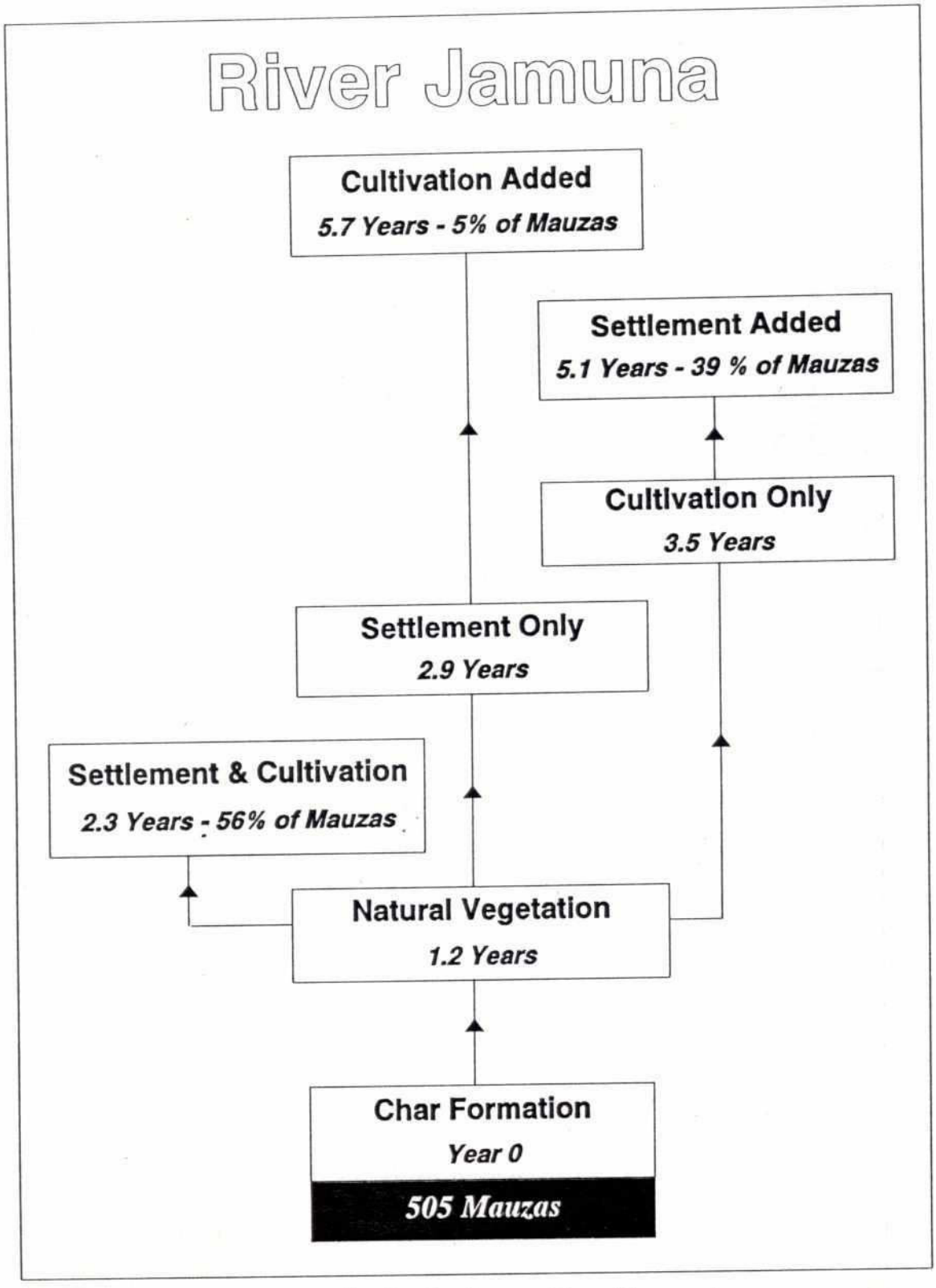
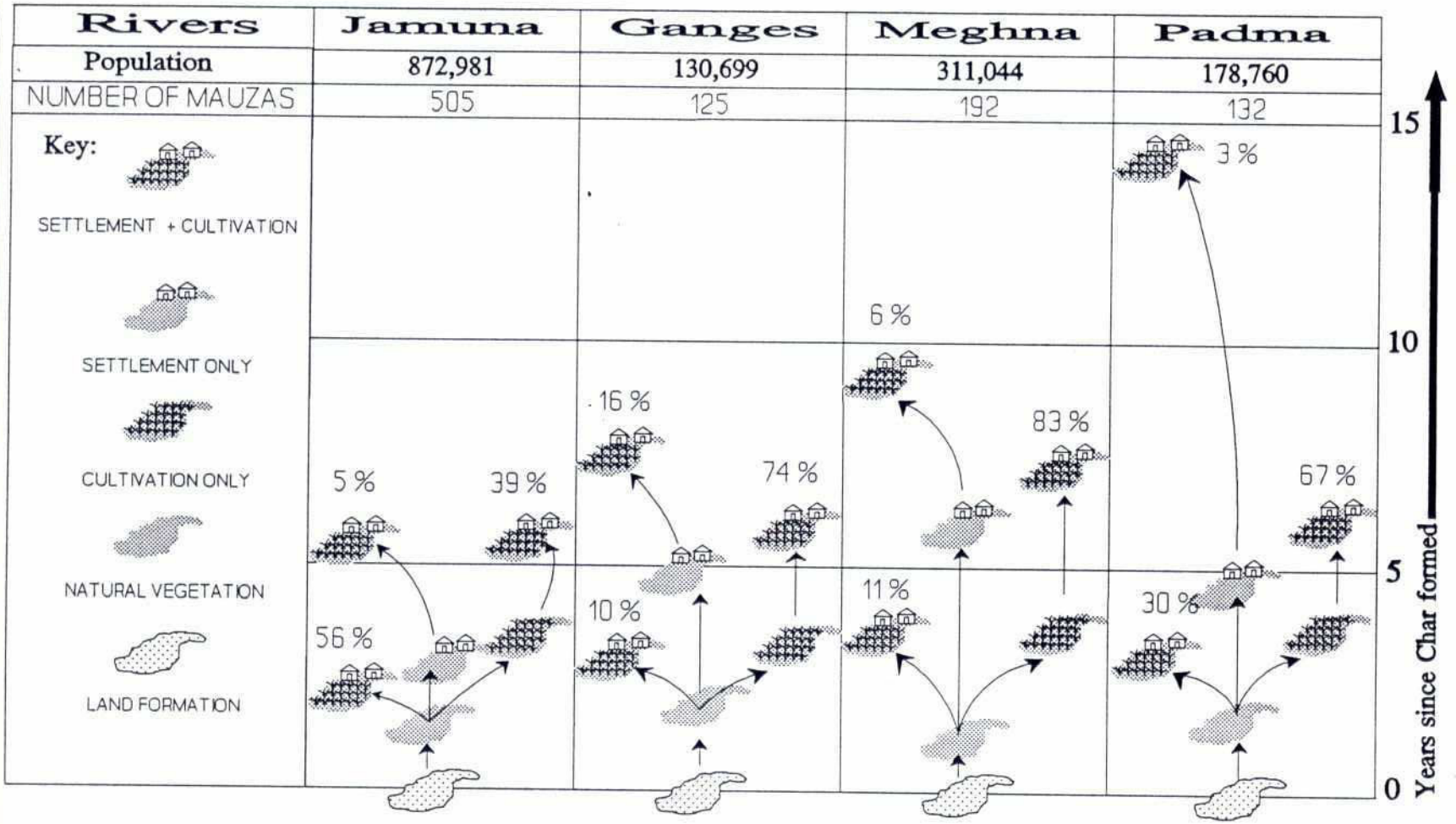


Figure 1.2 Charland Use Evolution for the Jamuna River (Averages)

Figure 1.3 Evolution of Settled Charland in the Major Rivers



Percentage given is the number of mauzas where the sequence was recorded.

chars (after 1.6 years and 3.5 years, respectively). In the Padma there was an average interval of 2.5 years between cultivation and subsequent settlement; but in the upper reach it was 3.5 years. The average interval in the Ganges is 2.2 years, but in the upper reach it is nearly 3 years.

In the Meghna, simultaneous settlement and cultivation is not especially common (11 percent), and a large majority (83 percent) are cultivated before being settled. Approximately two-thirds (67 percent) of Padma chars are cultivated before being settled, but 30 percent are settled and cultivated simultaneously. Three-quarters (74 percent) of Ganges chars are cultivated before being settled; but the Ganges middle reach has more char mauzas settled without cultivation (40 percent) than any other surveyed area.

The Meghna-Padma confluence was found to differ from the upper and lower reaches of the Meghna in that a significant number of chars (20 percent of mauzas) were found to have been settled and cultivated simultaneously. Cultivation before settlement, however, is still the dominant sequence (74 of 102 cases, or 73 percent).

Very few settlements in either river were established before the onset of cultivation (5 percent in Brahmaputra-Jamuna; 6 percent in the Meghna; 3 percent in the Padma; and 16 percent in the Ganges). If this does occur, however, it takes about three years for cultivation to be initiated in both the Brahmaputra-Jamuna and the Meghna. This is as much as one year longer than it takes to move from cultivation to settlement. Given that people may settle on charland under various arrangements that limit their rights to use the land, or that some people may be forced to live on land that is not yet cultivable, the time taken for a settlement to invest in cultivation is not surprising.

1.4.2 Bengali Terms for Char Development

Char people, depending as they do on the shifting lands, have a special vocabulary for the all-important changes in their environment. This vocabulary is not the same in all places, but the RRA team gathered some information on it, which helps to understand how char people see their world. In the Padma River a newly emerged char is called "floating river land" (*nodi bhasha char*), while a char that has existed for 10 to 20 years is called "ancient" (*shabuk* in the local dialect). In the lower Brahmaputra-Jamuna, people distinguish between a *char*, which emerges in the Bengali month of *Ashwin* (September-October) near the end of the monsoon season, and a *doba char*, which emerges later. In time, they explained, if it does not erode, it will become a "stable, established" (*kayemi*) place suitable for human settlement. The old words *diara, char,* and *rehai* are used interchangeably in the Padma to refer to islands, although *char* is the one currently in vogue.

Every region has some words for the mainland. Common ones are: *kayemi* in the northern part of Brahmaputra-Jamuna (literally, "stable"), *bir* in the middle reach of Brahmaputra-Jamuna (around Jamalpur),[8] and *desh* (literally, "state") or *denga* (literally, "lands near a river") in the Ganges.

1.4.3 Histories of Human Settlements

Chars have come to be settled in a number of different ways; and the RRA team encountered many situations of people in transition of one sort or another. In every area there was a core group who said they had been there for several generations, or as long as anyone could remember. Others had more specific migration histories. In the upper and lower reaches of the Brahmaputra-Jamuna many people settled on chars as renters or sub-tenants of large landlords (*zamindars* or *jotedars*) within the past century. In the Ganges, three of the six settlements visited had populations that had been recruited recently by large landlords seeking to claim, clear, and cultivate new chars. In the Ganges and Padma RRA studies these landlords were still referred to as *zamindars*. Many settlers in each area move from place to place within the rivers in small groups seeking sanctuary

with relatives or acquaintances when their lands disappear. Some chars have been settled from the mainland or other chars by people taking advantage of government land distribution or "cluster village" programs.[9] Some influential men of certain char regions own land in several places and move together with a retinue of dependents from place to place as their lands come and go, while others deploy forces of sharecroppers on their charlands but remain on the mainland as absentee landlords, a common pattern in the Padma RRA study region and occasionally found in the Brahmaputra-Jamuna and Ganges as well.

In some areas, social distinctions based on migration history persist. In the northern reach of the Brahmaputra-Jamuna, for example, one group calling themselves *Bangalis* saw themselves as the original settlers in their chars and maintained slightly different customs and some social distance from another group, the *Bhatiyas*, whose predecessors had come mainly from Pabna District and Mymensingh (including Tangail) around the turn of the century. A similar situation was found in the Ganges, although in this case some of the original settlers were calling themselves either *Chauras* or *Deshis*, and the "newcomers" were called *Bangalis*.[10] The grandparents of the latter group had come from Dhaka, Manikganj, and Noakhali seeking agricultural land and work opportunities in charlands.

1.5 Land Rights

Against the backdrop of the dynamic erosion and accretion of charland, the question of land rights assumes particular significance. Successive surveys conducted by the government have not been done in a way that dispel the confusion about the subject; rather, these have often added to the confusion by not trying to properly build one upon the other.

Land in the chars can be owned either by individuals or by the government; in the latter case it is known as *khas* land. In what follows, the subject of land rights is first discussed with respect to privately owned land, followed by a discussion of *khas* land.

1.5.1 Privately Owned Land

The controversy over who owns how much of newly accreting land on chars does not become acute as long as the land in question was previously recorded as belonging to a particular person, and the process of accretion takes place in quick succession to the event of erosion. When land is expected to accrete relatively soon after erosion (as has been the case in the Meghna confluence; see Table 1.6), the erosion-affected people prefer and mostly manage to stay nearby where they can monitor the status of their land. Once the land

Table 1.6 Erosion-Accretion-Settlement Timing for Meghna Confluence Island Chars Covered by RRA

Mauza	Erosion Year	Accretion Year	Settlement Year
Adam Manirabad	1988	1990	1993
Char Allen	1987	1989	1991
Dakhsin Borochar	1975	1980	1983
Chirar Char	1974	1978	1981
Nasirarkandi	1988	Still Eroding	People Migrating Away
Shibsen	1987	1990	1993

Source: Charland RRA

surfaces, it is common practice to re-demarcate their land using private *amins* (land surveyors) to make fresh measurements. If there are some small controversies, the *matbars* (leaders of local communities) usually resolve them. Major disputes may end in violent conflicts and formal litigation, however. Such disputes are more frequent in areas where land remains submerged for a long time after erosion, so that ownership rights become blurred.

The current law on land ownership in the context of erosion and accretion (see Section 1.5.2) states that when the land belonging to an individual is eroded and later resurfaces, the newly emerged land becomes the property of the government. In practice, people whose land is eroded resort to various means to prevent such an eventuality. There are some who continue to pay taxes on the eroded land to avoid official attention to, and subsequent recording of, the fact that the land in question has actually been eroded. Others manage to divert attention by exerting their influence. When the land resurfaces, these people arrange to pay backdated taxes, so that the erosion phase of the land does not get officially recorded.

An average *tahsil* (land record/revenue) office has very little in the way of personnel or resources (e.g., vehicles and boats) to cover the geographical area under its jurisdiction, and it would be naive to expect that these laws could be implemented by them. The government cannot expect to collect all land taxes when the land in question is eroded and submerged. Apart from a few people who had their small pieces of land eroded and are interested in government loans requiring that all land taxes be paid up, most erosion victims in the RRA study areas very seldom pay taxes on eroded land. The char people also feel that the tax rates for the mainland and chars should not be the same since they find their land much less productive than that in the mainland. As a result, collection of land taxes is extremely poor (one *tahsil* office reported that the "good" areas would pay up to 20 percent of the assessed amount).

1.5.2 Land Rights Laws: Alluvion and Diluvion

The laws on land rights for chars subjected to erosion and accretion have the following historical milestones:

- Permanent Settlement, 1793—established proprietary rights of *zamindars*
- Bengal Alluvion and Diluvion Regulation (XI of 1825)
- The Bengal Alluvion Act, 1868
- State Acquisition and Tenancy Act, 1950—abolished proprietary rights of *zamindars* and (Sections 86, 87) modified charland rights of others
- Ordinance LXI of 1975 (effective from 4 November 1972)

Of these legal documents, the last two are most relevant to present-day understanding of the subject. While the Act of 1950 allowed the repossession of accreted land by the previous owners if the accretion occurred within 20 years of its erosion, the Ordinance of 1975, an Amendment to the Act of 1950 brought about by a Presidential Order (No. 135) in 1972, provides that "all newly emergent lands previously lost by diluvion should be restored not to the original owner but only to the government".

The people of the chars find it very hard to accept a law that says that their land would not be turned back to them if and when it resurfaces. While the purpose of the law might have been to "recover" land from the powerful *jotedars* and redistribute it among the landless and marginal farmers, in reality such redistribution is rare. Instead, "redistribution" in the opposite direction is more common. Powerful people are able to use whichever land legislation is to their advantage to retain land or add to their holdings. They may, for instance, draw the erosion of other people's land to the attention of the land administration hoping that the land will be declared *khas* when it resurfaces, so they can then lease it and obtain control over it.

1.5.3 Government-Owned (*Khas*) Land

A large proportion of charlands in some areas, particularly in the Ganges, is *khas* land. Rights over the use of *khas* land often bring about controversies and conflicts.

The rules and regulations on how to put *khas* land to use specify taking a lease from the local land revenue (*tahsil*) office; such leasing is commonly known as obtaining a "DCR," (Duplicate Carbon Receipt). In fact, much *khas* land seems to be forcibly occupied by influential people. It is common practice for such influential people to lease a small amount of *khas* land from the government, and spill over their domain of control (and use) into much wider territories of *khas* land.

Many char areas, particularly in the Ganges and Padma, were under the active control of *zamindars* from the time of British rule. When the *zamindari* system was abolished by the East Pakistan State Acquisition and Tenancy Act of 1950, much of the land there was converted to *khas* land. A few households in these areas still claim very large landholdings (well above the currently allowed ceiling) because their forefathers had big landholdings (mostly obtained as revenue collection estates under the *zamindari* system). Since the law does not permit such large holdings, these people are said not to have proper documents to claim such ownership. Typically, people keep land in the names of their relatives to get around the constraint of the land ceiling. Because they do not have proper official documents to claim ownership of all that land, these large landowners are not in a position to sell off their land to purchase property in the mainland, if they should so desire.

To maintain authority on such land, these influential people try to attract erosion-affected households and other very poor groups to settle on "their" land. One way of doing this is to announce to potential settlers that they can take home all of the first two crops they produce, as these crops will require high investments in labor in clearing natural vegetation and preparing the land. The people controlling the land often do not honor these informal contracts, and at times there have been conflicts between those who control the land now and others who seek to control it, resulting in the real cultivators not being able to get their own harvest.

Influential people who have traditionally had possession of *khas* land often retain the ownership of that land through cycles of erosion and accretion.

In some cases, newly accreting *khas* land is distributed among the people of a mauza/village, the distribution usually being skewed in favor of the local elite. Although the government has a program of leasing out *khas* land to poor landless people, there has been very little evidence of its implementation. Usually influential people, such as *matbars*, large landowners, and union parishad chairmen, arrange applications from eligible candidates but maintain control over the leased land, settling tenants on new chars, for example, and even charging rent for homestead land in the Padma. While cluster village projects organized to settle *khas* land in chars were found in the Upper Meghna and Ganges RRA study areas, these resulted in discontent among local people because of alleged irregularities in land allocation, and only involved a small fraction of the land and erosion victims.

NOTES

1. Sharif Kafi, personal communication.

2. The remote area described in this paper was not identified as a char area, but it was one. (Ben Crow, personal communication, August 1993)

3. 1991 BBS Census data were not yet available for comparison as of the writing of this report.

4. The Meghna charlands covered in the inventory extended from Araihazar and Banchharampur thanas in the north to Hizla and Laksmipur thanas in the south.

5. A mauza is a revenue village.

6. Comparable data are not available for the other rivers covered by the FAP 16 inventory.

7. This report is based on inventory data documenting mauza residents' memories of the years of charland formation, appearance of natural vegetation, beginning of cultivation, and first human settlement. For the Brahmaputra-Jamuna it relates only to data on chars formed since 1920 and for the Meghna, Padma, and Ganges, to the most recent land formations and subsequent developments.

8. Thérèse Blanchet, personal communication.

9. The char people whom the North West Regional Study (FAP 2) interviewed, "had moved to the char due to the loss of land and possessions in floods elsewhere. Indeed, in two perennial char areas, Rahmatchar and par-Diara, near Gaibandha, fifty percent of them said they had migrated to the char from the same place on the mainland." (1992:4-1).

10. According to Ralph Nicholas (1962:132), who did a comparative study of settlements in the deltaic and moribund floodplain of West Bengal, *Bangali* was the name by which the Mahisya cultivating *jati* (caste) referred to themselves throughout the state. He pointed out that the Mahisyas were such a large part of the population that, "It seems quite reasonable that they should equate themselves with the 'nation.'"

Chapter 2

THE CHARLAND ECONOMY

2.1 Resources: Availability and Utilization

2.1.1 Land

As in other parts of rural Bangladesh, land is the primary resource in the chars. Chapter 1 has outlined how cyclical erosion and accretion makes the land resource in chars changeable. Although land in the chars can often be quite sandy (on some chars more than 50 percent of the land is reported to be sandy), silt depositions also can make them extremely fertile. The fertility of some charlands has historically attracted many to exploit their potential.

Sand itself can be an economic resource if it can be marketed commercially to urban centers, where it is used for construction. In some Upper Meghna and Ganges RRA locations, sand was collected from the chars for this purpose.

2.1.2 Natural Vegetation

Newly accreted chars are initially colonized by grass, particularly catkin grass (*Saccharum spontaneum*, for example). Dense growth of catkin grass can accelerate silt deposition on chars. Decomposition of the grass also adds humus to the soil. Although this grass grows naturally on newly accreting chars, there are instances where inhabitants, or potential inhabitants, of chars have planted the grass on newly emerging land to hasten its conversion to agriculture. This was reported in parts of the Kurigram and Bhuapur RRA areas, the latter having been undertaken under an NGO program (Service Civil International).

Catkin grass is a multipurpose resource. Its primary use is as a building material, and a majority of charland houses are made of it. It is also a source of cash for char people who sell the grass in nearby mainland markets as building material. The stems of the plant are a preferred material for fences and the roofs of enclosures for betel leaf cultivation; in some char areas traders buy large quantities of it for betel leaf gardens in other parts of Bangladesh. The other major use of catkin grass is as fuel. It is mainly due to the copious supply of catkin in chars that people living there are relatively well-stocked with fuel year-round. The grass is also used as fodder; in monsoon it is cut for fodder in the chars and for sale to mainlanders. When floods inundate homesteads, cattle owners often make mounds of the plant for their cattle to stand on, raising them above the flood water. Catkin grass is also placed around the outer side of the earthen plinths of houses before monsoon to reduce the possibility of damage due to excessive rain, inundation, or waves.

2.1.3 Grazing Land

Wide expanses of grazing land constitute another economic resource in some charlands, particularly in the upper Jamuna region. The grazing land has encouraged cattle raising in many chars, particularly in those less vulnerable to frequent flooding.

2.1.4 Trees

Although the newly accreted chars have very few trees (except for quick-growing bananas) some older chars have a variety of fruit and timber

trees, including mango, jackfruit, guava, bamboo, *shimul*, and *jiga*. Planting of banana trees in and around the homestead is extremely common. They provide privacy for the homestead and act as protection from wind. The fruit of the banana is also a source of food and cash, of course, and the trunk is used for making rafts, particularly during floods. In the RRA study areas there were two government-sponsored tree planting projects, both in the Ganges area, in Chakla Binodpur and Diar Bahadurpur mauzas. Apart from bananas, people do not plant "permanent" trees on chars they perceive to be erosion-prone.

2.1.5 Open-water Fisheries

Fishing is an important activity in some parts of the Bangladesh river system. In the RRA locations of the Upper Meghna, Meghna confluence, and Padma more than 40 percent of the households reportedly fished as their primary occupation during the wet season, and many relied on fishing for income year-round. Fishing was not a major occupation in the Ganges and Jamuna. Data on fishing as a main occupation for all seasons are in Table 2.1. In addition to those whose primary support comes from the fish resources of the rivers, many others fish on a subsistence basis. The importance and type of fishing in charlands depends, among other things, on whether the area is close to major fish habitats, spawning grounds, or migration paths. The Upper Meghna is adjacent to extensive floodplain, and the Meghna confluence and Padma are important fisheries for migratory *hilsha*. The Jamuna area around Bhuapur,and to a lesser extent the Padma near Faridpur, are key areas for catching fish spawn and fry, particularly for carp. The seasonal availability of fish and the leasing rights that give people access to them also are important factors affecting the exploitation of open-water fisheries.

Table 2.1 Fishing as Main Occupation in Charlands (percentage of households)

River Reach	Island Char	Attached Char	Unprotected Mainland	Total
Upper Jamuna	2	3	2	2
Middle Jamuna	8	10	2	6
Upper Meghna	15	17	13	14
Meghna Confluence	28	18	8	15
Ganges (Middle)	7	2	2	3
Padma (Middle)	23	19	6	8

Source: Charland Inventory

2.2 Occupational Structure

As in other parts of rural Bangladesh, the main occupations in most charlands are agricultural. The intensity with which agriculture can be pursued on a char depends very much on the stage of its development. Chars may be cultivated without having human settlements on them, particularly in their early stages (see Section 1.4.1).

Farming occupations include owner cultivation, sharecropping, and day labor. Absentee ownership of land is common in some chars, and extends to control over cultivable *khas* land on some chars; in such cases there are more tenant farmers. Those involved in agriculture may cultivate their own land part of the time, and supplement their income with day labor.

On chars in the better fishing grounds (see Section 2.1.5) fishing is the primary occupation for many households. In other areas people fish as a "last resort" activity (for example, when they lose their land to erosion). Even under normal circumstances, the primary occupation of one season can become the secondary occupation of another season. In the Upper Meghna and Meghna confluence, for example, many people do agricultural work in the daytime, and fish at night.

Cattle rearing is also an important source of income in many chars.

Some chars, as previously noted, are endowed with wide expanses of grazing lands. When char people have relatively easy access to cattle markets, the propensity for cattle raising in the chars goes up. In addition to selling cattle, selling milk can also be an important money-earner. The milk is collected in most chars by one or two households known as *goalas*, who sell it to milk traders in semi-urban or urban markets. Sometimes people from outside come to the chars to collect milk.

Char people also trade in miscellaneous commodities. In the Ganges RRA location, trading in fabric was quite common on some chars. These traders keep their families in the chars, where they feel they have the desired amount of security, and procure fabric from the nearby district of Pabna (which produces a lot of fabric) and travel far and wide in search of buyers. In chars that are closer to towns people trade in small domestic items. Such petty trading is more common on attached chars than on island chars, the major reason being their generally better access to markets (in the Meghna confluence RRA location, for example, 4 percent of households on the attached chars had petty trading as the main occupation, compared with 2 percent on the island chars).

The occupational pattern is also influenced by the nature of the labor market in other parts of the country. Farm laboring does not necessarily mean being confined to one's immediate location. Many char people seasonally migrate in search of agricultural work. For example, people go to the haors of Sylhet during the peak of the boro harvest when there is a shortage of laborers to complete the harvest on time. Char dwellers also work as unskilled laborers on mainland earthwork projects, and some have traditionally been involved in specialized mainland occupations. In parts of the upper Jamuna RRA area, for instance, some households have traditionally worked as saw-operators (*karatis*). Some of these people, when affected by erosion, have been able to move their entire families to their job location. Although most of them have moved their families back onto their own land when it resurfaced, some managed to keep together in the mainland, which is their preferred option.

Occupations are also affected by the cycle of migration caused by erosion. Frequent migrations may entail unemployment for some people and can result in quick occupational changes. Much depends upon the options available, which vary. Socioeconomic standing, location, erosion risk, and the speed of dislocation all affect choice of occupation if a household migrates. A char household prefers to own land in more than one char in the hope of having a place of its own to move to in the event of homestead erosion. Many households, however, cannot afford such "portfolio-diversification." Therefore, erosion may turn a farmer into a day laborer working on another char or on the mainland, or a wage laborer or trader in an urban area.

2.3 Market Orientation

The char people are quite heavily dependent upon markets. While some chars are rather remote from urban centers and their people cannot easily frequent mainland markets, many char dwellers deal with at least one major mainland market once or twice each week. In some char complexes far from mainland markets, a marketplace has grown on one of the relatively stable chars to serve the people that live there. Although these markets cannot be substitutes for the mainland markets, they act as secondary markets and are important during emergencies. People who find it too expensive to carry merchandise to distant mainland markets bring goods to such local markets to sell to middlemen.

The char people depend on markets both as consumers and as suppliers. They sell agricultural produce (food crops, cash crops, etc.) and buy consumption essentials, implements, production inputs, etc. They sometimes sell some of their agricultural products to the traders right in the fields. Chars with extensive cattle-raising operations are often served by specialized cattle markets. While not entirely dependent upon the charlands, there were markets in the upper Jamuna and Meghna confluence RRA areas that were found to be dealing exclusively with cattle. These markets

Table 2.2 Households Per Boat

River Reach	Island Char		Attached Char		Unprotected Mainland		Total	
	Engine Boat	Other Boat	Engine Boat	Other Boat	Engine Boat	Other Boat	Engine Boat	Other Boat
Upper Jamuna	103	14	112	20	144	33	116	19
Middle Jamuna	68	13	38	12	115	7	71	10
Upper Meghna	30	3	48	5	47	7	47	5
Meghna Confluence	38	10	101	14	74	10	69	11
Ganges (Middle)	74	14	46	19	412	60	147	29
Padma (Middle)	37	4	63	4	123	8	101	7

Source: Charland Inventory

are within easy reach of the cattle owners in the upper Jamuna and Meghna confluence areas.

Most char people find it easier to go to marketplaces during the monsoon when the river channels leading to the markets are navigable. Of course, floods during the monsoon can also make the journey hazardous, and may even inundate some marketplaces, although some of the trade in periodic markets (*hats*) can continue from boats. Another constraint is the threat of erosion, which limits the number of markets. Markets on riverbanks, which are convenient for char people, often erode. The market at Dighirpar in the Meghna confluence area, for example, has largely been eroded since the RRA; and Gobindashi market in Bhuapur area has been moved a couple of times because of erosion.

Access to markets during the dry season is often very difficult for char people as walking becomes the main means of reaching markets. Walking long distances on sand is both tiring and time-consuming, particularly when bulky items have to be carried. Data on availability of boats to the char people, which constitute the main mode of transportation, particularly in the monsoon, are presented in Tables 2.2 and 2.3. Availability of boats seems to be relatively high in the Upper Meghna and low in the Ganges and upper Jamuna.

Dependence on markets has increased over time according to the char people interviewed. Population pressure means that resources are used more intensively, and people tend to specialize where they have a comparative advantage. Farmers in the Upper Meghna island chars, for instance, reported cultivating more watermelons because they are suited to the sandy soils, and because good road and engine-boat communications give them access to nearby urban markets and to Dhaka.

2.4 Agriculture

Table 2.4 provides some data on the commonly grown crops in the charlands. Mixing broadcast

Table 2.3 Households with a Boat (percent)

RRA Location	Island Char	Attached Char
Upper Jamuna	10	16
Middle Jamuna	37	8
Upper Meghna	82	52
Meghna Confluence	23	28
Ganges (Middle)	2	3
Padma (Middle)	30	15

Source: Charland RRA

aus and broadcast aman is a common cropping practice in the chars. Among *rabi* crops, wheat, a variety of pulses, groundnut, and chilies are important. The low lands often produce high yields of local boro.

Agricultural productivity depends on soil fertility and flood regime, which vary considerably in the charlands. The proportion of sand to silt in soil is a critical factor. As Table 2.5 shows, sand content in the soil is particularly high in Jamuna chars.

Flood regime is also important, lower lands are often relatively silty but are inundated for a long period. Often these areas can only grow a single local boro crop each year as is done, for example, in the Meghna (upper reach and confluence). Low cultivation intensity, however, need not mean low production value. Land that is single cropped with L. boro and suffers no flood losses an give as good a return on average as other land where broadcast aus and aman can be grown but where there is a high risk of flood damage during the monsoon. Table 2.6 reports data on cropping intensities of the charlands in Ganges, Padma, and Meghna as they compare with the national average.

Table 2.7 presents data on cropping intensities by land elevation for the RRA locations. The cropping intensities are relatively high on high land of the Upper Meghna and Meghna confluence charlands. The very low lands are good only for a single crop, local boro.

Table 2.4 Common Charland Crops

Crop	Percentage of Mauzas Reporting	
	Island Char	Attached Char
B. Aus (L)*	96	91
Wheat	76	83
Pulses	64	75
Local Boro	60	41
Groundnut	52	50
Chilies	52	33

Source: Charland RRA
*Often mixed with B. aman.

Table 2.5 Percentage of Sandy Soil in Charlands

River Reach	Ganges	Jamuna	Padma	Meghna
Upper	29	57	45	21
Middle	42	51	31	37
Lower	33	58	28	12
Total	34	56	35	24

Source: Charland Inventory

Table 2.6 Charland Cropping Intensity

River	Cropping Intensity
Ganges	185
Padma	178
Meghna	150
Bangladesh	172

Source: Charland Inventory and 1992 Statistical Yearbook of Bangladesh (BBS)

Table 2.7 **Cropping Intensity in the Island and Attached Chars of the Meghna, Padma, and Ganges by Land Elevation***

RRA Location	Island Char	Attached Char
Upper Meghna		
High land	227	288
Medium land	255	270
Low land	100	100
Very low land	100	100
Meghna Confluence		
High land	262	271
Medium land	256	277
Low land	163	135
Very low land	100	100
Ganges (Middle)		
High land	190	200
Medium land	200	200
Low land	149	165
Very low land	no such land	no such land
Padma (Middle)		
High land	200	145
Medium land	192	202
Low land	133	143
Very low land	no such land	no such land

Source: Charland RRA

*Land elevations were generally defined by the char dwellers as follows: High = Less than 1.2m of water on land during high monsoon; Medium = 1.2 to 1.8m of water on land during high monsoon; Low = Over 1.8 to 2.7m of water on land during high monsoon; Very low = More than 2.7m of water on land during high monsoon

While the mix of broadcast aus and aman is important in medium lands in the Upper Meghna, confluence, and lower Padma, and more locally in the Jamuna, a single crop of aus paddy tends to dominate as soils become sandier in the Ganges and upper Padma. In stark contrast, the silty, flood-free area of Hizla in the Lower Meghna grows two transplanted paddy crops (boro followed by transplanted aman) in a year. Outside that area, HYVs are limited to irrigated boro in some unprotected mainland areas, particularly along the Jamuna and Upper Meghna. No paddy crop is without risks, however. Flood proofing surveys found that in the Brahmaputra aus was harvested early ahead of rising flood water. In the Padma, aman was damaged by rapidly rising water levels. In the Padma and Meghna confluence, crops planted late due to delayed drainage were damaged when the next floods came early.

Rabi (winter) crops are therefore less risky and take advantage of the maximum land area. A wide variety of rabi crops are grown, in some Brahmaputra-Jamuna chars millets are important and may be grown more than once in a year, while in other charlands the crop is very rare. Groundnuts are commonly grown in the sandier soils of the Ganges, Padma, and Meghna. In the Ganges this is apparently the result of past extension programs, but groundnuts are much less widely grown in similar chars in the Jamuna. Similarly, sweet potatoes are an important food and fodder crop in the Upper Meghna chars, but they are less important in the other rivers.

2.5 Fisheries

Of the six RRA locations, fishing has been found to be extremely important to the char communities in the Meghna (upper as well as lower) and the Padma.

Fishing households do not always operate their own business. In the Meghna chars, for instance, many fishermen rent fishing gear from somebody else, the equipment rental usually being a 50 percent share of the catch. This is often the case where large nets costing Tk. 50,000 or more are used. Some fishermen also work as employees for a fixed wage.

Catches are usually bought by traders right on the river; these traders then sell to wholesale shops (*arats*) usually located in a large mainland market.

Traders supplying retail outlets in the urban areas then purchase the fish from the *arats*.

The poor people of the chars often reported that they cannot buy nets and/or boats and are therefore unable to exploit fish resources. They said that they did not receive any institutional assistance in procuring fishing gear. There appear to be no programs to provide credit to potential fishermen. But the management policy for the main river fisheries is not yet clear. Each thana has a fisheries officer, but they are primarily involved in culture fishery development. Involvement in fishery management depends on the system in place. In several of the RRA study areas, such as the Upper Meghna, licensing of fishermen (the "new fisheries policy") has been introduced, in other areas the older system of auctioning leases to fisheries is still in place. Although the existing system is supposed to be phased out, it continues and ex-lessees still control riverine fisheries in some areas, such as the Upper Meghna, where they exclude licensed fishermen from the most productive river reaches. Despite problems of access to fisheries, their productivity in some areas (upper Meghna) enable households to earn a living even when erosion takes their land. Fishing, therefore, is an occupation that is adjusted to the ever-changing charland environment.

Widespread use of fine nylon monofilament nets (locally called "current nets") is reported; these catch not only mature fish, but also juvenile fish, which is prohibited by law. Fisheries regulations have not been enforced properly, and it is reported that the fish stock has been depleted over the years. Hence there is a basic contradiction between the need to help poor fishermen get a better livelihood and the need for sustainable exploitation of fish resources. At present neither of these aims is achieved, and the rich and powerful benefit.

2.6 Livestock

Livestock, in addition to providing income through sale are also exploited as draft power for cultivation, food (meat and milk), organic manure, and fuel. Cattle are the most important animals kept in the chars; goats are also widespread. Buffaloes are important only in parts of the Ganges charlands. Data on availability of large livestock are shown in Table 2.8. In the island chars, their numbers are quite high in the Jamuna, Padma, and Ganges.

Raising livestock for sale requires ample grazing land or fodder, and good marketing facilities. High flood and erosion risks can handicap livestock rearing because moving cattle to safety is expensive and difficult, and the rate of disease is high. Although people try their best to keep their livestock dry on earth or catkin grass mounds during floods, extreme floods necessitate removal of the livestock to distant places. Also, dry fodder is

Table 2.8 Large Livestock per 100 Households

River Reach	Island Char	Attached Char	Unprotected Mainland	Total
Upper Jamuna	81	74	65	74
Middle Jamuna	97	57	132	104
Upper Meghna	58	73	112	92
Meghna Confluence	42	55	76	63
Ganges (Middle)	97	27	31	49
Padma (Middle)	89	54	62	64

Source: Charland Inventory

difficult to obtain in floods. In most char areas, therefore, there are more cattle during the dry season than in the monsoon. Some households adjust their business to the environment by raising cattle in the dry season when grazing land is plentiful, fattening them on crop residues at the end of the *rabi* season, and then selling them for a profit at the start of the monsoon, particularly in the Meghna chars.

A "tenancy" system of livestock-raising was observed in many of the charlands. Under this arrangement, the owner and tenant of an animal agree on its market value at the time the animal is handed over. After rearing the animal until its sale value peaks, it is marketed, and the proceeds are equally divided between the owner and the tenant after deducting the original value of the animal, which is paid to the owner. When a cow gives birth to calves before being sold off, the tenant gets the first calf and its milk, and the second calf and its milk go to the owner. Wealthier char households and even those on the mainland, who can invest in livestock but do not have the labor to rear it, give animals to char people for rearing under such tenancy arrangements. This was observed in the Meghna confluence and Padma RRAs.

Cattle theft and robbery is reported to be a problem in chars, and households living close to the river try to keep a guard and keep their livestock in the vicinity of their homesteads. Some build cattle sheds in the interior of island chars so that *dacoits* (robbers) coming in boats are not able to find them easily.

Char people do not receive any institutional help from the government for rearing cattle more effectively. In some areas NGOs have provided small loans to buy cattle for rearing. SCI and RDRS, for example, have provided loans for this purpose in Bhuapur and Kurigram areas, respectively. There is a great need for veterinary services in most of the chars. Char dwellers often have only charlatans or faith healers to resort to when their livestock become ill. Mobile veterinary services would be very useful for them.

2.7 Women's Work

The sexual division of labor in some charlands is rather different from that of the mainland. In the mostly poor char families women's earning capacity come before the comparative luxury of *purdah* restrictions. Also, women perform some tasks rarely done by their counterparts on the mainland. Men often travel to seek employment elsewhere, so women shoulder some of their responsibilities at home. In erosion crises, men and women work together to move house with a minimum of concern about sexual division of labor.

The RRAs found that in the chars women's work included the following:

- Women and girls regularly do marketing.
- Women regularly earn money by doing field labor: cutting grasses, weeding paddy fields, and harvesting chili and groundnut.
- Poor women of the chars were also observed performing earthwork in development projects on nearby mainland areas.
- Processing catkin grass (drying, bundling, and marketing it) is mainly the responsibility of women.
- Women take on most of the cattle care responsibilities (gathering fodder, bathing, etc.), especially when their husbands are away earning money.
- Women and men together dismantle, transport, and reconstruct houses, including building plinths, when families are forced to move because of erosion.
- Following the monsoon, it is often the women's duty to collect earth and repair the plinth, floor, and the walls by mud-plastering.
- During the monsoon season, women place shrimp traps in the river near their houses, prepare bait (using a type of soap wrapped in paddy leaves), remove shrimp from the traps, and sell the catch to middlemen. (During the rest of the year this work is done farther out in the river by men with the assistance of children, who catch grasshoppers for bait.)

These activities, pursued by the char women in addition to traditional activities like household chores, kitchen gardening, cattle and poultry rearing, post-harvest agricultural activities, etc., indicate the latitude that these women have created for themselves to supplement household income.

2.8 Conclusions

The economies of the charlands are characterized by the varying types of resources available in them, which contrast significantly with situations obtaining in the mainland. The contrast is particularly sharp because of the cycle of erosion and accretion, which determines land stability.

The largely agriculture-based economies of the chars, the nature of which depends upon the stage of the char's physical development as well as demographic realities of the surrounding area, are also characterized by varying degrees of fishing and livestock-raising activities. There have been little in the way of extension services to utilize the potential of the charlands to contribute to the national economy. For example, no institutional interest has been shown in utilizing the very fertile lands of some of the chars, since they are not permanent by mainland standards.

The char economies have become more market-responsive than they used to be. One of the reasons for this has been the monetization of the country's economy over the years. The char people need better marketing services, however, both in terms of more effective marketplaces (which are not prone to erosion and can continue functioning during floods) and easier means of communicating with these markets. This has been achieved to some extent in the private sector with the many engine boats now in operation, but assistance from local and central government for charland market infrastructure has been minimal. In short, better integration can and should be achieved between the economies of the charlands and those of the mainland.

As Section 1.5 noted, there are many contradictions, confusions and conflicts over land rights in the chars. The problem is particularly acute for *khas* land on chars. For more equitable but economically efficient utilization of *khas* land in the chars, it is necessary to streamline the relevant laws and also implement them properly.

The migratory nature of the erosion-displaced population in some of chars has resulted in permanent dislocation to slums (*bustees*) on river embankments in semi-urban and urban areas. A policy is urgently required that provides for the temporary resettlement of displaced people. In addition, policies are needed that encourage and facilitate the process of resettling people in their own areas when the their land is available and habitable. The char areas, however, are increasing in size at the expense of mainland areas along some of the rivers (as shown by the inventory reports and satellite image analyses). Since the char areas are less stable and have lower population densities, provision is also needed to assist erosion victims from the mainland to find alternative livelihoods, as they cannot depend on moving to the chars.

Chapter 3

SOCIAL ADAPTATIONS

3.1 Formation of Human Communities

Char settlers negotiate the frequent changes of their environment in a structured social way. Meeting the challenges posed by this hazardous environment, and taking advantage of opportunities it offers, depends to a large extent on the effective mobilization of community groups that are organized somewhat differently than their mainland counterparts.

3.1.1 Alternative Settlement Modes

The RRA field visits identified several ways in which a community colonizes (or forms on) a char. One common pattern is the previously described battle between two rival groups, each led by a strong man with ambitions to control a newly emerged char. There were few cases of this in the mauzas visited. A second, more common scenario is for two or more groups to move around within a shifting land mass, peacefully (if begrudgingly) coexisting in different neighborhoods. A third pattern is for a group to migrate with its leader (*matbar*) to some place where he owns or otherwise controls land. Where tenants not previously acquainted with each other are recruited by a landlord to come and clear new charland (as was observed in the Ganges), the tenants will form cohesive societies of their own within a year or so after they get to know each other; the landlord in these situation is likely to remain absentee and aloof.

There are two kinds of informal leaders (*matbars*). One is a man with power based on his control of land and perhaps other important resources; his dependents are tied to him in patron-client relationships. He gives them sharecropping rights and various kinds of protection. This patron-leader is a member of a local elite, the upper echelon of a two-class society, who may have important political and social ties to the mainland (a union parishad chairman, for example). The second type of leader is a man who is an equal with his fellow settlers, who assign him the responsibility for maintaining harmony within the society (*samaj*). This man is selected for his personal qualities by group consensus.

Once formed, human settlements attract numerous families, often relatives or former neighbors of existing group members, people who have lost lands to erosion and are in need of temporary or permanent shelter. They are allowed in under certain terms and conditions discussed further below.

Whatever their origins, char settlers all seem to have a strong sense of territory. This is heightened by the shortage of land and the urgency of making use of it while it exists. Once a group forms, it must work in a variety of ways to defend its claims to ever-changing land masses.

3.1.2 Problems with Place Names

The identification of island and attached char settlements sometimes is confused. When a group moves from one place to another, for example, it may take its place name with it. The RRA teams encountered several cases of groups settled in a mauza other than their own but calling their settlement by their original mauza name. In the

northern Brahmaputra-Jamuna one group had done this, but the people with whom they were temporarily sharing an island objected to what looked like a name change being imposed on their place by the newcomers. Such quarrels have as an undercurrent the pervasive competition over land rights that seems to be typical of most all chars.

3.1.3 Kinship and *Samaj*

A recent CARE flood proofing proposal has argued that if assistance is to aim toward self-reliance,

> *...We have to first identify existing communities and institutions and conceptualize the hierarchy of the units—not for a lesson in sociology but as applicable to roads and infrastructure. It is a socially sound principle that development can be best achieved building on the social capital that already exists. It may be possible to create new institutions for new purposes, but that takes years or decades.* (CARE 1993)

This principle applies as well to flood proofing as well as any other public program focussed on improving the capacity of char people to cope with floods and erosion and based on participatory planning.

Local life in all char areas visited by the RRA teams revolved around the familiar Bangladesh institutions of kinship and *samaj*.

3.1.3.1 Kinship

The typically larger households in charlands appear, from available information, to be extended families of various types, rather than nuclear families of two parents with many children. In the Flood Response Study's group of 30 villages, the five char villages had an average of 29 percent extended families, either married children supporting aged parents or other old relatives (15.6 percent), or some form of "joint" family, in which married parents lived with one or more of their married children (13.3 percent). Extended family types also were found in non-char villages, where they made up 28 percent of households. The unique feature of char households in this study was that 4 percent of them were the most complex type of joint family, in which two or more married brothers live with their married parents. This was a high percentage for the study sample, in which such families were found to make up only 1 to 3 percent of all households in other kinds of environments.[1] The joint family tends to be found mainly in affluent classes throughout Bangladesh and India; but in the char environment it may have some adaptive value in utilizing the changeable resource base. The REIS study report observed that, "Extended households and multiple nuclei households rely more heavily upon farming than upon day-labour in comparison with nuclear family households." (Elahi and Rogge 1990:40) This is an advantage in the char situation, but it may reflect more on the ability of a large family to take exploit social and work opportunities than on a privileged position in the agricultural economy, which is what it would indicate on the mainland.

Households in the chars, as in other parts of Bangladesh, are dependent on close relatives of two kinds; lineage-mates (called *bangsha, gushti,* or *sarik* in Bangla) and relatives by marriage. But, in the chars kinship ties can be exercised to an even greater extent than they are elsewhere. When moving temporarily during the rainy season or permanently because of erosion displacement, people sometimes turn to their relatives, often relatives by marriage, for shelter. If they live near each other, groups of lineage-mates may try to remain together when they move and pool their resources to maximize their efficiency in taking advantage of new opportunities. For example, they may share draft animals.[2]

3.1.3.2 *Samaj* and *Salish*

All of the settlements visited by the RRA team, except for one very new one, were organized into "societies" called *samajes*. Depending on the size

of the population, its homogeneity, and other factors there were from one to 10 societies in a settlement of less than 600 households. Some larger settlements had more; one in the Padma, a mauza of 1,400 households, had 40.[3] A newly settled group may retain its affiliation with a society in the place from which the members have come. Some societies had only one leader, or patron (*matbar*), but many had more than one. The ones encountered by the RRAs were religiously homogeneous, although this is not always the case. Most of the Muslim societies ritually express their unity by praying together on Fridays and sharing sacrificial meat at Eid; but some others (e.g., in the very poor community of laborers at Diar Bahadurpur in the Ganges) did not emphasize religious ritual to such an extent. There were very few Hindus in any of the chars visited, but in one Padma mauza where there were, there was a Hindu society.

The members of a society are responsible for helping and supporting each other to the best of their ability. This typically includes emergency assistance, money contributions to fund dowries and cover marriage expenses, and helping in quarrels with outsiders. When displaced by erosion, many people said that their *samaj* made a resettlement decision and the group would attempt to travel together to a new location. If they could not all find a place together, separate households might stay with relatives for a while, but the expressed desire to remain with society members was strong in almost all places.

An important difference between mainland and char societies is the flexibility and relatively *ad hoc* character of those of the chars. On the mainland society membership in a *samaj* seems to be a lifetime bond, but this may not be true in char society, where circumstances can force people to separate. According to some people who had moved permanently to the mainland in the Ganges, their char society did not survive the move; each family went its separate way. Nor did char families expect to reunite with their original society if they ever returned to live on chars. There were several examples of families applying to join a new *samaj* when they had moved too far from their original one to maintain their obligations to it; and it was customary, according to most people, for the new society to enquire of the older one about the character of the applicants. Even though it may not be as permanent as its mainland counterpart, the char *samaj* imposes strongly binding commitments on its members; and failing to meet those commitments can result in social ostracism, which in the char environment could be a dangerous position. It is unlikely that an outsider trying to do any work in chars could accomplish much without the cooperation of local societies and their leaders or patrons.

Dispute settlement is managed by means of the conciliation and judgement process called *salish*. Conflicting parties petition the authority of a council of local leaders or patrons, who make decisions about personal problems (e.g., marital cases), disputes over property boundaries, and many other matters. Regional councils handle larger cases and serve as higher courts of appeal, as it were (these were mentioned in the Jamuna).

3.1.4 Government

Reports from RRA interviews on people's satisfaction with their union parishads varied considerably. In one Ganges mauza, inhabited by a newly arrived group, some were even unaware of exactly what union they were in. In two mauzas, one in the Ganges and one in the Padma, there was uncertainty about the location of the union boundary; and in the Padma mauza people said they vote in the elections of both unions claiming the mauza as its own. In the Meghna confluence area a conflict over a disputed district boundary erupted into a violent battle in the mid-1980s as union parishad elections approached, and three people died when houses were burned down and police opened fire on battling forces. In the upper Meghna area a similar dispute involved violence and harvesting of others' crops, and a long-running legal case.

Several people interviewed, however, felt that their union parishad had provided useful relief

services during the 1988 flood or when they had been displaced by river erosion. Union officials also have been instrumental in helping destitute groups find *khas* lands on which to settle. This was especially evident in one mauza in the Ganges,[4] and in two government-sponsored "cluster villages," one in the upper Meghna and one in the Ganges.

As the entity with control of all charlands that have re-emerged after once disappearing, the central government Land Records and Surveys (*Tahsil*) Office has the potential to be a strong presence in char society. In the Ganges and Upper Meghna it was a visible presence, more so than in other areas visited. In the northern Brahmaputra-Jamuna there were *tahsildars* in some areas who were involved in maintaining land records and granting permission to people who wanted to establish claims on accreting lands. In the lower reach of the Jamuna and Padma, in contrast, the government seemed to be minimally involved in such matters, which were said to be mainly in the hands of local patrons and surveyors (*amins*).

Government offices at both union and thana levels are difficult to get to from many chars, because people have to take boats and may even have to walk long distances. Even when they are not physically distant, many char people perceive government as remote and not concerned with their needs. Several groups expressed dissatisfaction with the level of government services and asked the RRA team to help them gain more recognition and assistance from all levels of government. Several people said they were not at all getting the level of services their taxes were supposedly supporting.

Char people of many areas are known to go with their animals and seek refuge on BWDB embankments during the monsoon season and in severe floods. For those who use these facilities, the government is in effect providing much-needed shelter services. Health and family planning workers provided regular immunization and contraception services in most areas. Other specific needs mentioned by groups were: regular, free engine boat service on market days; emergency evacuation and resettlement services during erosion events; visiting medical teams, especially during floods; veterinary medicine; restoring primary education services for children after floods and erosion; homestead gardening assistance; credit to buy cattle and poultry; and help with re-establishing land rights. One group in the middle Jamuna pleaded for a simplification of the land laws and clearer procedures.

3.2 Migration and Resettlement

The study has identified two types of migration of char peoples: temporary and permanent. As previously mentioned, it is very common for individuals to migrate temporarily away from their homes to seek employment. This section will focus, however, on relatively permanent migration associated with erosion displacement or the claiming of newly accreted lands. Some pertinent data about erosion and migration are in Tables 3.1 through 3.4, which show the situation in Meghna confluence and the Ganges, the former associated with very frequent erosion and accretion, and the latter experiencing such events relatively less frequently.

The tables indicate that the incidence of erosion in the recent past is quite high in the Meghna confluence. Many of the RRA mauzas were completely eroded, requiring that all households move. Erosion at the Ganges RRA location has not been all that recent, although some mauzas reported ongoing erosion. Past erosion in the Ganges has caused many people to seek employment elsewhere, often in nearby towns and urban centers.

"We have to keep rolling like silt," is a Kazipur saying quoted by Zaman, who found that 20 percent of those interviewed had been displaced 10 times or more by bankline erosion, and another 15 percent, seven to nine times (Zaman 1989:200). In the island chars and adjacent mainland areas surveyed by the Jamalpur Priority Project (FAP 3.1), 92 percent of present char households had moved in the past, 80 percent of them more than three times and 16 percent more than nine times.[5]

Table 3.1 Erosion Impact on Land, Houses, and Other Infrastructure (Meghna Confluence Mauzas)

Mauza	Major Erosion Years	Land Eroded (%)	No. of Households prior to Erosion	No. of Households Moving due to Erosion	Infrastructure Affected
Adam Manirabad	1988	100	300	300	A school was moved
Char Abdullah	Early 1960s	90	100	100	None
Char Allen	1970 & periodically since	85	400	400	None
Chirar Char	1988 onward	60	500	200	A few earthen roads were damaged
Dakhsin Borochar	Mid 1970s	100	600	600	A few earthen roads were damaged; a school was moved
Dular Char	1989 onward	35	600	200 households moved to safer land in the same mauza	A school was moved
Nasirarkandi	1988 onward	80	650	500	A few earthen roads were damaged; a school was moved
Uttar Shankibhanga	1983-88	25	-	Very few	None
Shibsen	1984-87	100	400	400	None

Source: Charland RRA

Table 3.2 **Years of Migration, Destinations, and Reasons for Destination Choice (Meghna Confluence Mauzas)**

Mauza	Year(s) of Migration	Destinations	Reason for Destination Choice/ Occupation at the Destination
Adam Manirabad	1988	Mainland unions to the south such as Kachikata and Char Bagha	Some had relatives there; others arranged to stay on other people's land & work as sharecroppers/day laborers
Char Abdullah	Early 1960s	Attached chars and mainland in Munshiganj	Some had relatives; some had land; others got sharecropping & day laboring jobs
Char Allen	1970	Mainland to the north (Dighirpar) and south (Char Bagha) and stable chars such as Char Atra and Noapara in Naria Thana	Sharecropping, day laboring, and fishing
Chirar Char	1988 onward	Balashia mauza in Raj Rajeshwar Union of Chandpur Thana	Most migrants had land and/or relatives to settle with
Dakhsin Borochar	Mid 1970s	Mainland to in Ekhlaspur Union of Matlab Thana	Sharecropping, agricultural day laboring, and petty trading
Dular Char	1989 onward	-	Some had land of their own; some are staying on other people's land and are engaged in sharecropping and day laboring
Nasirarkandi	1988 onward	Mainland Matlab (Ekhlaspur), mainland Munshiganj (Kalir Char), and attached chars in Munshiganj	Petty trading, sharecropping, & day laboring
Shibsen	1984-87	Mainland to the south (Sureshwar, Haimchar) and the relatively stable island char of Mathabhanga	Sharecropping, day laboring, and fishing

Source: Charland RRA

Table 3.3 Erosion Impact on Land, Houses, and other Infrastructure (Ganges Mauzas)

Mauza	Major Erosion Years	Land Eroded (%)	No. of Households Prior to Erosion	No. of Households Moving due to Erosion	Infrastructure Affected
Bhabanipur	1983-93 (on-going)	25	200	50	Three union roads lost; one school moved
Chakla Binodpur	1985-93 (on-going)	75	300	290	None
Char Golapnagar	1962-68	100	200	200	None
Diar Bahadurpur	Before 1947; specific years unknown	N.A.	-	Uninhabited at that time	-
Dikrirchar Talbaria	1971-76	100	250	250	None
Naosara Sultanpur	1950-53	100	200	200	A few earthen roads lost; one school moved

Source: Charland RRA

The Flood Response Study collected numerous cases of people who had been forced to move and face total economic upheaval. As one group described it, "River erosion takes away the smiles and happiness of many people, creating unending misery. The Jamuna River flows in both their eyes (signifying tears)....The char has ups and downs due to erosion, and so also do the lives of char inhabitants go: rich farmers and landlords (*jotdars*) of the past are now landless". It was not unusual for adults in the Jamuna to have moved six to 10 times in their lives; and one man interviewed in the Meghna confluence had moved 11 times in 21 years (between 1969 and 1989). The RRA team found, however, that fewer moves, four or less, were typical of life histories of Ganges and Upper Meghna adults.

Most, though not all, of the people interviewed by the RRA team had lived in charlands for several generations. If they had moved it was within groups of local chars. Available data from the Flood Response Study and REIS indicate that such moves are within small areas, usually about two miles or less. Of 89 Flood Response Study families that had moved recently because of erosion, most in two villages (one middle Jamuna and one Padma), only seven (8 percent) had gone more than two miles. (See also Elahi *et al.* 1991.)

It is important to note, however, that this study of erosion-related displacement and resettlement has focussed on people who remain within chars, rather than on the large numbers who have left charlands to live in urban slums, on embankments, or to other migration destinations. The generalization about migration distance therefore should be qualified: it applies to those who migrate somewhere *within* their original region.

Several permanent migration patterns were identified by RRA teams. One pattern, mentioned earlier, is the result of recruitment of tenants by a large landlord in need of help to clear and cultivate land over which he has gained control. In this case an announcement is broadcast throughout an area and diverse groups are attracted by a chance to rent and farm some land. The RRA team encountered one case of this type in the Ganges.

In other, frequently observed cases, there are continual moves of families or societies within

Table 3.4 Years of Migration, Destinations, and Reason for Destination Choice (Ganges Mauzas)

Mauza	Year(s) of Migration	Destinations	Reason for Destination Choice/ Occupation at Destination
Bhabanipur	1986 onward	Mauza: Mangalbari & Haripur Thana: Kushtia Sadar	•went to relatives •bought homestead land •took up jobs as porters, agricultural laborers and sharecroppers
Chakla Binodpur	1985-93 (ongoing)	Mauza: Char Jijira Thana: Lalpur Mauza: Raita Thana: Bheramara Village: Palashir Char Thana: Lalpur	•settled on railway land •trading in livestock and vegetables •fishing •leased govt. land for agriculture
Char Golapnagar	1962-68	Ansarbaria Jessore	•agricultural day laboring •rickshaw/van pulling •petty trading (paddy, pulses)
		Gouripur Thana: Lalpur	•some had land there •agricultural day laboring
		Muladuli Thana: Atgharia	•some had land there •agricultural day laboring
		Mauza: Golapnagar Thana: Bheramara	•settled on railway land •near to own mauza
Diar Bahadurpur	-	-	-
Dikrirchar Talbaria	1971-76	Kalukhali Thana:Pangsha	•some had land there •agricultural day laboring & sharecropping
		Chilmari, Talbari and Bheramara	•agricultural day laboring •rickshaw/van pulling •petty trading (mainly paddy)
		Mauza: Char Katra	•agricultural day laboring & sharecropping
Naosara Sultanpur	1952-55	Fazilapur Thana: Bheramara Maricha Thana: Daulatpur	•agricultural day laboring
		Bilmaria Thana: Lalpur	•agricultural day laboring •rickshaw/van pulling
		Ishwardi Town	•rickshaw/van pulling

Source: Charland RRA

their mauza because some part of it erodes or moves slightly over the boundary to an adjacent mauza. Yet another scenario is for households to move separately when the whole lineage and/or society is unable to find a place to settle together: these separate moves usually require imposing on relatives or wealthy people for some amount of time. Relatives are the preferred choice when this happens, but their hospitality may be limited by their own resources. Some people say that, in any event, they prefer to settle for the long-term near their fellow society (*samaj*) members and rely on relatives for short-term assistance. In all of these situations the society is likely to be led by its patron(s), who may own or otherwise control land in several areas. This pattern was found most commonly in the Jamuna chars.

When they are unable to sustain themselves on their own or their family's or society's resources, people in the Jamuna and Meghna, though apparently not in the Ganges, have another alternative in the arrangement known as *uthuli*, by which they can build a homestead on someone else's land without paying rent. In the areas where this practice exists, it is considered a last resort, the humiliating choice of a desperate household. Providers of shelter to *uthuli* families are often prosperous people, relatives by marriage, or even strangers (see Indra and Buchignani, 1992). People seeking shelter under this arrangement are vulnerable to exploitation and may be expected to perform services, paid or unpaid, for their hosts. They also may be asked to leave if the hosts decide they can no longer accommodate them. There also may be uncomfortable restrictions on them, as in one upper Jamuna case where the host objected to the *uthuli* family keeping farm animals. In the Padma it was not common for such people to rent homestead land, but in some cases the landowner raised the rent.

3.3 Conflict

The RRA team either encountered or heard reports of several cases of conflict over land in the chars. These cases were not battles between stick-wielding *lathiyals*, but they were nonetheless violent and very destructive. Typical forms of conflict were for competing parties to cut each other's crops or steal each other's cattle. Few cases resulted in murders or burning of whole settlements. The inventory also collected some information on conflicts over accreted land, and found violent conflicts to have occurred in 42 percent of mauzas in the Meghna, 38 percent in the Padma, and 36 percent in the Ganges.[6] These situations were characteristically fights between influential men and groups they mobilized to help them establish rights to charlands. These situations can harm the people who live in chars by causing them to lose assets (houses or cattle), and by discouraging them from planting crops, and ultimately may cause malnutrition and various other kinds of hardship as well as depriving people of even the limited degree of security that is possible in the chars.

More subtle, but also serious conflicts occurred at the governmental level, or between government agencies and char communities. In the Padma RRA there was dispute between thanas under Faridpur and Dhaka districts over claims to the same island char territories. A similar situation was identified by the RRA team in the Upper Meghna, where Comilla and Dhaka districts were fighting about a boundary. At the local government level were two cases in the Ganges, mentioned earlier, of unions competing for the same mauzas. Such situations do harm in their own way, although they do not result in the kinds of violence described above. They result in confusion about responsibilities for basic service provision and deprive citizens of services that are rightfully due them.

One form of unintended conflict was observed in the implementation of government programs, both in social forestry and in the cluster villages. These kinds of efforts, though well intended, were found to be provocative to people who already were very sensitive about *anyone*, including their own government, competing with them for land use rights.

3.4 Health and Sanitation

Health care access problems were mentioned frequently in RRA interviews with char people. The inventory found health services of some sort (governmental or non-governmental clinics, family planning centers, or hospitals) to be present in a small percentage of mauzas in each river: 13 percent in the Brahmaputra-Jamuna, 11 percent in the Meghna, 16 percent in the Padma, and 14 percent in the Ganges. In all cases, however, such facilities are located most frequently on the unprotected mainland. Some reaches are also far better served than others. In the lower reach of the Meghna, for example, there are more than 26,000 people per facility, whereas in the upper Meghna the situation is slightly better, with 17,000 people per facility.[7] In the whole of the Meghna, there were 15,785 people per facility in the unprotected mainland, whereas in the island chars there were 29,589 people per facility. RRA teams found coverage by immunization or family planning health workers, traveling every one to three months to most places, to be better than expected.[8] Access to primary health care or hospital services, however, was a difficulty confronting many char families who found the expense and physical problems of travelling to be daunting. In addition to formally trained medical practitioners, people in each area use local healers (*kabiraj*), particularly when they cannot afford the services of other kinds of doctors.

Table 3.5 provides data on availability of health care facilities in the mauzas of the unions covered by the RRAs. With the exception of the attached chars in the middle Padma reach, where some NGOs have been active in the health sector, very few health facilities were found.

A fundamental way to prevent illness is to have a secure and pure source of drinking water. In the Meghna, the inventory found some 79 percent of all households using hand tubewells for drinking water; in the Padma, 95 percent used them, and in the Ganges, 99 percent. According to the findings of this study, in some areas at least, island char dwellers were better off than people on the mainland in terms of access to tubewells for drinking water. Most mauzas visited by the RRA team had some tubewells, but these were not all operational year-round. A large percentage are submerged during the annual inundation and even more during severe floods. Thus, many island char people are drinking untreated river water during the monsoon season every year.

The RRA teams discussed water purification with some island char groups. Most said they do no purification of any kind. Some use alum (*fitkiri*), and others had received some purification tablets from a public agency but did not use them because they disliked the taste they gave the water.

Sanitary latrines were extremely rare in the char areas visited. The usual arrangement was that men, and sometimes women, used fields or naturally vegetated areas for this purpose. If there were latrines, they were simple *kutcha* fenced-in enclosures, and were likely to be used mainly by women. None of the visiting health workers discuss other kinds of sanitation arrangements with char people, according to RRA interviews, even though the current system creates health risks,

Table 3.5 Health Care Facilities Available in Charlands

	Island Char		Attached Char	
Area	% of Mauzas	Population per Facility	% of Mauzas	Population per Facility
Upper Jamuna	7	29,785	5	42,042
Middle Jamuna	13	8,381	18	5,845
Upper Meghna	7	42,470	14	26,961
Meghna Confluence	6	63,396	8	42,233
Ganges	5	5,959	5	13,770
Padma (Middle)	0	—	25	11,711

Source: Charland Inventory

especially during the monsoon season and in floods.

In all RRA study areas dysentery and fevers (and typhoid in the upper Jamuna) were said to be common problems during the monsoon season.

Other commonly mentioned health problems occurring year-round or at other seasons were: scabies (especially in the Meghna confluence), measles, chicken pox, and colds. Childbirth was also mentioned as a dangerous health problem in several interviews.

NOTES

1. One exception was in the two semi-saline villages of southwest Bangladesh, where 5 percent of all households were of this type.

2. The lineage is the group that shares property and inheritance rights; so it may have an economically corporate character under some conditions, e.g., in land ownership.

3. North Channel

4. Diar Bahadurpur. One group of villagers in this place said they make sure that all vote in every election.

5. Thirty percent of attached char or setback area settlers interviewed by the same study had to move once or twice because of erosion. Some of these would have been former island char dwellers.

6. The Jamuna figure of 8 percent is not strictly comparable because the question design was different than for the other study areas.

7. The figures on number of people per health care facility were: for Brahmaputra-Jamuna 19,000, Ganges 12,000, Meghna 20,000, and Padma 12,000. The corresponding figure for the nation as a whole was 38,980. One of the reasons for the relatively low figures for the rivers was the much lower density of population there. It should, however, be appreciated that the char people find transportation to a health care center a much greater problem than the mainland people.

8. In some RRA sites in the middle Jamuna and a few in other areas, people were not accepting of these services. For example, one settlement in the middle Jamuna was dominated by fundamentalistswho felt so strongly about birth control being sinful that couples using it were forced to be secretive about their practices. In two other places in the same river reach some segments of the population, apparently the poorer people, feared that immunizations might harm their children and rejected this service.

Chapter 4

FLOOD RESPONSE

4.1 Vulnerability to Flood Hazards

Char people are vulnerable to several hazards, of which flood is only one. In the north, violent storms, "nor'westers," can wreak havoc on fragile grass houses. Chars of the central and eastern regions are in the paths of some cyclones. In most places, diseases associated with the normal monsoon cycle may be more of a hazard than flood damage to crops. This section, however, will focus on char people's experience with annual inundation and severe flood. Some relevant information has been assembled in Table 4.1.

Riverine islands and nearby unprotected mainland areas have large percentages of low agricultural lands that are regularly inundated in the annual monsoon; this is an expected occurrence. The inventory found, for example, that some 57 percent of cultivable land in the Meghna is underwater in the monsoon season; and in the Padma, 60 percent is awash. The Brahmaputra-Jamuna inventory found variable average flooding from north to south: in 1991, considered a "high-average" year, about 65 percent of the total land area was inundated in the upper reach, but only 33 percent was inundated in the lower reach; similar variations were found in all four rivers covered by the survey. In the Ganges, as much as 76 percent of the area covered by the inventory was flooded at the peak of 1991 flooding.

The impact of severe floods on charland agriculture is determined by (1) the percentage of high, medium, and low lands cultivated, (2) the extent of double or triple cropping, and (3) the duration of flooding. There is no overall comparison of char height between river reaches, but in the six RRA areas the majority of agricultural lands were low lands. Although the percentages ranged from 10 to 90 percent, the area of low land on the Ganges was 50 percent, in the upper Jamuna and

Table 4.1 Percentage of Area Flooded at Peak Flood, 1991

River Reach	Island Char	Attached Char	Unprotected Mainland	Total
Upper Jamuna	73	63	51	65
Middle Jamuna	53	18	22	43
Upper Meghna	94	74	65	73
Meghna Confluence	44	83	61	66
Ganges (Middle)	90	84	86	87
Padma (Middle)	88	56	69	71

Source: Charland Inventory

Meghna confluence, 60 percent, in the middle Jamuna, 80 percent, and in the Padma, 90 percent.[1] All areas visited had some mauzas with double- or triple-cropped land, indicating some degree of agricultural vulnerability to floods in all char areas.

The extent and duration of severe floods, such as those of 1987 and 1988, were especially significant in most charlands, although the impact of these events on the chars of each river also differed from reach to reach. In 1988, Meghna island and attached chars were almost 100 percent flooded for 40 to 60 days, and unprotected mainland areas for an average of 74 days; in the lower Meghna, however, the waters broadened as they approach the delta, and charlands in this area were less severely affected than in the upper Meghna and confluence areas. Each river showed a similarly dramatic increase over normal inundation levels in 1988 for most reaches. In the Jamuna, average flood duration was 24 days; in the Padma, 38 days; and in the Ganges, 27 days.

Sand carpeting is a common annual problem for many char agriculturalists, even those who consider normal inundation mostly benign. The RRA team encountered many whose agricultural lands were ruined in one season, forcing a change of occupation at least until some other development might reverse their bad fortune.

People build homesteads on the highest available land and (if they stay for any length of time in a place) further elevate their dwellings on built-up plinths to avoid annual inundation. Unlike on the mainland, however, many char people expect to have their homes flooded each year despite these measures, creating inconvenience for people and some danger for animals. So it can be said that, if water entering the homestead is a sign of a flood *crisis*, such events are far more common in charlands than in the mainland.

In RRA interviews, people explained to team members how they prepare for and cope with either normal monsoon inundation or severe floods. In most homesteads, grains and other valuables are stored on platforms (*machas*), whereas mainland people only build such structures if they anticipated special flood problems. People try to anticipate the extent of inundation as the monsoon approaches mainly by listening to the radio; but few said this was an adequate source of information, and many said they could cope more successfully if they had more time to plan for specific rises in river water levels. One widespread pattern of flood preparation with serious negative economic consequences is the sale of cattle and other large animals at low prices before the monsoon season. This measure was described in all areas as one way to salvage some part of the investment in animals rather than risk losing them to disease and starvation, possibilities anticipated even in normal inundation conditions, when settlements and grazing lands may be underwater.

When inundation or flood occurs, people may also choose to move with their animals to higher land, often the nearest BWDB embankment. If they remain at home, many have problems caring for large animals, which may have to stand in water for some time, or be unable to lie down because of the water that surrounds them, when that occurs the animals become fatigued and vulnerable to diseases. Poultry are vulnerable to drowning in floods, just as they are on the mainland.

Problems people mentioned in coping with floods are similar to those in the mainland but they are more intense and possibly annual events in chars. These include difficulties obtaining food and supplies, and difficulty cooking. Access to medical care is especially problematic. One Ganges char woman, in describing the differences between char and mainland life said, "The worst thing about char life is women dying in childbirth because they cannot get medical attention during floods". Privacy for sanitation purposes (urination, defecation) is a problem for everyone, but especially for women. Health dangers from drinking contaminated river water are prevalent during monsoon season and almost universal during severe floods, when most tubewells are submerged.

4.2 Perceived Associations Between Flood and Erosion

Although few people interviewed by the RRA teams see a direct connection between flood and erosion, the monsoon season is a transition point in char life, when many people are waiting to see how their land survives, i.e., whether they will have to move or not. It is the key decision point in the annual cycle. Many people explained, for example, that they would not invest much effort or money in building up their homesteads until after the monsoon season, when they would know whether their island was still there.

4.3 Future Flood Risks

Attention under FAP has been drawn to the possibility that embankments to protect mainland areas will raise flood levels in the charlands by restricting flood flow. FAP 25 (1993) modelled floods of 1986, 1987, and 1988 magnitude for the main rivers with seven different combinations of main river embankments, plus sea level rise, and construction of the proposed Jamuna Bridge. The results of this study were essentially that the greatest effects would be on the Jamuna, and to some extent the Padma (and lesser rivers outside the Charland Study), and that the greatest impact would be from the combination of the Jamuna Bridge and left bank Jamuna embankments, which would have a synergistic impact in raising peak flood levels. Table 4.2 summarizes the predicted increases in water in 1988 under three of the FAP 25 scenarios. These results show that if all these works went ahead, some 1.77 million people living in the chars and unprotected mainland of the middle and lower reaches of the Jamuna and Padma, could be flooded by an extra 30 to 80 cm of water (depending on char location) in a virtual repeat of the 1988 flood each and every year.

Table 4.2 Predicted Increase in Water in 1988 Under Three Scenarios

River/RRA	Gauging Station	Increase (cm)		
		Scenario 2	Scenario 3	Scenario 5
Upper Jamuna	Bahadurabad	8	9	9
Middle Jamuna	Sirajganj	55	83	87
Ganges	Hardinge Bridge	0	0	6
Padma	Mawa	17	17	34
Upper Meghna	Baidyer Bazar	-8	-8	3
Meghna Confluence	Chandpur	6	6	17

Source: FAP 25
Scenario 2 = Jamuna-Dhaleswari left embankment
Scenario 3 = Scenario 2 plus Jamuna Bridge
Scenario 5 = Maximum embankment development

NOTES

1. These modes were affected by RRA teams' selection of places to visit, but they reflect a relatively consistent pattern.

Chapter 5

RECOMMENDATIONS

5.1 Background Information Needed by Program Planners

When working in riverine charlands there are a number of points to keep in mind about any group of potential program beneficiaries. This study has demonstrated that charlands are not all alike and the social structures of char people vary somewhat from people in the rest of Bangladesh. Char people therefore need to be understood within their own context. Such information will enable the planner to understand several factors likely to affect the outcome of planned activities. The following should be taken into consideration:

(1) Type of charland and stage of char development: attached, island (accreted or detached mainland) or mainland; new or old; cultivated, settled, or cultivated and settled; people's estimates of the char's stability.

(2) Settlement history: are the inhabitants a long-established local group or recent immigrants; what were their motives for settling; what ties do they have to other places; are there any local conflicts?

(3) Community composition and social structure: families (*gushti, sarik*) and societies (*samaj*) as well as the nature of their leadership; meaningful, long-term associations between people likely to remain interdependent; terms and conditions of land grants to destitute settlers (*uthuli* in Jamuna and Meghna). Nature of ties to union and thana officials.

(4) Type of Household: female-headed percentages, joint families able to take advantage of diversified employment options and pool resources.

(5) Typical erosion displacement experiences of the group: number and timing of moves; groups that have stayed together when moving; their ideas of problems caused by these experiences and current or future needs.

(6) Alternative occupational patterns: previous working experiences and concepts of primary, secondary, and temporary work possibilities for both men and women.

(7) Local skills in exploiting resources (lands, animals, natural vegetation, crops) that can serve as a basis for introducing new techniques or expanding income-generation programs.

(8) Main assets: animals, tools, cooking equipment—things needing protection in floods.

(9) Gender division of labor: normal work activities (current, previous, acceptable/unacceptable) of males and females of various ages.

(10) Perceptions of problems and needs; the honest reactions of char people to outsiders' ideas and plans for them.

The resource base of a community tends to be greater on more established land. Intense local conflicts will reduce the incentives to invest in productive activities even if programs are imple-

mented to facilitate them. Likewise, control by large landlords who may evict tenants and erosion risk may make investments inappropriate.

5.2 Specific Program Interventions

Some specific public programs could benefit large segments of the charland population covered by this study. The priority recommendations presented here are of five types: information resource development, flood and erosion assistance, basic services, economic development measures, and policy improvements. Some of these recommendations have been made elsewhere in slightly different forms; the reader may wish to consult the sources referred to in Section 1.2 for further ideas.

5.2.1 Development of Information Resources

Baseline data on charland demographics and resources have been compiled in the inventories under the Charlands Study. These need to be updated periodically, combined with 1991 census data, and refined as development agencies and departments make use of the data for planning purposes. Using the inventory, strategies need to be developed that better utilize the resources available in the chars.

5.2.2 Flood and Erosion Assistance

Flood proofing a settlement, i.e., preparing it to withstand floods with minimum disruption of normal subsistence and social activities, is a complex subject that has been addressed by a special report of the Charlands Study. Ultimately it can be a vehicle to increase economic flexibility and protect resources, thus protecting vulnerable groups from disastrous losses at times of crisis.

Within this larger framework, some specific priority needs associated with normal inundation and floods were identified by RRA teams visiting several riverine char areas:

Improved flood warning is an urgent need in all char areas. Since some people have to make elaborate preparations, advance warning about water levels in specific areas would greatly enhance their capacity to prepare for floods. The main requirement is for meaningful warnings that relate to local features and flood levels. The most appropriate methods of information dissemination would be radio and local announcements over loudspeakers in marketplaces. Other priority needs can be most effectively used when combined with improved warnings.

Animal shelter is one of the most common problems char people have in normal inundation, and is even more important in severe floods. It is such a serious problem that people sell off large animals in anticipation of the rainy season rather than risk losing them to disease or starvation. Any public monsoon season arrangements to shelter animals more securely, feed them, and provide veterinary services would be of great interest to people in many char areas.

Human shelter facilities most used are public high places, especially BWDB embankments. Development of multi-purpose raised areas in charlands that could be used for basic services such as education and health care would make such facilities accessible. Their development would, of course, have to be appropriate to the stage of development of the charland. Raised shelters, for instance, are not advisable in very new land or in land that is rapidly eroding.

Transport for people and animals to safe shelter areas is also a priority need. During the monsoon season and in severe floods transport by engine boat, if it is available at all, becomes so expensive that many can barely afford it.

Water purification that is effective and acceptable is of the utmost importance during inundation and floods, when large percentages of char people in all charland types drink polluted river water because hand tubewells are submerged. Fuels tend

to be in short enough supply during the monsoon season to make boiling impracticable for many households.

Resettlement services for people displaced by erosion would under some circumstances provide them with *khas* land, and in other cases would require helping them secure jobs in urban or semi-urban areas. Policies are also required to help people get back to their original locations in chars if and when they re-emerge and become habitable.

5.2.3 Provision of Basic Services

Extension services: Char people would benefit from extension services on crop-diversification, seed storage, and irrigation. Extension services in livestock-raising could include mobile veterinary services during periods when diseases are most common.

Health and sanitation services, as in many other rural Bangladesh communities, are in short supply in the charlands. In addition, the cost of care prevents many from seeking skilled medical assistance in any but the most dire emergencies. Providing health care to people in island chars is difficult year-round, but it is especially problematic during the monsoon season, when a mobile health team would be the best approach. The study found that risks from disease are greater than risks from flood waters during normal inundation and floods.

Review of the information obtained by the RRA survey indicates that sanitary conditions are poor in the charlands. In the absence of sanitation facilities, diseases like diarrhoea and dysentery are very common year-round. Initially, it is important to raise people's awareness of the necessity of good sanitation (in the middle Jamuna, SCI was found to be conducting such a program). Training people in the building of low-cost latrines (including ring latrines), which are not left exposed for long periods of time would be useful. Locating these latrines on relatively high ground would enable them to be used even during monsoon season. Local government institutions, as well as NGOs, can play important roles in popularizing such ideas.

Schools: While there are primary schools in many charland mauzas, coverage is less than the national average and is poor in some island char areas. Even where there are educational facilities, keeping children in school during the monsoon season or during erosion-related migration is virtually impossible in many char areas. Improving primary education in charlands requires new approaches:

- buildings that are community-owned and that can be moved when erosion occurs. This could be done by having local members take responsibility for safeguarding the school on behalf of the village.
- encouraging staff to live in charlands, preferably by hiring local people.
- adjusting the curriculum and school year to the seasons.
- subsidizing boat services, particularly to improve access to high schools.
- since parents are unwilling to send young children on hazardous boat journeys, a primary school should be present on each inhabited island char.

Institutional credit: Institutional credit for agricultural inputs would encourage the use of better inputs and improve crop yields in the charlands. Access to credit for livestock and fishing equipment would also benefit char people.

5.2.4 Economic Development to Build Self-Reliance

Land laws: There is a great deal of confusion about the land laws pertaining to alluvion and diluvion, and the existing laws are subverted by a variety of means to the benefit of the local elite. Char people are particularly unhappy about the current law that makes any accreted land government-owned.

Establishing administrative boundaries: Conflicts between chars can often be traced back to confusions over administrative boundaries. Such

lack of administrative clarity also leaves many of chars without public services. The inventory reports highlight many of these problems. Accurate surveys would help efficient administration.

Strengthening local government, the union parishad: Local government agencies can play an important role in keeping updated inventories of charlands for their respective areas. Such a role also would be useful in making damage assessments following floods and erosion, as well as in developing rehabilitation and resettlement strategies.

Existing social groups (kin groups, neighborhoods, and societies) should form the core of program development to the extent possible, as these groups tend to be interdependent and/or remain together when moving. If leadership is not exploitative, local leaders with the respect of char residents can help to promote innovative ideas and analyze program plans.

Innovative approaches must be utilized in any charland programming, because most existing local development activities are designed for more stable environments. Infrastructure creation, such as road building, as currently done is inappropriate in most charland situations. Policies and procedures that assume a stable land mass and a non-mobile public also need to be modified to accommodate the typically changeable charland situations in most river reaches.

Participatory program development (planning done in close consultation with beneficiary groups) is likely to yield the best results in the chars, because it can minimize the chances of setting up unworkable charland programs. Alternative types of earthwork, such as raising flood shelter mounds for cattle and people, are needed in charlands and could be accommodated within existing programs.

5.2.5 Policy Changes for Effective Land Use

Major improvements are required in policies relating to land law and the utilization of land. The inventory and RRA surveys found that although vast amounts of charland are technically government-owned *khas* land, such land is mostly under the unauthorized control of locally influential people. In fact, in many chars, the question of land access more often involves "control of land" than "ownership of land".

If the existing *khas* law is to remain in place, it should be enforced properly. Enforcement requires that measures be taken to prevent locally influential people from keeping *khas* land under their control in defiance of government directives. Proper enforcement also requires accurate information about charlands. Updated information on erosion and accretion needs to be available to the relevant government authorities at the local level (there currently is very little manpower available to accomplish this effectively).

It may be advisable to modify the *khas* law to allow ownership of resurfaced land to revert its previous owners (with correct documents) if the land reappears within a specified period of time after erosion. Properly implemented and enforced, this would reduce land-grabbing since the land-ownership pattern prior to erosion would be relatively fresh in the memory of those concerned, and since they would be expected to retain the documents showing their ownership rights. Even with such a change in the *khas* law there would still be vast amounts of government-owned land in the chars. In addition, land that takes too long to resurface after erosion (perhaps 20 years) could revert to *khas* to avoid confusions over ownership rights.

The current policy of leasing out the *khas* land to individuals for agricultural purposes also needs to be reviewed. First, much of the *khas* land is not properly identified, making illegal occupation of land relatively easy. Second, in leasing out such land the authorities have failed to give priority consideration to the land-poor households that the law was intended to help.

Finally, given the impermanent nature of the land in many of the chars, and the transience of its

population, it may be advisable to formulate a policy establishing cooperatives to utilize land resources that are legally under the ownership of the government. In certain cases the *samaj* has taken the role of arbiter in deciding how newly emerging *khas* land is utilized by its members. While such decisions have on many occasions been biased in favor of the *samaj* leaders, the *samaj*, with greater participation from the general members, can be used as a social platform to activate cooperatives.

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APPENDICES

Table A.1 (i) Char Development in the Jamuna (years)

Physical Characteristic	Upper	Middle	Lower (North)	Lower (South)	Total
Interval between Formation & Natural Vegetation					
Mean	1.1	1.2	1.45	1.02	1.15
Median	1	1	1	1	1
Interval between Natural Vegetation & Cultivation (No Settlement)					
Mean	2.97	2.59	2.09	1.76	2.29
Median	2	3	2	1	2
Interval between Natural Vegetation & Settlement (No Cultivation)					
Mean	2.39	1.77	1.24	1.33	1.67
Median	1	1	1	1	1
Interval between Natural Vegetation & Settlement with Cultivation					
Mean	1.25	1.1	1.15	1.04	1.11
Median	1	1	1	1	1
Settlement without Cultivation					
No. of Mauzas	1 (of 275)	0 (of 377)	0 (of 173)	6 (of 611)	7 (of 1,436)
Simultaneous Settlement & Cultivation					
No. of Mauzas	59 (of 275)	59 (of 377)	41 (of 173)	127 (of 611)	286 (of 1,436)
Separate Settlement & Cultivation					
Interval between Cultivation & Settlement					
Mean	2.23	1.3	1.06	2	1.62
Median	1	1	1	1	1
Interval between Settlement & Cultivation					
Mean	2.86	1.64	1.33	8.33	2.79
Median	1	1	1	1	1

Source: Charland Inventory

Table A.1 (ii) Char Development in the Meghna (years)

Physical Characteristic	Upper	Confluence	Lower	Total
Interval between Formation & Natural Vegetation				
Mean	2.5	1.44	1.21	1.39
Median	2	1	1	1
Interval between Natural Vegetation & Cultivation (No Settlement)				
Mean	3.46	1.9	2.58	2.3
Median	2	1	2	2
Interval between Natural Vegetation & Settlement (No Cultivation)				
Mean	3.89	2.96	6	4.71
Median	4	2	6	4
Interval between Natural Vegetation & Settlement with Cultivation				
Mean	2	2.2	1	2.14
Median	2	1	1	1
Settlement without Cultivation				
No. of Mauzas	0 (of 227)	2 (of 155)	0 (of 129)	2 (of 511)
Simultaneous Settlement & Cultivation				
No. of Mauzas	1 (of 227)	20 (of 155)	1 (of 129)	22 (of 511)
Separate Settlement & Cultivation				
Interval between Cultivation & Settlement				
Mean	1.6	2.26	3.75	3.52
Median	2	2	4	2
Interval between Settlement & Cultivation				
Mean	2.5	2.88	6	3.09
Median	3	2	6	2

Source: Charland Inventory

Table A.1 (iii) Char Development in the Ganges (years)

Physical Characteristic	Upper	Middle	Lower	Total
Interval between Formation & Natural Vegetation				
Mean	3.48	1.27	1.53	1.89
Median	2	1	1	1
Interval between Natural Vegetation & Cultivation (No Settlement)				
Mean	2.3	1.6	1.63	1.78
Median	1.5	1	1	1
Interval between Natural Vegetation & Settlement (No Cultivation)				
Mean	3.93	1.86	3.48	3.02
Median	3.5	2	3	2
Interval between Natural Vegetation & Settlement-cum-Cultivation				
Mean	1	1	1	1
Median	1	1	1	1
Settlement without Cultivation				
No. of Mauzas	0 (of 145)	0 (of 71)	0 (of 206)	0 (of 422)
Simultaneous Settlement & Cultivation				
No. of Mauzas	6 (of 145)	1 (of 71)	5 (of 206)	12 (of 422)
Separate Settlement & Cultivation				
Interval between Cultivation & Settlement				
Mean	2.88	1.2	2.5	2.25
Median	2.5	1	1	1
Interval between Settlement & Cultivation				
Mean	9	1.35	11	2.6
Median	9	1	11	1

Source: Charland Inventory

Table A.1 (iv) Char Development in the Padma (years)

Physical Characteristic	Upper	Middle	Lower	Total
Interval between Formation & Natural Vegetation				
Mean	1.67	1.34	2.12	1.66
Median	1	1	1	1
Interval between Natural Vegetation & Cultivation (No Settlement)				
Mean	2.1	1.43	2.45	1.95
Median	1	1	2	1
Interval between Natural Vegetation & Settlement (No Cultivation)				
Mean	3.93	2.59	2.81	3.22
Median	2	2	3	2
Interval between Natural Vegetation & Settlement with Cultivation				
Mean	1.63	1.08	1.2	1.33
Median	1	1	1	1
Settlement without Cultivation				
No. of Mauzas	0 (of 86)	0 (of 137)	0 (of 89)	0 (of 312)
Simultaneous Settlement & Cultivation				
No. of Mauzas	17 (of 86)	13 (of 137)	10 (of 89)	40 (of 312)
Separate Settlement & Cultivation				
Interval between Cultivation & Settlement				
Mean	3.49	1.65	1.87	2.52
Median	2	1.5	1	2
Interval between Settlement & Cultivation				
Mean	0	2	11.67	9.25
Median	0	2	1	1.5

Source: Charland Inventory

Table A.2 Percentage of Inhabited and Uninhabited Mauzas

	Inhabited			Uninhabited			
River	Cultivated	Noncultivated	Submerged	Accreted (non-vegetated)	Vegetated (non-cultivated)	Cultivated	No Information
Jamuna	87	13	5	43	11	29	12
Meghna	99	1	50	3	7	17	22
Ganges	99	1	7	17	17	40	19
Padma	99	1	40	14	17	27	2
Total	384	16	102	77	52	113	55

Source: Charland Inventory

Table A.3 Land Use Sequence

River Reach	No. of Mauzas	Settlement with Cultivation	Settlement before Cultivation	Cultivation before Settlement
		JAMUNA		
Upper	109	54	6	39
Middle	147	40	7	52
Lower (North)	76	53	4	43
Lower (South)	173	73	2	25
Total	505	56	5	39
		MEGHNA		
Upper	9	11	22	66
Confluence	102	20	8	73
Lower	81	1	1	98
Total	192	11	6	83
		GANGES		
Upper	32	19	6	75
Middle	43	2	40	58
Lower	50	10	2	88
Total	125	10	16	74
		PADMA		
Upper	56	30	0	70
Middle	40	33	3	65
Lower	36	28	8	64
Total	132	30	3	67

Source: Charland Inventory