

Urbanising Deltas of the World Programme of NWO

Hydro-Social Deltas Project

(Understanding flows of water and people to improve policies and strategies for disaster risk reduction and sustainable development of delta areas in the Netherlands and Bangladesh)

Migration and flood-erosion hazards: influence of local institutions and infrastructure Report on Focus Group Discussions



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Introduction

Although floods in 2016 have not attracted the level of media coverage accorded to floods in previous decades, Bangladesh suffered very severe monsoon floods during July to September along the Brahmaputra-upper Jamuna River and its tributaries (Teesta, Dharala, Dudkumar). Floods are not uncommon to the people living in this delta of three mighty rivers, the Ganges, the Brahmaputra and the Meghna. Intense heavy rainfall occurred in the foothills of the Himalayas from Uttarkhand to Arunachal and Meghalaya during the second week of July, generating high runoff.

The 2016 flood has been estimated to be have about a 1-in-100 year return period as the water level at the Bahadurabad station crossed the previous highest ever recorded water level (from 1988). However, the duration of 2016 flood did not exceed that of 1998 flood for several reasons. The water level of the River Ganges was much below the danger level enabling flood water to flow faster into the Bay of Bengal. Also the main flood peak coincided with weak neap tide conditions in the Bay of Bengal creating a steeper gradient for the receding flood water.

Prior to 2016 over the last three decades, major floods have occurred in Bangladesh in 1987, 1988, 1998, 2004 and 2007. During each flood, hundreds of people have been killed and damage to crops, small enterprises and infrastructure was as high as several billion US dollars, severely disrupting the local economy.

The prospects for floods in Bangladesh are also not promising. Because of global warming, the world temperature is continuously rising and 2015 was the warmest year since 1880. According to NASA and NOAA, June 2016 was also the warmest month compared with the 20th century. Such a continuous rise in temperature will increase water holding capacity in the atmosphere, increasing the probability of heavy rainfall events in the future, and with that increasing the incidence of unusual floods.

Erosion is common along the banks of the main rivers and into the coastal zone (Haque and Zaman, 1989). The Jamuna–Brahmaputra river has been widening and shifting its course since 1830, becoming braided, and the trend has continued during the period for which satellite images are available, widening by about 128 m per year during 1973–2000 (EGIS, 2000). This affects lands that have been settled for generations, and also the islands (chars).

The aim of this study was to investigate the impacts of floods and erosion in 2016 on communities and households living in the active Brahmaputra floodplain, and in particular the use of migration as part of coping strategies, role of community initiatives and influence of flood protection infrastructure.

In this regard hazard research in the past has treated evacuation as a result of a positive decision to respond to the impending and immediate threat. The key variables influencing a decision to evacuate – in many different cultural circumstances - include the presence of a warning system, the credibility of the warning message, the perceived personal risk presented by the hazard and the logistics of the evacuation itself (Perry, 1979). Demographics are also seen as important, including gender, age, household income, educational attainment and ethnicity (Paul et al., 2010; Elliott and Pais, 2006). The evacuation decision is also theorised as a complex social process, involving family, community and other group interests and interactions (see Falk et al., 2006). It is expected that these complex processes and factors will underlie the more complex decisions in Bangladesh regarding temporary evacuation during flood events, seasonal and temporary movements for work as part of coping strategies, and longer-term movements forced by erosion and permanent loss of land.

Although evacuation and movements in response to cyclones and coastal flooding have been well studied in Bangladesh (reviewed for example in Penning-Rowse et al., 2013), riverine floods and erosion are different. For example, over 80% of char households in the Brahmaputra–Jamuna river reported building raised platforms (macha) inside their homes in the major flood of 1988 (Thompson and Tod, 1998). Nevertheless, in severe (bonna) floods there may be no safe shelter in the river chars – about one-quarter of households in some char villages took shelter on boats in 1988 (FAP 14, 1992). Erosion is a long-term or permanent loss of land along with any immovable property on that land; as described by Haque and Zaman (1989) ‘staying put’ is not an option. When both homestead and land are eroded/ submerged for long periods in the chars, the affected people may move as a whole village (retaining the same village name) to a new location, even some distance away (FAP 16, 1995).

Much of the existing literature relates to 1-2 decades previously when urbanization and inter-district communications in Bangladesh were less developed than at present. This study adds to knowledge and focuses in part on urban-rural linkages and their role in flood and erosion coping. It is based on case studies of flood and erosion affected communities on the west side of the Brahmaputra in Bangladesh through fieldwork conducted within a few months of flood and erosion events.

Methods

The study is based on two stages and methods - firstly on focus group discussions in each of nine communities /CBO areas, and secondly interviews with a sample of households . This report documents the **focus group discussion** outputs. These were intended to update existing information and fill gaps (on hazard experience, trends, and responses of CBOs in general) as context. They then focused on investigating in greater depth events in 2016, specifically:

- the main migration patterns (if any) adopted by households (disaster response, short term, seasonal, long term);
- migration responses to this year's floods and erosion (e.g. which households engage in migration and which do not migrate, and the reasons);
- the relative advantages and disadvantages of migration;
- the vulnerability of locations people migrate to;
- the influence of flood protection infrastructure on these communities (whether outside or behind it, and whether this is used for temporary shelter, provides protection, traps water, is vulnerable to breaches, etc);
- the extent that CBOs have responded to this year's flooding and erosion, and whether this has helped households (and which ones); and
- any change in resilience or household strategies.

The focus groups were conducted in mid October in nine locations noted in the following sections. In consultation with the concerned community based organisation (CBO) active in each area, and with which FHRC has worked for several years, a suitable location was selected in advance in or near one of the villages most affected by floods and erosion in 2016. Here the study leader and research associate met with about 30 to 40 persons to discuss their experience following a pre-defined checklist.

Locations between main river and embankment

Context

Three locations were investigated, all in Gaibandha district, in three different Upazilas, covering a combined total of 13 villages inhabited by about 4,300 households and covering just under 4,000 ha.

Konai Brahmaputra Community Based Fisheries Organisation in Gazaria Union, Fulchari Upazila covering five villages (Khamarpara (char, eroded), Baluchar, Gobindi, Nilkuthi and Katlamari) with about 60% of land considered high and 40% low. Asher Alo Unnayan Sangstha (1) in Kamarjani Union of Gaibandha Sadar Upazila covering four villages (Karaibari (char) and Goghat 1,2,3 (all facing erosion), with about 30% of land considered to be high and 70% low. Asher Alo Unnayan Sangstha (2) - Vati Bochagari Unnayan Samity in Kapasia Union of Sundarganj Upazila covering four villages (Ujan Bhurail (char), Vati Bhurail (char) Rajarchar (char) and Vati Bochagari). These villages are heavily eroded - out of their original areas 60% of Ujan Bhurail village eroded, 17% of Vati Bhurail village eroded, 20% of Rajarchar village eroded, and) and all of Vati Bochagari has disappeared.

In each of these a community based organisation has been active for several years (named in the column headings in Table 1) working to improve natural resource management and the lives of inhabitants. Notably the site with the largest area reported the lowest number of households (and has had relatively less erosion in the past) and vice versa the smallest of the three areas is by far the most densely populated due to past erosion which has resulted in most people living on public land.

The main sources of livelihood are fishing, farming (as wage labourers, as share croppers, and for a few households farming own land) and migration for work, in two of the sites 50% or more of households have members who seasonally move away for work.

These three sites are frequently affected by river floods and by erosion (Table 1), although this varies between years and between locations the pattern was reported to be more or less the same in Konai Brahmaputra and in Asher Alo 1, while Asher Alo 2 is affected by floods and erosion in some degree each year. The most hazard prone of the three (Asher Alo 2) interestingly reported that morphological changes have been more rapid in the last decade than in the past - with stronger currents, erosion, and reappearance of accreted land.

Table 1 Past hazard experience in last 10 years - river side

	Konai Brahmaputra Community Based Fisheries Organisation	Asher Alo Unnayan Sangstha (1)	Asher Alo Unnayan Sangstha (2): Vati Bochagari section
Flooding	Every year but bit more in 2004, 2005, 2008, 2011 and 2014.	Causes misery every year but bit more in 2004, 2005,2008, 2011 and 2014	Most years
Erosion and accretion	Erosion every year but severe in 2015 and 2016	Erosion every year but severe in 2015 and 2016 Char formation is faster now than before. People do not have to wait for 30-40 years to get their land back.	River current is stronger than 10 years back, river bed silted, erosion and accretion are frequent. It takes 2-3 years to accrete land now in comparison to 30-40 years before.
Drought	2011 and 2013	2011 and 2013	2014
Storms	Excessive rainfall: 2011, 2016 Now a days natural calamities decreased.	Excessive rainfall: 2011, 2016 Other natural calamities decreased but thunderstorm increased now.	Heavy rain and strong wind in 2016 and 2013, Thunder storm killed 16 people in this area in 2015-16.

2016 Floods

Extensive areas of these three sites were flooded in 2016 (Table 2), and at least half of all households had up to 1.8 m of flood water within their houses for 10-20 days, with their homesteads surrounded by water of around 2-3 m depth (water depths inside houses vary and depend also on house plinth levels). Well over half of households temporarily evacuated during floods for up to a month, and many lost some land to erosion, although in Asher Alo 1 erosion was most severe as 400 households lost their homestead land. Most affected people moved temporarily to embankments and higher public buildings for 20-30 days.

Table 2 Summary of 2016 flood-erosion event - riverside

Site/CBO	Konai Brahmaputra	Asher Alo Unnayan Sangstha(1)	Asher Alo Unnayan Sangstha (2): Vati Bochagari section
Number of households within the site	500	800	3000
Land flooded in 2016	50%	100%	100%
Households flooded	250	400	2400
Duration of standing flood water	10 to 20 days depending on land level	15 to 30 days depending on land level	20 days
Depth of water	Homestead: 3-5 ft Agric land: 6-10ft	Homestead: 5-6 ft Agric land: 7-10ft	Homestead: 5-6 ft Agric land: 10-12ft
% of flooded households evacuated due to flood	50	75	80
Households erosion affected (agricultural land or homestead)	230	600 (400 homesteads affected)	750
% area reported eroded	35	40%	52%
Movement in flood-erosion event	90 households moved to nearby areas 100 households moved to embankment and flood shelters. Others moved temporarily to adjacent areas.	250 households moved within CBO area to embankment, higher ground and shelters, school ground. 50 households move to adjacent area (will move back when new char appears).	2400 households moved to nearby villages, within protected area, on the embankment and on higher ground. Rest stayed back in their original places, living on <i>macha</i> (raised platform) or raised plinth.
Duration stayed outside the homestead in 2016 after flood	1 month	20 days	1 month

Cattle are an important movable asset in the area, usually it is easy to graze and maintain livestock in the chars and people like to raise cattle. Notably in the relatively less flood and erosion prone areas there were greater cattle losses as households were keeping cattle expecting to profit from sale in September for Eid ul Azha, particularly in 2016 because India restricted cattle movement to Bangladesh. Here cattle were moved to higher ground such as school grounds and embankments and remained there for up to a month, but about 30% of the livestock died due to poor feed, lack of proper shelter, and being crowded in a small space which spread disease. In Ashar Alo 1 during flood when cattle were moved to higher places people had to stall feed cattle and the feed they could provide was not enough and the livestock health was at stake, but only about 5% died and most people could sell livestock for the Muslim festival. Whereas in the villages in Ashar Alo 2 that are most flood and erosion prone few households keep any livestock as they have to move several times in a year. People who had livestock sold them earlier because it is usually too risky to keep them in the monsoon.

There were multiple flood peaks in 2016, and although the three sites are not so far apart they reported slightly different patterns, all with the main floods in July-August but in total 3-5 flood peaks, including two in September (Table 3). In addition to damage to crops and housing, in Ashar Alo 1 high sand deposition in floods may affect cropping in the next two

years in the lands outside the embankment, but here the embankment held and protected lands and people behind it. In the two other areas embankments breached, adversely affecting the people living behind the embankment. But in all three of these cases for people living normally on the riverside of the embankments the embankments were widely used by flood and erosion affected people to take shelter.

Table 3. 2016 flood impacts and role of embankments - river side

	Konai Brahmaputra	Asher Alo Unnayan Sangstha (1)	Asher Alo Unnayan Sangstha (2): Vati Bochagari section
Flood pattern	Biggest since 1988 (1998 flood did not stay for so long). 2016 flood caused more damage than 1988 flood. 5 flood peaks: early June for 5-6 days. July for 15 days August for 1 month - this was the devastating one as it causes damage to standing crop. September for 18-19 days end September for 5-6 days. Farmers lost crops that had been planted for 2nd time in this last flood.	One foot lower than flood level in 1988. But this year erosion and food hit at the same time making life difficult as they could not return home within a month. Three flood peaks: July/August for 20 days - homesteads were under 5 to 6 feet water. Even the highlands went under 1-2 feet water.. Two in September which stayed for 10-12 days. Erosion was more this year than in last 10 years.	Four flood peaks: 2 big ones in July-August which stayed for 20 days each time 2 smaller ones in August/September which stayed for 10 days. Erosion was greater this year than other years.
Impact of flood	Damaged houses, infrastructure, crops (Jute and Paddy), seedbeds were under water	Damaged houses, infrastructure, crops (Jute and Paddy), seedbeds were under water. Lots of sand deposition on the agricultural land. Farmers are afraid that may be in next two years they will not be able to harvest good crop	Some people had to move several times, dismantling their shacks and building again. They lost all their agricultural land.
Role of embankment behind the villages	About 0.5 km of the embankment breached. This big breach in embankment flooded people living inside the embankment. The people living outside the embankment took shelter on the embankment. But respondents said it was "inhuman" to live there as it was so crowded with flooded mainland people as well as char people. Embankment is also used as a road during dry season.	Embankment was not breached and people inside the embankment were safe. Embankment saved people who sheltered on it. Erosion victims built houses and live on the embankment. Due to embankment sand deposition on the agricultural land inside the protected area was avoided. However, flood from torrential rain also impacted people's life within the protected area.	Embankment breached during the flood in several places. Heavy rain water logging inside, and pressure from outside current caused the breaches. Local people used sand bags and put earth in the breached areas to protect the embankment. Embankment provided shelter for the flood and erosion victims.

Erosion led to permanent losses of houses eroded, agricultural land (as well as standing crops), and displaced people moved and many had to stay in open spaces where they are exposed to risk of theft (dacoity). In addition to migration to cities for work and moving home as needed, coping measures include borrowing from NGOs and money lenders (*mahajan*), selling livestock, and fishing in the river. These are also the main responses for households that were flooded but not eroded (except for moving home).

NGOs are active in all three areas, providing general advice, flood warning systems with community volunteers in two areas, and in the most erosion prone area where two villages have eroded seven times NGOs, mainly Practical Action have helped people move house, raise house plinths and establish new homes, and provided cattle (Table 4). Schools in addition to embankments are used for shelter, and in all three areas government provided food as relief. CBOs differ in their capacities and services in floods, but even in Konai Brahmaputra where this is an organisation of poor fishers it formed a basis for sharing warnings and for members helping one another to move and rebuild house. In all three

locations the CBOs have formed a basis for voluntary assistance in disasters - helping to warn and rescue people, and also contributing some materials for the worst affected.

Table 4 Support for coping in 2016 - river side

	Konai Brahmaputra	Asher Alo Unnayan Sangstha(1)	Asher Alo Unnayan Sangstha (2): Vati Bochagari Unnayan Samity
NGO and government initiatives to help people	<p>Early warning was given by different NGOs, Government Information Services, Red Crescent , Social welfare department and Union Parisad. However, schools were used as shelter and people moved by themselves as everyone was affected and very difficult to help each other.</p> <p>Government and NGOs provided dry food for one day only.</p>	<p>Early warning by NGO and Government was provided. Volunteers were trained before on preparedness and 40 (20 from young group and 20 from community) received training from NGO. Besides hoisting flag, volunteers gave warning by loudspeaker (miking). Embankment and schools were used as shelter.</p> <p>Government provided relief (rice, dal salt).</p>	<p>In 2016 two villages Vati Bochagari and Rajar char was eroded three times. Since 1988 char started to erode and since then up to 2015 these chars eroded 7 times. People moved to the land area with the help of the NGO. NGO provided information on flood and erosion.</p> <p>Practical Action, an INGO, raised 100 house plinth and renovated house, built latrine and provided tubewell. In 2007 erosion victims who moved to embankment received cattle.</p> <p>Government provided relief (rice, dal salt).</p>
CBO role during flood/erosion	<p>CBO members are also very poor. Most fish for living. They helped people to move and when needed they helped them to build shelters. Members collect bamboo from whoever has a bamboo grove to build shelter on embankments. They also provided early warnings to their members and their trained volunteers gave training on how to move to a safer place, how to preserve food and essentials, etc.</p>	<p>CBO members helped people to move, provided some help for a day. They provided dry food, formed rescue team and helped people to move to safe places with boat. They also provided information on the flood and erosion to their members. Distributed seeds among the erosion and flood victim.</p>	<p>CBO provided information on the flood and erosion to their members. They also distributed relief provided by the government and INGOs.</p>

Seasonal migration

A high proportion of households present in the area are involved in seasonal migration for work (see Table 5). Although there are some differences between the three sites (see table below for details), the general pattern is that men are away for much of 6-8 months during the dry season taking any work they can get for survival. Some of this work is on trips of 1-2 months at a time, other men are away for the full period. Especially in the most flood-erosion prone site, but also in all three, men come back to their original home/family during the monsoon mainly so that they are there to help their family move or cope with floods and erosion.

While working away from home in urban areas those who earn a better wage (mainly from Konai Brahmaputra area) can afford to rent a room shared by 4-5 people share. Those who are construction workers often sleep in the site. However, most men who move to urban areas for work tend to stay in unhygienic insecure places. Men usually sleep in crowded places, mosques, park benches, footpath, railway station, bus station, under the shade of shops in local markets, etc.; those who pull rickshaw/van sleep on the road in shacks made of plastic; those who come with family often end up sleeping in roadside shacks which they

have to dismantle during day time. They face problems for food, clean drinking water, toilets, shelter and theft. They also have to pay tolls to local *mastans* (musclemen) and police. Construction labourers complained about getting their wages on time and that they never get full payment. Rickshaw pullers said they have to do hard work and they cannot continuously work for many days, often they fall sick and weak. But at least they can earn for the family, if they stay in the village they cannot earn anything in the locality. The groups said that sometimes people fall in a trap and get involved in drugs and other crime.

Table 5 Seasonal migration for work - river side

Site/CBO	Konai Brahmaputra	Asher Alo Unnayan Sangstha (1)	Asher Alo Unnayan Sangstha (2): Vati Bochagari section
% of households involved	25-30%	70%	75%
Timing	October-June, typically 6 months	6-8 months in dry season, work trips are 30-60 days at a time in most cases, except for fishers who can be away up to 6 months. Some stay away year-round except for holidays	Dry season, at least 6 months, up to 8 months
Urban work	Dhaka, Chittagong, work as rickshaw/van puller, earth cutting labour, construction labour, stone carrier. Some people work in factories and live in Gazipur, Joydebpur, Kalagachi and Mirpur.	Dinajpur, Thakurgaon, Rangpur, Dhaka, Munshiganj and work as wage labour in brick field, Garments, drive rickshaw/van/autorickshaw	Most of the people migrate to Dhaka and Chittagong to work as labour in brick field, pull rickshaw and work as construction labour
Agricultural work	In Mushiganj area they work as agricultural labourers specially for planting and harvesting potato. In Sylhet area they go for rice harvesting.	A big percentage of men and some women go to Mushiganj for planting and harvesting potato. Others go to Dinajpur, Bogra and Rangpur for agricultural work also go twice, once for sowing/ transplanting and once for harvesting.	They go to Manikganj and Bogra to harvest rice. Migration to Mushiganj is for planting and harvesting potato. 10% people go to adjacent area (Sreepur, Chadipur) for harvesting Jute and maize.
Other work		The fishers (about 40% of households) fish in groups in the river and stay away for 6 months a year (they do some fishing from home here in river in monsoon)	

For agricultural labouring they travel as a group each year to areas where they previously got work, and stay here until the seasonal work ends. They have to find out places to sleep nearby. If the contract for agricultural labour includes food they get food but mostly for other work they have to cook themselves, the same as for non-agricultural work. Getting work everyday is uncertain.

Seasonal migration for work almost always involves men, leaving women living at home to take care of the children and the family, livestock, etc. The absent men are always worried about the family they left at home (although some men who migrate alone sometimes get married and never come back). The women left behind have to face different problems (health, food, etc.) all by themselves. Shortage of money is common, as men may not be able to send money on time. Some have fallen into the trap of moneylenders (mahajan) who give loans on high interest rate and ultimately take almost all the money they earn. In the most erosion affected of these sites no NGO gives loans as they are floating people and have no permanent address or property. Here the women and children tend livestock in the dry season that are mostly sold before the monsoon as they do not have permanent places

to live and lack security for livestock in the monsoon. Some households take an advance for their work and have to fulfil their job at any cost.

Mainland

Context

Three locations in different Upazilas of Lalmonirhat District, all along the Teesta River, were purposively selected. In each there is an active federation - a local development association - with a fixed territory, formed under previous development project initiatives and that FHRC has involved in networking for natural resources management in the past. They are cooperatives which pool resources, and can be termed interest associations which admit members from poor strata of the local society. Each Federation operates at union level which is the lowest tier of the local government of Bangladesh. The federation follows a two tier structure- a small neighbor group at the lower level and federating these a physical and governance component at the higher tier.

Satata Rajapur Federation is in Rajapur Union of Lalmonirhat Sadar Upazila and covers 22 villages, out of which 60% of Rajapur village and 50% of Thakurdari village have been eroded , 30% of a further villages has been eroded, and 75% of two villages are located in chars; in general 70% of remaining land is considered high and 30% low. Progoti Tushvander Federation covers Tushvander Union in Kaliganj Upazila, of the nine villages there (Tushvander, Sundrahobi, Talikbarinagar, Kanchanshar, Dakshin Ghanasham, Uttar Ghanasham), two were eroded (Kashiram-1 and Bairati-3) a few years back but recently accreted and have been reoccupied, while only Talikbarinagar is completely protected by embankments; overall about two thirds of land is high and one third low. Onnesha Velabari Federation covers Velabari Union in Aditmari Upazila, the 10 villages here (Falimari-1 (part char-adjacent), Falimari-2, Velabari (part char-adjacent), Shalmara (part char-adjacent), Mahishtali (part char-adjacent), Talukdulali, Paglarchara, Pashchim Velabari, Purba Velabari, and Mohammadpur) are on average 80% high land and 20% low.

Livelihoods differ between the three areas: Satata Rajapur is mainly inhabited by farmers with their own land, with some working as labourers or traders in the town, in Progoti Tushvander only 20% are farmers, but 30% are fishers and half of households mainly depend on work outside the area, also in Onnesha half the households depend substantially on seasonal migration, and the others mainly work locally, with 15% fishing.

Floods are an annual event here, and 2015 was worse among recent years, particularly in Onnesha (Table 6). However, erosion was reported to be more severe in 2016 and 2015; also in two of the areas morphological changes are reported to be more rapid now - with chars accreting after a shorter interval in areas that eroded..

2016 floods

Substantial parts of two areas were flooded in 2016, and this was accompanied by erosion particularly in part of Progoti Tushvander. Those households that were flooded deeper in their houses mostly moved for about 15 days during the flood peak- in some cases to India which is nearby and had flood free areas, others to embankments and land protected by embankments (Table 7). In two of the areas during flood people temporarily moved to higher ground, schools, and mainly embankment. Respondents said that these places become overcrowded, and they suffered from lack of drinking water and latrine and lack of space for cooking as none provide cooked food, and even for sleeping. Women suffer from lack of

security and privacy. Sanitation was a big problem, shortage of clean drinking water most of the time causes water borne diseases.

Table 6 Past hazard experience in last 10 years - mainland

	Satata Rajapur Federation	Progoti Tushvander Federation	Onnesha Velabari Federation
Floods	Every year but was high in 2015 and in 2011.	Causes misery every year but little more in 2004, 2008, 2011 and 2014.	Flood was more severe in 2015 than in 2016 - water level was 1 ft higher in homesteads and in agricultural field where it stayed for more than a month in 2015. Floods affected the area every year but it was little higher in 2011, 2012, 2013 and in 2014 than other years (except 2015).
Erosion and accretion	Erosion every year but severe in 2015 and 2016	Erosion every year but severe in 2004, 2008, 2015 and 2016. Char formation is faster now than before. People do not have to wait for 30-40 years to get their land back.	In 2016 Ratnai river current was stronger than in 10 years back, erosion and accretion are frequent. It takes 2-3 years to accrete land now in comparison to 30-40 years before.
Drought	2011 and 2013	2003, 2014 and 2015	2014, 2015 and in 2016.
Other hazards	Excessive rainfall: 2011, 2016 Now a days other natural calamities decreased.	Excessive rainfall: 2001, 2005, 2006 and 2014 Other natural calamities decreased but thunderstorm and fog increased now.	Heavy rain and strong wind in 2016. Thunder storm killed several people and livestock in this area in 2015. Fog in 2012 and in 2015 caused severe damage to the winter crops.

Table 7 Summary of 2016 flood-erosion event - mainland

	Satata Rajapur Federation	Progoti Tushvander Federation	Onnesha Velabari Federation
Number of households within the site	6000	9000	5256
Land flooded in 2016	60% (10 villages and chars)	40%	25%
Households flooded	1200	400	100
Duration of standing flood water	5-7 days depending on land level	10 to 15 days depending on land level	7-15 days depending on land level
Depth of water	Homestead: 1 ft Agric land: 2-2.5ft	Homestead: 4-4.5 ft Agric land: -6-7ft	Homestead: 1 ft Agric land: 5ft
No of households evacuated for flood	460	400	0
Households eroded	800	200	None - homesteads are far from the river bank.
Land eroded	20%. Villages in chars suffered erosion more than mainland. Homesteads eroded more than the agricultural land this year.	100% land of one big village. Part of two newly formed chars eroded.	20%. Usually 5% erodes every year
Movement in flood-erosion event	10 households moved to mainland. 50 households moved to Paglarhat village. About 300 households moved to India. Some moved to Rajarhat and Rajibpur upazila and others moved temporarily to adjacent areas. Poor try to stick to the same area.	200 homesteads eroded: 100 households moved temporarily to embankment and 100 households moved to the protected area. Also all 400 households flooded in their homes moved temporarily within the area, to the embankment, higher ground and shelters, school ground.	People managed to stay at home and did not move
Duration stayed outside the homestead in 2016 after flood	15 days	15 days	na

In Satata Rajapur during the last 20 years about 5% of households reportedly moved 2 to 5 times due to erosion, but never moved more than 2 miles. Some participants mentioned moving 8-10 times since 1990 but again each time within about 2 miles, and some people moved 2 or even 3 times within the last year (2016).

In all three areas cattle are commonly kept, and were moved to higher protected ground such as school grounds, embankments and other higher land during floods and remained there for about 2-4 weeks until the homesteads dried up. Very few livestock died due to shortage of feed and proper shelter, or disease linked with crowding. People usually keep cattle as a safety net. They take their livestock to chars during dry season for grazing. During flood they had to stall feed cattle, but the feed they can provide was not enough and the livestock health was at stake. However, in 2016 they could sell livestock at high prices as the festival of Eid-ul-Azha coincided with this period. Although middlemen tried to pay less knowing their inability to sell cattle by themselves during flood, as India restricted cattle movement from India to Bangladesh there was a high demand for local cattle.

There were 4 flood peaks in 2016, but the September one was not notable in Satata, the main floods were two in July--August (Table 8). Crops and housing were damaged, and in Onnesha some people had to move home several times, dismantling their shacks and building again. The embankments breached in two areas, but breaches were quickly filled in one site. Embankments in all three sites provide shelter for the flood and erosion affected, even in the location with several breaches the embankment and groynes are viewed favourably because people say they reduced erosion from what it could have been.

Table 8. 2016 flood impacts and role of embankments - mainland

	Satata Rajapur Federation	Progoti Tushvander Federation	Onnesha Velabari Federation
Flood pattern	2016 flood hit 3 times (2 times in July and once in August) and stayed for 5 days. Water level on the agricultural land was about 2.5ft and on the homestead water level was about 1 ft. In 2015 flood water stayed on the land for about two weeks. On the charland the water level was about 6 ft and on the mainland it was 4ft..	2016 flood hit the area 4 times, 2 times in July-August and stayed for 15 days, once in August and once in September and water stayed for 2 weeks. The one in August was worse than the others. Homesteads were under 4 to 4.5ft high water. Erosion was more widespread this year than in last 10 years.	2016 flood came 4 times, 2 big ones in July-August which stayed for 10 days each time and 2 small ones in August-September which stayed for 7 days.
Status of embankment	Embankment was breached in 3 to 4 places, despite 3 groynes here, due to strong current.	Eight km embankment was not breached and people living inside the embankment were safe.	The embankment was built in 1989. Several breaches as they river current was very strong. But government and people repaired it.
Role of embankment	Embankment specially groynes saved the villages from massive erosion this year. However, a char is forming and the residents hope to have less erosion next year. Embankment is used as shelter during flood and erosion and also used as road for communication. Respondents said it was "inhuman" to live on the embankment as it was so crowded with char and flooded mainland people. Embankment is also used as road during dry season. There is a railway track which is also providing protection.	Embankment saved people and provided shelter to the flood and erosion victims. Due to embankment sand deposition on the agricultural land inside the protected area was avoided. However, water logging from torrential rain impacted people inside the protected area . Erosion victims build houses and live on the embankment.	Embankment works as shelter for the flood and erosion victims in past years.

In all three locations the CBOs are significantly involved in disaster related activities - providing warnings, helping rescue and move people and their possessions, helping affected people access relief and services from local councils, government and NGOs, and also contributing some materials for the worst affected (Table 9). The CBOs form a link with NGOs and other agencies that supported flood warning dissemination through community volunteers in two areas. Because the CBOs here are federations with links to NGOs they have relatively wide coverage and put a priority on disaster risk reduction related activities.

Table 9 Support for coping in 2016 - mainland

	Satata Rajapur Federation	Progoti Tushvander Federation	Onnesha Velabari Federation
Initiatives to help people	Early warning was given by different NGOs, Government and Union Parisad. However, people saw the river current and realized that there will be disaster. They moved to higher ground in the main stable area.	Early warning by NGO and Government. Volunteers were trained before on preparedness and raised awareness among people. There is a Village Disaster Management Committee. Besides hoisting flag, warnings were spread by loudspeaker (miking) by the volunteers. Embankment and schools were used as shelter. Government provided some relief although people complained it to be not enough.	The CBO members did not get receive much help as there was very little damage. They got help from the federation.
CBO role during flood/ erosion	One of the main activities of the CBO is disaster management. The CBO members received training and formed volunteer group. They provide early warning through own miking system. They help relocate people by using their boats and labour, find space for the people and their livestock to move. They report to RDRS (a regional NGO) for relief and help. They also keep contact with government for post flood/erosion rehabilitation. They also cooperate with Union Parisad during relief distribution.	They provided information on flood and erosion to their members They formed rescue team and helped people to move to safe places with boat and provided some help for a day. They prepared list of flood and erosion victims, appealed to NGOs and government agencies for help for the victims. They also communicate with the Union Parisad. They also help people to rebuild their houses and repair roads. Distributed seeds, tubewell, latrine and medicine among the erosion and flood victims.	The CBO has a Disaster Management Committee. They provided information on flood and erosion to their members. In 2016 they provided early warning and helped vulnerable households to safer places before flood. They also provided information on affected people of the area and distributed relief provided by the government and INGOs.

Seasonal migration

In all three areas it is common for men to migrate seasonally for work - from at least 50% of households, the timing depends on availability of work - some is seasonal for planting and harvesting crops in other districts, and others are away for much of the year working in factories, or for shorter periods when they have less work on their own land (Table 10).

As there is very few opportunities for work in the area, the men have to go to the cities and even to other places to earn money to maintain their families. Those who earn a better wage can afford to rent a room where 4/5 people share. Those who are construction worker often sleep in the site. They have to work hard to earn money. Moreover, they are always worried about the family they left at home. Sometimes people fall in trap and get involve in drugs and other crime. All of them complained about the quality of accommodation and food they eat. They tend to stay in unhygienic environment and insecure places. Men working in cities usually sleep in crowded places, mosques, park benches, footpaths, railway station etc. Those who come with family often end up sleeping in roadside shacks which they have to dismantle during the day time. They all face problems for food, clean drinking water, toilet and also theft. Construction labourers complained about not getting their wages on time and they never get full payment. Rickshaw pullers have to do hard work and they cannot

continuously work for days. Often they fell sick and weak Those who pull rickshaw/van sleep on the road in shacks made of plastic. All of them said that they face water, sanitation, food and shelter problems. Besides, rickshaw pullers have to pay police, and street vendors have to pay local mastans and police. They also face increasing travel cost to and from the working place.

Table 10 Seasonal migration for work - mainland

	Satata Rajapur Federation	Progoti Tushvander Federation	Onnesha Velabari Federation
% of households involved	75% household male members	60% household male members from unprotected area and 40% from the protected area	50% household members from unprotected area move temporarily every year for
Urban work	Dhaka and Chittagong (construction work, brick field, pulling rickshaw, professional work like carpentry, masonry)	Dhaka and Chittagong (construction work, brick field, pulling rickshaw,)	15% go to Dhaka and adjacent area to work in the garment industry.
Agricultural work	Comilla, Noakhali, Bogra (agricultural labour). Mushiganj for planting and harvesting potato.	Comilla, Tangail and Bogra (for agricultural labour).	Bogra and Sherpur area to plant and harvest Aman paddy.
Duration of temporary/ seasonal migration each time	Depends on types of work. They usually come home every 3 to 4 months but usually stay out of their home for 6 months. Those who have agricultural land come home frequency to help family. Those who go to work as agricultural labour to on a contract and in group. Usually they go to the same area they are familiar with.	On average 4 to 6 months a year. Urban labourers go for 30 to 60 days, come home and again go. Those doing agricultural work go twice, once for sowing/ transplanting and once for harvesting. Those who work in garment or other factories go for longer time. They usually come for holidays.	Mostly 4-6 months a year for those who go for agricultural work and wage labour (construction labour, brick field etc.) Those who pulls rickshaw work for 15-21 days at a time and come home for a week or two and then they again go to cities.
Other factors	For coping they also sold land, took loan from NGO and from Federation. They also work overtime to earn more money.	20% of the households catch fish in monsoon season and only 10% area involved in risky agriculture.	

The agricultural labourers have to find out places to sleep nearby their contraction sites. If the contract for agricultural labour includes food they get food but mostly for other work they have to cook themselves They go in a group and stay there until their specific job is finished. But getting work everyday is uncertain for other wage labour. In the dry season work is available but in monsoon they have to come back home.

In the case of garment workers, the main problems are job security and personal security. These people get less salary than the others. They face problem for getting rental houses at prices they can afford. They are forced to stay in low cost houses and in crowded places where they are not connected to water supply and gas.

Women living at home take care of the children and the family, livestock etc. Women left in the house have to bear all the problems at home: shortage of money (as men may not be able to send money on time), health problems for themselves and the children, etc.

Seasonally migrating men have to borrow money in advance to give to the family before they leave at a high interest rate. Some fell in the trap of Mahajan who give loan on high interest rate and take all the money they earn. In these three sites the federations have their own credit system and members can borrow from the federation. Some get advance for their work and have to fulfill their job at any cost. While living away some men get married again

and never come back to the village. Some families send their school going children for work to cope with the situation.

Permanent migration

People who have money and are affected by erosion buy land outside the area and go permanently, but the percentages are very small. Some went to India and never came back. Women who go to cities to work in garment factories can only come home during festivals or long holidays as they only get one day off weekly. But some work overtime to make more money. In 2016 very few people migrated permanently as they wanted to stick together with their family and be secure and get help from each other. They said they are afraid of moving from their birth place and they do not have money to buy better land outside the area and they do not know other there.

Chars

Context

The chars are the most flood prone environment in Bangladesh, and this has shaped livelihoods. In extreme events by definition the entire riverine charlands are inundated (since this area is within the active river channels and flood protection is not feasible in this highly dynamic environment where land erodes and also accretes and river channels in the braided river are prone to shifting.. Although life in the charlands is dominated by floods and the seasonal rise and fall of river levels, when charland is above river level and thus cultivable significant areas of sandy soils dry out and are only suited to crops such as millets and groundnuts. In the Brahmaputra-Jamuna the dominant crops traditionally were are single cropping of boro, a single millet crop, and mixed aus and aman paddy. A notable feature of substantial areas of accreted charland is the extent of grasses known as *khaisa* or catkin grasses (*Saccharium* sp.). These grasses are used as grazing/cut-and-carry fodder, for fuel, and as one of the main house construction materials in the chars – both as thatch and (using the older stems) for house walls. Grasses form the initial stage in the sequence of converting new chars to cultivation and are the natural colonists of chars. Livestock are a key asset for char people, they not only offer a means of adding value to the grasses that colonise recently accreted land before cultivation is possible, but they are also a mobile asset in the face of erosion. Nevertheless livestock are also vulnerable to floods, theft, and normal disease hazards, and these problems are more significant in char areas than mainland because of the lack of services to counter these threats. Fishing is an important but not dominant economic activity in the charlands.

Three locations in two Upazilas of Kurigram District were purposively selected. In each there is an active federation (*samity*) - a local development association - covering multiple villages within a fixed territory, formed under previous development project initiatives and that FHRC has involved in networking for natural resources management in the past. Jatrapur federation in Jatrapur Union under Kurigram sadar Upazila includes 18 villages along the Dharla and Brahmaputra Rivers, out of which 6 villages are river char and the other villages are partly (about half) in the chars. Land is considered to be 65% high and 35% low. Goruhara Gram Unayan Samity is in Panchgachia Union in Kurigram Sadar Upazila includes 9 villages (Kadamtala, Sitaijhar, Balamajhir char, Dakshin Goruhara, Kamarchar, Goldarchar, Dharalar char, Mazhipara, Dhakshin Nowabash) along the Dharla (west) and Brahmaputra (east) Rivers, about half the land is considered high and half is low. Porarchar Gram Unayan Samity in Begumganj Union of Ulipur Upazila is in the Brahmaputra river chars, it covers 7 villages (Mondolpara, Hazipara, Kalimuddinpara, Memberpara, Porarchar, Sluice gate para and Inol Haque Para), and about 60% of land is considered high and the rest low.

Overall a third of the Jatrapur area is behind embankments and all of the other two areas are unprotected. The FGD was limited to the char area of Jatrapur.

In Goruhara and Porarchar 50% or more of households depend on seasonal migration, and the others work as labourers, fish, or farm their own land (about 30% of Goruhara households). In Jatrapur 60% of households are involved in agriculture and the rest work in towns.

All three areas experience flooding every year, but reported it was slightly higher than normal in several recent years, and that 2016 was exceptional (Table 11), for example flooding homesteads unlike 1998 or being almost as high as in 1988 (the two largest previous floods affecting the area). Respondents said that flood usually comes here in August-September, but this year it started in July. Erosion is also an annual hazard here, but was worse in 2016. Two sites reported that accretion is more rapid here in recent years: before it took 15 to 20 years (or even more) for a char to arise and it might be far from the eroded area which influenced violent conflict over access to the new land. Now chars rise up faster, within 5-6 years and near to the eroded char, so it is easier to locate their own land. Respondents said the river is shallower and more braided now.

Table 11 Past hazard experience in last 10 years - Chars

	Jatrapur Federation	Goruhara Gram Unayan Samity	Porarchar Gram Unayan Samity
Flooding	Every year but was not so high. Flood affected in 2010, 2014 and in 2015 due to high rainfall. Flood was 2 ft less than in 1988.	Causes misery every year but more in 2013, 2014, 2015 and 2016. During 1998 flood homesteads were not flooded but continuously there was standing water for 3 months on the agricultural land	Affected every year but it was little higher in 2011, 2012, 2013 and 2014. Flood in 2016 was little less than 1988 flood, but river was violent in 2016. According to the respondents water level was higher in the homesteads in 2016 than in 2015.
Erosion and accretion	Erosion every year but severe in 2015 and 2016	Erosion every year but severe in 2013	Erosion and accretion are frequent. In 2016 Dharla river current was stronger than 10 years back.
Drought	2011, 2012, 2013 and 2014	2010, 2011 and 2015	2010 and in 2015/16.
Other hazards	Excessive rainfall: 2010, 2015 Now a days the period of other natural calamities shifted a month ahead. Untimely rain, drought, fog, shorter winter and less winter rain are evident.	Excessive rainfall: 2014 and 2014. Other natural calamities decreased but thunderstorm and fog increased now..	Fog in high in 2014 caused severe damage to the winter crops.

2016 floods

All of the unprotected land in the these areas was flooded in 2016 (Table 12), and all of the households in two areas and many of those in the other areas were flooded, with water present for 5-20 days and in the range of 1-1.5 m in homes. Erosion mainly affected agricultural land, but two complete villages were eroded (close to 400 households) plus 15-20 other households in Goruhara Gram area. These erosion affected households, plus half of flooded households in Jatrapur moved to embankments and higher land for about two weeks, whereas almost all households in Porarchar Gram stayed in their houses living on raise platforms (*macha*) or boats for two weeks.

In general many households keep livestock, about half fatten cattle and sell them during or before the monsoon. It is not easy to maintain livestock in the chars during monsoon but during dry season there is plenty of grass for the cattle. When flood comes they move the livestock to safe places. In 2016 cattle were moved to higher ground such as school ground

or embankment for 15-30 days until the homesteads dried up. Very few livestock died. In 2016 many households fattened cattle for sale, as India restricted cattle movement to Bangladesh, they could be sold before/during the floods for the Muslim festival of Eid-ul-Azha. However, they said they could not get proper prices as middlemen paid less knowing their inability to sell cattle by themselves due to floods and also the lack of shelter. In one of the sites about 30% were sold to recover from the after flood shock, and because they have to stall feed cattle and it is difficult to feed and keep cattle healthy during floods.

Table 12 Summary of 2016 flood-erosion event - chars

	Jatrapur Federation	Goruhara Gram Unayan Samity	Porarchar Gram Unnayan Samity
Number of households	5825	2000	960
Area	7000 ha	728 ha	380 ha
Land flooded in 2016	66% (12 villages and chars)	100%	100%
Households flooded	<2000	2000	900
Duration of standing flood water	5-16 days	15 to 30 days depending on land level	15-20 days in the homestead and one month on the agricultural land.
Depth of water	Homestead: 4-5 ft Agric land: 5-12ft In the unprotected area the water level was about 10-12 ft and in the protected area it was 5ft.	Homestead: 4-5 ft Agric land: -10-15ft	Homestead: 3-4 ft Agric land: 7-8ft Lowlands: 12ft
No. of households evacuated due to flood	1700	200	14
Land eroded in 2016	25% land eroded. Villages in chars (Garuhara-50%, Parbatipur-25%, Char Jatrapur mouza) suffered more than the villages adjacent to mainland. Erosion happens every year but this year current was high and agricultural land eroded more than homesteads.	100% land of Kadamtala and Dakshin Goruhara village eroded, in other char villages about 15-20 households eroded partly.	25%. Usually 5% erodes every year
Households eroded	27, Within 10km land area in last 10 years only 1.5 km area exists. Now the people living in that area has no land.	In two villages all households eroded and in other chars 15-20 households eroded .	20 (most homesteads are far from the river bank).
Movement in flood-erosion event	1000 households moved to mainland - to embankment, higher ground and adjacent areas. Others made high platform and lived there. Some lived on the roof, some lived on boats	All 400 eroded households moved to the protected area, on the embankment, higher ground and shelters, school ground.	Most people managed to stay at home on raised platform and boats and did not move
Duration stayed outside the homestead in 2016 after flood	16 days	20 days	15 days

In all three areas there were the same three flood peaks, with the first in July lasting longest (15-20 days). Overall crops and houses were damaged, with some people in Porarchar having to dismantle and move house; in two areas sand was deposited on land which will affect crops in future years (Table 13). Porarchar has no embankment nearby (which is one reason why people had to stay in their houses on platforms during the floods), whereas flood and erosion victims move to the embankments which are not too far away in the other two areas. In one area the embankment breached in 2016 disrupting road communications. But in Goruhara Gram area the embankment was built in 1996 and prevented flooding so that

people had fish ponds, different crops and a good irrigation system in the mainland there, before they moved to the new chars where they have to move frequently due to erosion.

Table 13. 2016 flood impacts and role of embankments - chars

	Jatrapur federation	Goruhara Gram Unayan Samity	Porarchar Gram Unnayan Samity
Flood pattern	Flood hit 3 times (once in July, once in August and once in September). The big one in July stayed for 16 days but in August and September stayed for 5 days.	Flood hit the area 3 times, 2 times in early July to early August and stayed for 20 days, and once in August and water stayed for 2 weeks. The one in early July was worse than the others	3 peaks - one big one in July/August for 15-20 days and two small ones in August-September for 7 days. Water stayed for one month on agricultural land.
Impact of flood	Damaged houses, infrastructure, crops (Aman, Mash kalai, peanuts), seedbeds were under water. Sand deposition on agricultural land also indicates that within next 2 years they will not be able to harvest better crops.	Damaged houses, infrastructure, crops (Paddy), seedbeds were under water. In exposed areas	Some people had to move several times. They had to dismantle their shacks and rebuild. About 1.5 to 2ft sand has been deposited on all the agricultural land. Some standing crops were buried under sand. They had to sell their livestock.
Role of embankment	Normally embankment is used as shelter during flood and erosion and also used as road for communication. In the adjacent chars are 3 km of embankment of which 1km was breached in 2 places, cutting the road cum embankment. As most of the char area is unprotected they could not protect their standing crops (Aman rice, Mashkalai and peanuts). There are 4 shelters (higher ground, killa) in this area	Western part of the embankment was breached in 2010 and eastern part eroded in 2013; these have not been repaired. Embankment provides shelter to flood and erosion victims, but it also traps water inside when it rains a lot, sometimes damaging standing crops. Erosion victims build houses and live on the embankment. There is one shelter in the mainland area.	There is no embankment

Erosion resulted in loss of crop land and houses. Those who lost their homesteads (mainly Goruhara Gram) had to pay the costs of moving and stay in open spaces exposed to rain and storms. They had to sell some livestock and became separated from their original community. To cope with erosion and with floods, households borrowed from NGOs, CBO (federation), and moneylenders, moved to cities for work, sold livestock and fixed assets, and caught fish in the river.

During the 2016 flood those people who temporarily moved to higher places (schools, embankment, roads) faced overcrowding, shortage of drinking water and latrines, and also places for cooking as no organisation provided cooked food. Lack of safe drinking water commonly caused diseases. Relief was not enough. Women in particular suffered from lack of security and privacy. People in Porarchar preferred to stay on raised platforms in their homestead or on a boat near their homestead due to fear of theft and with the hope that the water would recede quickly.

In Porarchar area no NGO or government assistance was reported, and despite almost all houses being flooded people stayed living in them and reported little damage. There their CBO helped warn people and to move some vulnerable households. In the other two areas also CBOs were active helping people to move and rebuild their houses or do repairs, and also forming a link with NGOs and government, including local councils, to access relief for the worst affected by erosion or floods. Also NGOs and government besides relief gave flood warnings in these two areas, although people said they could also tell for themselves that it would be a severe flood (Table 14).

Table 14 Support for coping in 2016 - chars

	Jatrapur federation	Goruhara Gram Unayan Samity	Porarchar Gram Unnayan Samity
NGO and Government Initiatives to help people	Early warning was given by different NGOs, Government and Union Parisad. Looking at the river current and rainfall upstream, char people realized that there would be a disaster. They moved to higher ground in the stable area.	Early warning was provided by NGO and Government. Embankment and schools were used as shelter. Government provided some relief although people complained it was not enough.	The CBO members did not get much help as there was very little damage.
CBO role during flood/erosion	One of the main activities of the CBO is disaster management. The CBO members received training and formed volunteer group. They provide early warning through own miking system .They relocate people by using their boats and man power, find places for the people and their livestock to move. They report to RDRS (a regional NGO) for relief and help. They also keep contact with government departments for post flood/erosion rehabilitation.. They also cooperate Union Parisad during relief distribution.	CBO members helped people to move and build new houses or repair damaged ones. But as the members are all poor and have very limited funds they were not able to do much. They prepared lists of flood and erosion victims, and appealed to NGOs and government agencies for help for the victims. They also communicated with the Union Parisad.	The CBO provided information on the flood and erosion to its members. They provided early warning and helped vulnerable households move to safer places by CBO boat before flood. They also provided water purification tablets and tablets for diahorrea.

In Jatrapur area more local movements were reported due to erosion - in the last 10 years 5% of households were reported to have moved 2 to 5 times but remained within the adjacent area. Some participants in the focus group said they moved home 10-12 times since 1990 but never moved more than 2 miles. And some people moved 2 to 3 times within the last one year. Ten years back less people were migrating and going to adjacent towns or areas such as Rangpur and Bogra; but now more people move and go to further places where they can get work.

Seasonal migration

Men from between 60% and 75% of all households in the three areas move seasonally away for work (Table 15). The patterns are very similar in the three areas, they spend 6-9 months a year away, but come back home every 2 months or less (usually under a month away at a time for rickshaw pullers). Most people go to large cities (Dhaka and Chittagong) for construction work, to work in brickfields or pulling rickshaws. A small number have moved away longer term to work in factories, mainly garments. Those who work away as agricultural labourers go on a contract and in a group to districts southeast of Dhaka to work on planting and harvesting. Usually they go to the same area every year as they are familiar with the land owners and the area.

Those men who move to cities for work and earn a better wage can afford to rent space in a room shared by 4-5 people. However, the majority of migrants complained about the unhealthy environment in the cities where they face problems of cooking, accommodation and sanitation. Construction workers often sleep in their site. Those who pull rickshaw/van sleep on the sidewalk in shacks made of plastic. Migrants are forced to sleep in public places, on the sidewalks, mosques, park benches, railway station, bus station, under the shade of shops in local markets, etc. Those who come with family often end up sleeping on roadside shacks which they have to dismantle during day time. Shortage of drinking water, toilets are expose them to health problems. Rickshaw pullers have to do hard work and they cannot continuously work for days, often they fell sick and weak. Getting work everyday is uncertain for wage labourers. Construction labourers complained about not getting their wages on time and that they never get the full payment. Other challenges facing migrants in

cities are theft and corruption - rickshaw pullers have to pay the police, and street vendors have to pay local mastans and police. Migrants also mentioned high travel cost to and from their working place. Also sometimes people fall in a trap and get involved in drugs and/or crime.

Table 15 Seasonal migration for work - chars

	Jatrapur federation	Goruhara Gram Unayan Samity	Porarchar Gram Unnayan Samity
% of households involved	60-70%	75%	75%
Urban work	Dhaka and Chittagong (garments, construction work, brick field, pulling rickshaw, professional work like carpentry, masonry)	Dhaka (construction work, brick field, pulling rickshaw).	10% go to Dhaka and adjacent area to work in the garment industry. Most go seasonally to Dhaka, Chittagong (construction work, brick field, pulling rickshaw).
Agricultural work	Comilla and Noakhali, (agricultural labour).	Comilla, Feni, Munshiganj and Narayanganj Districts	Comilla, Feni, Munshiganj districts to plant and harvest Aman paddy and Potato
Duration of temporary migration	About 6 months. Depends on types of work. They usually come home every 2 to 3 months. Those who have agricultural land t come home frequently to help..	On average 6 to 8 months. Labourers work for 30 to 60 days, come home and again go. Those who go for agricultural work go twice, once for sowing/transplanting and once for harvesting. Garment and other industry workers go for longer, but they usually come home for holidays.	6-9 months. Those who go for agricultural work and wage labour (construction labour, brick field etc.) usually work for 4-6 months a year. Those who pull rickshaws work for 15-21 days and come home for a week or two and then they again go to cities.
Other coping actions	For coping they also sold land, livestock, took loan from NGO and from Federation. They also work overtime to earn more money.	20% of the households catch fish in monsoon season and but 75% are involved in risky agriculture as sand is deposited on farm land every year making land less fertile.	

If the contract for agricultural labour includes food they get food but mostly for other work they have to cook themselves. The agricultural labourers have to find places to sleep near their contract sites. They go in a group and stay there until their specific job is finished.. In the dry season work is available but in monsoon they have to come back home to help their families.

All households where men migrate have to borrow money in advance to give to the family before they leave. Some households fell in the trap of moneylenders (mahajan) who give loans on high interest rate and then take all the money they earn. The CBOs have their own credit system which helps members who can borrow from the CBO. Also NGOs provide short term loans. But many migrants have to take advances for their work and then must fulfill their job at any cost. Lastly they are always worried about the family they left at home.

Women living at home take care of the children and the family, livestock etc. They have to face different problems (health, food etc.) all by themselves. Sometime they do not get money from their male partners on time. Some family send their school going children for work to cope with the situation.

In the case of garment workers, the main problems are job security and personal security. These people get less salary than the others. They face problems to rent houses which usually cost more than they can afford. So they are forced to stay in low cost houses and in crowded places where they are not connected to water supply and gas.

Permanent migration

Permanent movement away from these char areas is rare. In Porarchar Gram or example no households were known to have migrated permanently from this area. But from 20% of households members go to cities to work in the garment industries for longer time. In Jatrapur area very few people who have money bought land outside the area and left permanently. A few people went to India and never came back. Women who move for work in the garment industry can only come home during festivals or long holidays. They only get one day off weekly. But some work overtime to make more money.

Goruhara Gram area is significantly different - none migrated permanently as they wanted to stick together with their family and be secure and get help from each other. They said they are afraid of moving from their birth place and they do not have money to buy better land outside the area and they do not know other there.

Interim comparisons

In all of the areas investigated the 2016 floods were among the worst experienced by people in those localities and came in several flood peaks. In six out of eight locations with embankments there were beaches in 2016. Nevertheless embankments were widely appreciated as places of refuge and many households that lost their homes to erosion or had flooding inside their homes moved temporarily to shelter on embankments. However living conditions there, and in other places of shelter such as schools and other high places, were very difficult due to overcrowding, poor water and sanitation, and difficulty to cook. People from one char location preferred not to evacuate and stayed to protect their homes on boats or raised platforms. Warning systems appear to have been quite effective with NGOs and government providing warnings. CBOs played an important role in some of the most vulnerable areas, such as chars, by helping the worst affected people move their possessions and salvageable house materials and finding safe places for them, and also helped affected people access relief and assistance from NGOs and government.

Migration for work, mostly by men, is very common in all of the areas, particularly in the more hazardous areas. This is either to cities and their edges for work in construction, labouring, pulling rickshaws, and rarely in factories; or to distant districts as teams/groups to work planting and harvesting crops during peaks in demand for agricultural labour. Especially from the more vulnerable locations, this is seasonal migration for six or more months of the year, usually in several trips, and these men avoid migrating for work in the flood season to be ready to cope and safeguard their homes. Conditions faced by temporary/ seasonal migrants are difficult - they have no proper shelter, face poor sanitation and drinking water, and are vulnerable to exploitation in the cities. Moreover, they have to borrow to provide initial funds for their wives and families that remain behind, to cover travel costs, and to cover initial living costs when they move; all of which reduce the actual benefit these households receive.

References

EGIS (2000). *Riverine Chars in Bangladesh Environmental Dynamics and Management Issues*. Dhaka: Environment and GIS Support Project for Water Sector Planning (EGIS) and The University Press Limited.

Elliott, J. R. and J. Pais (2006). Race, class, and Hurricane Katrina: Social differences in human responses to disaster. *Social Science Research* 35(2): 295-321.

Falk, W., Hunt, M.O. and Hunt, L.L. (2006). Hurricane Katrina and New Orleanians' Sense of Place - Return and Reconstitution or "Gone with the Wind"?" *Du Bois Review* 3(1): 115-28.

FAP 14 (1992). *Flood Response Study Draft Final Report and Planning Guidelines*. Flood Action Plan component 14. Dhaka: Flood Plan Coordination Organisation, Ministry of Irrigation Water Development and Flood Control (prepared by Irrigation Support Project for Asia and the Near East).

FAP 16 (1995). *Meghna Confluence Charland Socio-economic RRA*. Flood Action Plan component 16. Dhaka: Flood Plan Coordination Organisation, Ministry of Irrigation Water Development and Flood Control (prepared by Irrigation Support Project for Asia and the Near East).

Haque, C. E. and Zaman, M.Q. (1989). Coping with Riverbank Erosion Hazard and Displacement in Bangladesh: Survival Strategies and Adjustments. *Disasters* 13(4): 300-313.

Paul, B.K., Rahman, M.K. and Rashit, B.C. (2010). Post-cyclone Sidr illness patterns in coastal Bangladesh: an empirical study. *Natural Hazards* 56: 841–852.

Penning-Rowsell, E., Sultana, P. and Thompson, P. 2013. The 'last resort'? Population movement in response to climate-related hazards in Bangladesh *Environmental Science & Policy* (2013), pp. 44-59. DOI: 10.1016/j.envsci.2012.03.009

Perry, R.W. (1979). Evacuation decision-making in natural disasters. *Mass Emergencies* 4: 25–38.

Thompson, P. and Tod, I. (1998). Mitigating flood losses in the active floodplains of Bangladesh. *Disaster Prevention and Management* 7: 113–123.

Annex - Detailed records of focus group discussions

1 Category: Between River and Embankment

River side	Konai Brahmaputra Community Based Fisheries Organisation	Asher Alo Unnayan Sangstha(1)	Asher Alo Unnayan Sangstha (2): Vati Bochagari Unnayan Samity
Location	Union: Gazaria Upazila: Fulchari District: Gaibandha	Union: Kamarjani Upazila: Sadar District: Gaibandha	Union: Kapasia Upazila: Sundarganj District: Gaibandha
Number of villages covered by CBO	5 villages Khamarpara (char, eroded), Baluchar, Gobindi, Nilkuthi and Katlamari)	4 villages Karaibari(char) and Goghat 1,2,3(facing erosion)	4 villages Ujan Bhurail (char), Vati Bhurail (char) Rajarchar (char) and vati bochagari
Land level	60% high, 40% low	30% high, 70% low	In Ujan Bhurail village 40% land exist, in Vati Bhurail village 17% eroded, in Rajarchar village 20% eroded and vati bochagari 100%
Adjacent River	Brahmaputra (Jamuna)	Brahmaputra	Brahmaputra and Teesta
Number of households within the site	500	800	3000
Area	20sq.km	1175ha	780ha
Protected area	20%	0%	0%
Unprotected	80%	100%	100%
Occupation	Most of the people go fishing, do agriculture on leased land, share crop or work as labour. Some work in the town as day labourers.	40% people are fishers, 10% cultivate their own land and rest work as labourers, go outside the area for work.	75% migrate seasonally for work, 5% work as agricultural labourers and rest 20% live on fishing
Land eroded in 2016	35%, every year erosion happens but the year when current is high there is more erosion happened.	80% land of one big village eroded, all homesteads eroded and the 300 households moved temporarily and 100 households moved permanently from the area.	52%. 100% people live on Khas (government) land.
Land flooded in 2016	50%	100%	100%
Frequency of flood in 2016	According to respondents this is a big flood after 1988 one. There was flood in 1998 but it did not stay for longer. The flood in 2016 caused more damage than 1988 flood. Flood came about 5 times-once in early June which stayed for 5/6 days. The second one came in July and stayed for 15 days. The third one came in August and stayed for 1 month. This was the devastating one as it causes damage to standing crop. The fourth one came in September and stayed for 18/19 days and the last one came in end September and stayed	Flood in this area was one feet lower than flood level in 1988. But this year erosion and food hit at the same time making life difficult as they have not been able to come back home within a month. Flood hit hard the area thrice once in July/August and stayed for 20 days. Erosion was high this year than other years. Frequency and extent of erosion are higher this year than in last 10 years. Another two in September which stayed for 10-12 days. Homesteads were under 5 to 6 feet water. Even the highlands went under 1-2 feet water.	This year flood came about 4 times-2 big ones in July/August Which stayed for 20 days each time and two small ones in August/September which stayed for 10 days. Erosion was high this year than other years, but extent increased from last year.

River side	Konai Brahmaputra Community Based Fisheries Organisation	Asher Alo Unnayan Sangstha(1)	Asher Alo Unnayan Sangstha (2): Vati Bochagari Unnayan Samity
	for 5/6 days. Farmers lost second time planted crop in end September one.		
Households eroded	230	600	750
Households flooded	250	400	2400
Duration of standing flood water	10 to 20 days depending on land level	15 to 30 days depending on land level	20 days
Height of water	Homestead: 3-5 ft Agric land: 6-10ft	Homestead: 5-6 ft Agric land: 7-10ft	Homestead: 5-6 ft Agric land: 10-12ft
% of households evacuated due to flood	50	75	80
Migration	90hh moved outside the area (Fakirhat, Kalirbazar, Bonarpara, Taluk Kanupur, Nakai hat), but not too far. 100 moved to embankment and flood shelters. Others moved temporarily to adjacent areas. Poor try to stick to the same area.	250 households moved within CBO area to embankment, higher ground and shelters, school ground. 50 households move to adjacent area specially to adjacent area Sundarganj, Malibari, Dariapur. These people will move back when new char will be visible.	2400 hh moved to nearby villages, within protected area, on the embankment and on higher ground. Rest stayed back in their original places, living on macha (raised platform). Some have raised house where they and their livestock live.
Coping	25-30% household male members Seasonally migration to Dhaka, Chittagong, Sylhet, Munshiganj and Cox'sbazar	70% household male members migrate to Dinajpur, Thakurgaon, Rangpur, Dhaka, Munshiganj and work as wage labour in brick field, Garments, drive rickshaw/ van/ autorickshaw. a big percentages of the male and some female also go to Munshiganj for planting and harvesting potato. 40% of the households catch fish in monsoon season and only 10% area involved in risky agriculture.	75% household members move temporarily every year for atleast 6 months in search of work. During dry season 10% people go to adjacent area (Sreepur, Chadipur) for harvesting Jute and maize. Most of the people migrate to Dhaka and Chittagong to work as labourers in brick field, pull rickshaw and work as construction labourers. They also go to Manikganj and Bogra for harvesting rice. Migration to Munshiganj is for planting and harvesting potato. Rest 6 months they mostly sit idle. They usually sell livestock before monsoon as they do not have permanent place to live and security for the livestock. They also do sharecropping.
Duration of temporary/seasonal migration each time	Depends on types of work. On an average most of the people go for 6 months (between October and June) in a year. In cities like Dhaka and Chittagong they work as rickshaw/van puller, earth cutting labour, construction labour, stone carrier etc. In Mushiganj area they work as agricultural labourers specially for planting and harvesting potato. In Sylhet area they go for rice	On an average people stay away from home for 6 to 8 months. The fishers fish in group in the river and stay away for 6 months a year. The labourers work for 30 to 60 days, come home and again go. Those who go for agricultural work go twice, once for sowing/transplanting and once for harvesting. They go to Dinajpur, Bogra and Rangpur area. Those who work in garment industry or other industry/factories go for longer	Due to lack of work and extreme risk, people spend more time outside the area for work. They spend at least 8 months during dry period and come back to their original place during monsoon to help their family move or cope. They do any work they can get for survival.

River side	Konai Brahmaputra Community Based Fisheries Organisation	Asher Alo Unnayan Sangstha(1)	Asher Alo Unnayan Sangstha (2): Vati Bochagari Unnayan Samity
	harvesting. Some people work in factories and live in Gazipur, Joydebpur, Kalagachi and Mirpur. In almost all cases they go in group to find job.	time. They usually come for holidays.	
Pros and Cons of migration	<p>During temporary evacuation, respondents said that the place become overcrowded, lack of drinking water and latrine and place for cooking as none provide cooked food. Males from almost every household migrate seasonally/temporarily outside the area for work. They earn money there to maintain their families. Those who earn a better wage can afford to rent a room where 4/5 people share. Those who are construction worker often sleep in the site. The agricultural labour have to find out places to sleep nearby their contraction sites. They go in a group and stay there until their specific job is finished. But getting work everyday is uncertain. They have to work hard to earn money. Moreover, they are always in worry about the family they left at home. Sometimes people fall in trap and get involve in drugs and other crime. All of them complained about accommodation and food they eat. Construction labourers complained about getting their wages on time and they never get full payment. Those who pull rickshaw/van sleep on the road in shacks made of plastic. All of them said that they face water, sanitary, food and shelter problem. Besides they have to pay local mastans and police.</p> <p>Women living at home take care of the children and the family, livestock etc. They have to face different problems (health, food etc.) all by themselves. Sometime they do not get money from their male partners on time. They have to loan from local Mahajans on high interest.</p>	<p>During temporary evacuation in the shelter they suffer from space problem. Too many people have to stay in the same place crowded where cooking and sleeping, sanitation are bigger problem. Getting clean drinking water most of the time causes water borne disease. Women face problems like unhygienic environment and lack of security. People who leave their original place tend to stay in unhygienic environment and insecure places. Men usually sleep in crowded places, mosques, park benches, footpath, railway station etc. They have to face problem for food, clean drinking water, toilet and theft. Men who goes alone sometimes get married and never comes back. Those who come with family often end up sleeping on roadside shacks which they have to dismantle during day time. Shortage of drinking water, toilets are expose them to health problem. Women left in the house have to bear all the problems at home-shortage of money (as men may not be able to send money on time), health problem of herself and the children etc.</p>	<p>During temporary evacuation majority moved to embankment, some made shacks on the higher ground near school, Madrasa, and killa. Migrants have to live in very crowded places, some people even do not get space for sleeping, due to mosquito and lack of clean drinking water they fell sick. For women latrine is a problem. According to the participants some NGO helped people to raise plinth where they can stay. Some people live on the boat. Cooking food is problem for dry fuel and space. They cook one in a day and eat that. Getting work is a problem. However, they mentioned relief is a positive point for them although it is not enough.</p> <p>When men migrate to cities or to other places for work they have to live in inhuman environment having problem of food, shelter and water. They are forced to sleep in mosques, railway station, bus station, under the shade of shops in local markets etc. If the contract for agricultural labour includes food they get food but mostly for other work they have to cook themselves. For the other labourers this is also applicable. Rickshaw pullers have to do hard work and they cannot continuously work for days. Often they fell sick and weak. But they earn for the family. If they stay back they cannot earn anything in the locality. Some fell in the trap of Mahajan who give loan on high interest rate and rip off all the money they earn. No NGO give loan in this area s they are floating people and has no permanent address or property. Some get advance for their work and has to fulfill their job at any cost.</p>
Permanent migration	People who have money they buy land	Very few people migrated permanently as they	None migrated permanently as they get

River side	Konai Brahmaputra Community Based Fisheries Organisation	Asher Alo Unnayan Sangstha(1)	Asher Alo Unnayan Sangstha (2): Vati Bochagari Unnayan Samity
	outside the area and go permanently, but the percentages are very small. About 30 households migrated to Dinajpur and never came back.	wanted to stick with their extended family and be secure and get help from each other. They said they are afraid of moving from their birth place and they do not have money to buy better land outside the area.	supports from the neighbor and from NGO.
Duration stayed outside the homestead in 2016 after flood	1 month	20 days	1 month
Status of livestock during flood/erosion	Cattle were moved to higher ground such as school ground, embankment and higher land and remained there for one month. About 30% of the livestock died due to feed and proper shelter. Too many cattle in the same space spread disease. People usually keep cattle and fatten for selling. This is a common practice. Specially in 2016 people raised cattle with the hope to make profit during Eid-ul-Azha (sacrificing livestock). As India restricted cattle movement from India to Bangladesh and there was huge demand for cattle during this festival, people fattened cows to sell.	Cattle were moved to higher ground such as school ground, embankment and higher land and remained there for 20 days. About 2% livestock died and 5% were sold to recover from the after flood shock. Usually it is easy to maintain livestock in the chars and people like to raise cattle. During flood they have to stall feed cattle but the feed they can provide was not enough and the livestock health was at stake. But they can sell livestock during Muslim festival.	They do not keep any livestock as they have to move several times in a year.
Status of embankment behind the villages	About 0.5 km of the embankment breached between Katlamari and Singria due to high current pressure in the river.	Embankment was not breached and people inside the embankment was safe.	
Initiatives to help people	Early warning was given by different NGOs, Government Information Services, Red Crescent , Social welfare department and Union Parisad. However, schools were used as shelter and people moved by themselves as everyone was affected and very difficult to help each other.	Early warning by NGO and Government was provided. Volunteers were trained before on preparedness and 40 (20 from young group and 20 from community) received training from NGO. Besides hoisting flag, miking was also performed by the volunteers. Embankment and schools were used as shelter.	In 2016 two villages Vati Bochagari and Rajar char was eroded three times. Since 1988 char started to erode and since then upto 2015 these chars eroded 7 times. People moved to the land area with the help of the NGO. NGO provided information on flood and erosion. Practical Action, an INGO, raised 100 house plinth and renovated house, built latrine and provided tubewell. In 2007 erosion victims who moved to embankment received cattle.
	Government and NGOs provided dry food for one day only.	Government provided relief (rice, dal salt).	Government provided relief (rice, dal salt).
CBO role during flood/erosion	CBO members are also very poor. Most of them fish for living. They helped people to move and when needed they helped them to build other's shack. Members collect bamboo from whoever have Bamboo groves for house	CBO members have helped people to move, provided some help for a day. They provided dry food, formed rescue team and helped people to move to safe places with boat. They also provided information on the flood and erosion to	CBO provided information on the flood and erosion to their members. They also distributed relief provided by the government and INGOs.

River side	Konai Brahmaputra Community Based Fisheries Organisation	Asher Alo Unnayan Sangstha(1)	Asher Alo Unnayan Sangstha (2): Vati Bochagari Unnayan Samity
	rebuilding on the embankments. They also provided early warning messages to their members and their trained volunteers gave training on how to move to a safer place, how to preserve food and essentials etc.	their members. Distributed seeds among the erosion and flood victim.	
Impact of embankment	As these people were living outside the embankment they took shelter on the embankment. A big breach in embankment make the people living inside the embankment vulnerable to flooding. Respondents said it was "inhuman" to live there as it was so crowded with char and flooded mainland people. Embankment is also used as road during dry season.	Embankment have saved people providing shelter on it. Due to embankment sand deposition on the agricultural land inside the protected area was avoided. However, flood from torrential rain also impacted people's life within the protected area. Erosion victims build houses and live on the embankment.	Embankment breached in 20 places during the flood in several places. From inside due to heavy rain water logging and pressure from outside current causes the breach. Local people used sand bags and put earth in the breached area to protect the embankment. Embankment works as shelter for the flood and erosion victims.
Disasters in last 10 years	Flooding in every year but bit more in 2004, 2005,2008, 2011 and 2014. Erosion every year but severe in 2015 and 2016 Drought: 2011 and 2013 Excessive rainfall: 2011, 2016 Now a days natural calamities decreased.	Flood causes misery every year but in little more in 2004, 2005,2008, 2011 and 2014. Erosion every year but severe in 2015 and 2016 Char formation is faster now than before. People do not have to wait for 30-40 years to get their land back. Drought: 2011 and 2013 Excessive rainfall: 2011, 2016 Other natural calamities decreased but thunderstorm increased now.	River current was stronger in 2016 than 10 years back, river bed is silted, erosion and accretion are frequent. It takes 2-3 years to accrete land now in comparison to 30-40 years before. Heavy rainfall and strong wind in 2016 and 2013, Drought in 2014, Thunder storm killed 16 people in this area in 2015-16.
Impact of flood	Damaged houses, infrastructure, crops (Jute and Paddy), seedbeds were under water	Damaged houses, infrastructure, crops (Jute and Paddy), seedbeds were under water. Lots of sand deposition on the agricultural land. Farmers are afraid that may be in next two years they will not be able to harvest good crop	Some people have to move several times. They have to dismantle their shacks and build it again. They lost all their agricultural land, they have to sell all their livestock.
Impact of erosion	Houses eroded, agricultural land eroded, people moved to safer places.	Houses eroded, agricultural land eroded. As they have to stay in the open space they are exposed to dacoity.	Houses eroded, lost standing crops.
Coping with Flooding	Loan from NGO, Mahajan, sell livestock, fish business	Loan from NGO, Mahajan, sell livestock, catch fish in the river, migrate to work in other cities.	Loan from Mahajan, sold livestock, catch fish in the river, migrate to work in other cities.
Coping with Erosion	Migration, Loan from NGO, Mahajan, sell livestock	Loan from NGO, Mahajan, sell livestock, catch fish in the river, migrate to work in other cities	Loan from Mahajan, sold livestock, catch fish in the river, migrate to work in other cities.

Category: Mainland

Mainland	Satata Rajapur Federation	Progoti Tushvander Federation	Onnesha Velabari Federation
Location	Union: Rajpur Upazila: Sadar District: Lalmonirhat	Union: Tushvander Upazila: Kaliganj District: Lalmonirhat	Union: Velabari Upazila: Aditmari District: Lalmonirhat
Number of villages covered by CBO	The Federation includes 22 villages, out of which 60% of Rajapur village and 50% of Thakurdari village was eroded , 30% of 7 villages was eroded, 75% of two villages are in char.	9 villages (Tushvander, Sundrahobi, Talikbarinagar, Kanchanshar, Dakshin Ghanasham, Uttar Ghanasham, 2 are eroded (Kashiram-1 and Bairati-3) few years back but now again accreted and occupied. Talikbarinagar is completely save by embankment	10 villages Falimari (part char-adjacent)-1, Falimari-2, Velabari(part char-adjacent), Shalmara (part char-adjacent), Mahishtali (part char-adjacent), Talukdulali, Paglarchara, Pashchim Velabari, Purba Velabari, and Mohammmadpur.
Land level	70% high, 30% low	66% high, 33% low	80% high land, 20% low
Adjacent River	Tista	Tista	Ratnai Nadi connected to Dharla
Number of households within the site	6000	9000	5256
Area	2560ha	3650ac	7941ac
Protected area	80%	Tushvander, Sundrahobi, Talikbarinagar 70% of Dakshin Ghanasham, Uttar Ghanasham 30% of Bairati, 40% of Kashiram-1, Kashiram-2 are protected by embankment. In Kanchanshar 100% of the embankment is eroded.	56%
Unprotected	20%	30%	44%
Occupation	Most of the people Re involved in agriculture, petty trade in the town and work as wage labour.	30% people are fishers, 20% cultivate their own land and rest work as labour outside the area.	50% migrate seasonally for work, 35% work as agricultural labour and rest 15% live on fishing
Land eroded in 2016	20% land eroded in 2016. Villages in chars suffered erosion more than the villages in mainland. Erosion happens every year but this year the homesteads eroded more than the agricultural land.	100% land of one big village eroded, Part of two newly formed chars eroded. 200 homesteads eroded and 100 households moved temporarily on the embankment and 100 households moved to the protected area	20%. Usually 5% erodes every year
Land flooded in 2016	60% (10 villages and chars)	40%	25%
Frequency of flood in 2016	According to respondents flooding was less than in 2015. In 2015 the flood water stayed on the land for about two weeks. On the charland the water level was about 6 feet and on the mainland it was 4ft.. This year flood hit 3 times (2 times in July and once in August) and stayed for 5 days. Water level on the agricultural land was about 2.5ft and on the homestead water level was about 1 ft.	Erosion was high this year and flood hit the area due to 4 times, 2 times in July/August and stayed for 15 days and once in August and once in September and water stayed for 2 weeks. The one in August was worse than the others. Erosion was high this year than other years. Frequency and extent of erosion are higher this year than in last 10 years. Homesteads were under 4 to 4.5ft high water.	This year flood came about 4 times-2 big ones in July/August Which stayed for 10 days each time and two small ones in August/September which stayed for 7days.

Mainland	Satata Rajapur Federation	Progoti Tushvander Federation	Onnesha Velabari Federation
Households eroded	800	200	0, The homesteads are far from the river bank.
Households flooded	1200	400	100
Duration of standing flood water	5-7 days depending on land level	10 to 15 days depending on land level	7-15 days depending on land level
Height of water	Homestead: 1 ft Agric land: 2-2.5ft	Homestead: 4-4.5 ft Agric land: -6-7ft	Homestead: 1 ft Agric land: 5ft
% of households evacuated due to flood	460	400 households	0
Migration	10hh moved to mainland. 50households moved to Paglarhat village. About 300 households moved to India. Some moved to Rajarhat and Rajibpur upazila and others moved temporarily to adjacent areas. Poor try to stick to the same area.	All 400 households flooded in homestead moved within in the protected area, on the embankment, higher ground and shelters, school ground.	People managed to stay at home and did not move
Coping	75% household male members seasonally migrate to Dhaka and Chittagong (construction work, brick field, pulling rickshaw, professional work like carpentry, Masonry) Comilla, Noakhali, Bogra and (agricultural labour) and Mushiganj for planting and harvesting potato. For coping they also sold land, took loan from NGO and from Federation. They also work overtime to earn more money.	60% household male members from unprotected area and 40% from the protected area migrate to Dhaka, and Chittagong (construction work, brick field, pulling rickshaw,) Comilla, Tangail and Bogra (for agricultural labour). 20% of the households catch fish in monsoon season and only 10% area involved in risky agriculture.	50% household members from unprotected area move temporarily every year for 6-8 months in search of work. Out of which 15% go to Dhaka and adjacent area to work in the garment industry. Other go seasonally to Bogra and Sherpur area to plant and harvest Aman paddy.
Duration of temporary/seasonal migration each time	Depends on types of work. They usually come home every 3 to 4 months but usually stay out of their home for 6 months. Those who has agricultural land they come home frequency to help family. Those who goes to work as agricultural labour they go on a contract and in group. Usually they go to the same area they are familiar with. In last 20years 5% households moved 2 to 5 times but never moved more than 2 miles. Some participants mentioned moving 8-10 times since 1990 but never moved more than 2 miles. However some people moved 2 to 3 times within last one year.	On an average people stay away from home for 4 to 6 months. The labour class work for 30 to 60 days, come home and again go. Those who go for agricultural work go twice, once for sowing/transplanting and once for harvesting. Those who work in garment industry or other industry/factories go for longer time. They usually come for holidays.	Those who goes for agricultural work and wage labour (construction labour, brick field etc.) usually work for 4-6 months a year. Those who pulls rickshaw work for for 15-21 days and come home for a week or two and then they again go to cities.
Pros and Cons of migration	During flood people temporarily go to the higher ground, schools, embankment. Respondents said that the place become overcrowded, lack of drinking water and	About half of people moved to embankment temporarily. During temporary evacuation on the embankment or in the shelter they suffer from	There was no evacuation. People lived in their own house. When men migrate to cities or to other places for work they have to live in unhealthy environment facing problem of

Mainland	Satata Rajapur Federation	Progoti Tushvander Federation	Onnesha Velabari Federation
	<p>latrine and place for cooking as none provide cooked food. Relief was not enough. Women suffer from lack of security and privacy.</p> <p>Males from almost every household migrate seasonally/temporarily outside the area for work. As there is very few opportunities for work in the area, the male members have to go to the cities and even to other places for work. They earn money there to maintain their families. Those who earn a better wage can afford to rent a room where 4/5 people share. Those who are construction worker often sleep in the site. The agricultural labourers have to find out places to sleep nearby their contraction sites. They go in a group and stay there until their specific job is finished. But getting work everyday is uncertain for other wage labour. In the dry season work is available but in monsoon they have to come back home. They have to work hard to earn money. Moreover, they are always in worry about the family they left at home. Sometimes people fall in trap and get involve in drugs and other crime. All of them complained about quality of accommodation and food they eat. Construction labourers complained about getting their wages on time and they never get full payment. Those who pull rickshaw/van sleep on the road in shacks made of plastic paper. All of them said that they face water, sanitation, food and shelter problem. Besides, rickshaw puller have to pay police. Others like street vendors have to pay local mastans and police.</p> <p>Women living at home take care of the children and the family, livestock etc. They have to face different problems (health, food etc.) all by themselves. Sometime they do not get money from their male partners on time. They have to loan from local Mahajans on high interest.</p>	<p>space problem. Too many people have to stay in the same place crowded where cooking and sleeping, sanitation are bigger problem. Getting clean drinking water most of the time causes water borne diseases. Women face problems like unhygienic environment and lack of security. People who leave their original place tend to stay in unhygienic environment and insecure places. Men who migrate to cities for work usually sleep in crowded places, mosques, park benches, footpath railway station etc. They have to face problem for food, clean drinking water, toilet and also theft. Those who come with family often end up sleeping on roadside shacks which they have to dismantle during day time. Shortage of drinking water, toilets are expose them to health problem. However, they also mentioned about travel cost to and from the working place.</p> <p>Women left in the house have to bear all the problems at home-shortage of money (as men may not be able to send money on time), health problem of herself and the children etc.</p> <p>The good thing is that they can earn there and can send money for the maintenance of the family left behind.</p> <p>Besides, they have to borrow money in advance to give to the family before they leave at a high interest rate. Some people get married again and never come back to the village. Some family send their school going children for work to cope with the situation.</p>	<p>cooking, accommodation and sanitation. They are forced to sleep in mosques, railway station, bus station, under the shade of shops in local markets etc. If the contract for agricultural labour includes food they get food but mostly for other work they have to cook themselves. For the other labours this is also applicable. Rickshaw pullers have to do hard work and they cannot continuously work for days. Often they fell sick and weak. But they earn for the family. If they stay back they cannot earn anything in their own locality. Some fell in the trap of Mahajan who give loan on high interest rate and rip off all the money they earn. The federation have their own credit system and they can borrow from the federation. Some get advance for their work and has to fulfill their job at any cost.</p> <p>In case of garment workers, the main problem is job security and personal security. These people get less salary than the others. There is problem for getting rental houses. The ones they get can not afford. They are forced to stay in low cost houses and in crowded places where they are not connected to water supply and gas.</p>
Permanent migration	People who have money they buy land	This year very few people migrated permanently	None migrated permanently from this area. But

Mainland	Satata Rajapur Federation	Progoti Tushvander Federation	Onnesha Velabari Federation
	outside the area and go permanently, but the percentages are very small. Some went to India and never came back. People go to cities, specially women for work in garment industry can only come home during festivals or long holidays. They only get one day off weekly. But some work overtime to make more money.	as they wanted to stick together with their family and be secure and get help from each other. They said they are afraid of moving from their birth place and they do not have money to buy better land outside the area and they do not know other there.	from 20% household members go to cities to work in the garment industries.
Duration stayed outside the homestead in 2016 after flood	15 days	15 days	
Status of livestock during flood/erosion	Cattle were moved to higher ground such as school ground, embankment and higher land and remained there for 15 days until the homestead dries up. Very few livestock died due to feed and proper shelter. Too many cattle in the same space spread disease. People usually keep cattle as safety net. In 2016 they fattened cattle before flood and sold them during Muslim festival Eid-ul-Azha. But they could not get proper price as middlemen paid less knowing their inability to sell cattle by themselves due to flood and shelter. This is a common practice. As India restricted cattle movement from India to Bangladesh and there was huge demand for cattle during this festival, people fattened cows to sell.	Cattle were moved to the protected area where there is higher ground, near school premises and on embankment and remained there for a month till they feel secured. About 1% livestock died and 10% were sold to recover from the after flood shock. Usually it is not easy to maintain livestock in the mainland as most of the land are cultivated most of the year. They also take their livestock to chars during dry season for grazing. During flood they have to stall feed cattle but the feed they can provide was not enough and the livestock health was at stake. But they can sell livestock during at high prices	About 80% households keep livestock. When flood comes they move the livestock in safe places. 60% households sell their livestock during monsoon or before monsoon.
Status of embankment	Embankment was breached in 3 to 4 places. Although there are 3 groins due to heavy current in 2016 embankment breached.	Eight km embankment was not breached and people living inside the embankment was safe.	The embankment was built in 1989. There was several breaches different as they river current was very strong. But government has repaired it. There is a rubber dam to keep the water level controlled and can preserve water for fish culture and irrigation.
Initiatives to help people	Early warning was given by different NGOs, and Government and Union Parisad. However, people saw the river current and realized that there will be mass disaster. They moved to higher ground in the main stable area. CBO has helped them to move.	Early warning by NGO and Government was provided. Volunteers were trained before on preparedness and raise awareness among people. There is a Village Disaster Management Committee (VDMC) in the area. Besides hoisting flag, miking was also performed by the volunteers. Embankment and schools were used as shelter. Government provided some relief although people complained it to be not enough.	In 2016 there was no erosion. New chars accreted. The CBO members did not get receive much help as there was very little damage. They got help from the federation.

Mainland	Satata Rajapur Federation	Progoti Tushvander Federation	Onnesha Velabari Federation
CBO role during flood/erosion	One of the main activity of the CBO is disaster management. The CBO members received training on early management and formed volunteer group. They relocate people by using their boats and man power, find out space for the people and their livestock to move. They report to RDRS (a regional) NGO for relief and help. They also keep contact with the government departments for post flood/erosion rehabilitation. They provide early warning through own miking system. They also cooperate Union Parisad during relief distribution.	CBO members have helped people to move, provided some help for a day. They prepared list of flood and erosion victims, appealed o NGO and government agencies for help for the victims. They also communicate with the Union Parisad. They formed rescue team and helped people to move to safe places with boat. They also Help people to rebuild their houses and repair roads. They also provided information on the flood and erosion to their members. Distributed seeds, tubewell, latrine and medicine among the erosion and flood victims after flood and erosion.	The CBO has a Disaster Management Committee. They have provided information on the flood and erosion to their members. In 2016 they provided Early warning and helping vulnerable households to the safer places before flood. They also provided information on affected people of the area and distributed relief provided by the government and INGOs.
Impact of embankment	Embankment specially groins save the villages from massive erosion this year. However, A char is forming and the residents hope to have less erosion next year. Embankment is used as shelter during flood and erosion and also used as road for communication. Respondents said it was "inhuman" to live on the embankment as it was so crowded with char and flooded mainland people. Embankment is also used as road during dry season. There is a railway track which is also providing protection.	Embankment have saved people and providing shelter to the flood and erosion victims. Due to embankment sand deposition on the agricultural land inside the protected area was avoided. However, water logging from torrential rain also impacted people's life inside the protected area . Erosion victims build houses and live on the embankment.	Embankment breached but people take action right away to protect the embankment. Embankment works as shelter for the flood and erosion victims.
Disasters in last 10 years	Flooding happens every year but was high in 2015 and in 2011. Erosion every year but severe in 2015 and 2016 Drought: 2011 and 2013 Excessive rainfall: 2011, 2016 Now a days other natural calamities decreased.	Flood causes misery every year but in little more in 2004, 2008, 2011 and 2014. Erosion every year but severe in 2004, 2008, 2015 and 2016. Char formation is faster now than before. People do not have to wait for 30-40 years to get their land back. Drought: 2003, 2014 and 2015 Excessive rainfall: 2001, 2005, 2006 and 2014 Other natural calamities decreased but thunderstorm and fog increased now.	In 2016 Ratnai river current was stronger than in 10 years back, erosion and accretion are frequent. It takes 2-3 years to accrete land now in comparison to 30-40 years before. According to the respondents, flood was severe in 2015 than in 2016. But they suffer from heavy rain and strong wind in 2016. Flood also affected the area every year but it was little higher in 2011, 2012, 2013 and in 2014 than other year. According to the respondents water level in the area was higher on the homestead and in the agricultural field in 2015. Drought affected the area in 2014, 2015 and in 2016. Water stands on the ground for more than a month in 2015 and the water level was 1ft high than 2016.

Mainland	Satata Rajapur Federation	Progoti Tushvander Federation	Onnesha Velabari Federation
			Thunder storm killed several people and livestock in this area in 2015. Fog in 2012 and in 2015 caused severe damage to the winter crops.
Impact of flood	Damaged houses, infrastructure, crops (Jute and Paddy), seedbeds were under water	Damaged houses, infrastructure, crops (Jute and Paddy), seedbeds were under water. In exposed areas	Some people have to move several times. They have to dismantle their shacks and build it again. They lost all their agricultural land, they have to sell all their livestock.
Impact of erosion	Houses eroded, agricultural land eroded, people moved to safer places.	Houses eroded, agricultural land eroded. As they have to stay in the open space they are exposed to rain and thunder shower. They have to move which caused financial loss. They have to sell some livestock and be separated from the original community.	Very few houses eroded but lost standing crops.
Coping with Flooding	Loan from NGO, Mahajan, sell livestock, agricultural land, migrate for work for longer time	Loan from NGO, Mahajan, sell livestock, catch fish in the river, migrate to work in other cities.	Loan from Federation and Mahajan, sold livestock, sold fixed assets, lease land out, migrate to work in other cities.
Coping with Erosion	Migration, Loan from NGO, Mahajan, sell livestock	Loan from NGO, Mahajan, sell livestock, catch fish in the river, migrate to work in other cities	Loan from Federation and Mahajan, sold livestock, catch fish in the river, migrate for work in other cities.

Category: Active Char

Chars	Jatrapur federation	Goruhara Gram Unayan Samity	Porarchar Gram Unayan Samity
Location	Union: Jatrapur Upazila: Sadar District: Kurigram	Union: Panchgachia Upazila: Sadar District: Kurigram	Union: Begumganj Upazila: Ulipur District: Kurigram
Number of villages covered by CBO	The Federation includes 18 villages, out of which 6 villages are river char and 50% of other villages were partly in char.	9 villages (Kadamtala, Sitaijhar, Balamajhir char, Dakshin Goruhara, Kamarchar, Goldarchar, Dharalar char, Mazhipara, Dhakshin Nowabash)	7 villages (Mondolpara, Hazipara, Kalimuddinpara, Memberpara, Porarchar, Sluice gate para and Inol Haque Para).
Land level	65% high, 35% low	50% high, 50% low	60% high land, 40% low
Adjacent River	Dharla and Brahmaputra	Dharla (west) and Brahmaputra (east)	Brahmaputra
Number of households within the site	5825	2000	960
Area	70sq.km	1800ac	941ac
Protected area	33%	0%	0%
Unprotected	66%	100%	100%
Occupation	60% of the people are involved in agriculture, rest in petty trade in the town and work as wage labour.	20% people are fishers, 30% cultivate their own land and rest work as labour outside the area.	70% migrate seasonally for work, 20% work as agricultural labour and rest 10% live on fishing
Land eroded in 2016	25% land eroded in 2016. Villages in chars (Garuhara-50%, Parbatipur-25%, char Jatrapur mouza) suffered erosion more than the villages adjacent to mainland. Erosion happens every year but this year the agricultural land eroded more than the homestead. The water current was higher than other years.	100% land of Kadamtala and Dakshin Goruhara village eroded, in other char villages about 15-20 households eroded partly.	25%. Usually 5% erodes every year
Land flooded in 2016	66% (12 villages and chars)	100%	100%
Frequency of flood in 2016	According to respondents flood height was 2 ft less than in 1988. In 2016 the flood water stayed on the land for about 16 days. On the unprotected area the water level was about 10-12 feet and on the protected area it was 5ft. On the homestead the water was as high as 5-7ft This year flood hit 3 times (once in July and once in August and once in September). The big one in July stayed for 16 days but the August/September one stayed for 5 days.	Flood hit the area 3 times, 2 times in early July and early August and stayed for 20 days and once in August and water stayed for 2 weeks. The one in early July was worse than the others	This year flood came about 3 times-one big one in July/August Which stayed for 15-20 days each time and two small ones in August/September which stayed for 7days. Water stayed for one month on the agricultural land.
Households eroded	27, Within 10km land area in last 10 years only 1.5 km area exists. Now the people living in that area has no land. Before it took 15 to	In two villages all households eroded and in other chars 15-20 households eroded .	20 The homesteads are far from the river bank.

Chars	Jatrapur federation	Goruhara Gram Unayan Samity	Porarchar Gram Unnayan Samity
	20 years to accrete land and char arose far from the eroded area which influenced violent conflict. Now chars arose faster, within 5/6 years and near the eroded char. So it is easier to locate their own land. The reason they mentioned is depth of river and braiding of river.		
Households flooded	<2000	2000	900
Duration of standing flood water	5-16 days	15 to 30 days depending on land level	15-20 days in the homestead and one month on the agricultural land.
Height of water	Homestead: 4-5 ft Agric land: 5-12ft depending on land level	Homestead: 4-5 ft Agric land: -10-15ft	Homestead: 3-4 ft Agric land: 7-8ft Lowlands: 12ft
% of households evacuated due to flood	1700	200 households	14
Migration	1000 moved to mainland, on the embankment, higher ground and to the adjacent mainland areas. Others make high platform and lived there. Some lived on the roof, some lived on the boat.	All 400 households moved within in the protected area, on the embankment, higher ground and shelters, school ground.	Most people managed to stay at home on raised platform and boats and did not move
Coping	60-70% household male members seasonally migrate to Dhaka and Chittagong (garments, construction work, brick field, pulling rickshaw, professional work like carpentry, Masonry) Comilla and Noakhali, (agricultural labour). For coping they also sold land, livestock, left the area in search of work, took loan from NGO and from Federation. They also work overtime to earn more money.	75% household male members migrate to Dhaka (construction work, brick field, pulling rickshaw,) Comilla, Feni, Munshiganj and Narayanganj (for agricultural labour). 20% of the households catch fish in monsoon season and but 75% are involved in risky agriculture as sand deposited on the crop land every year making land unfertile.	75% household members from unprotected area move temporarily every year for 6-9 months in search of work. Out of which 10% go to Dhaka and adjacent area to work in the garment industry. Other go seasonally to Dhaka, Chittagong (construction work, brick field, pulling rickshaw,) Comilla, Feni, Munshiganj area to plant and harvest Aman paddy and Potato.
Duration of temporary/seasonal migration each time	Depends on types of work. They usually come home every 2 to 3 months but usually stay out of their home for 6 months. Those who has agricultural land they come home frequency to help family. Those who go to work as agricultural labourers they go on a contract and in group. Usually they go to the same area every year as they are familiar with the land owners and the area. In last 10years 5% households moved 2 to 5 times but remained within the adjacent area. Some participants mentioned moving 10-12 times	On an average people stay away from home for 6 to 8 months. The labourers work for 30 to 60 days, come home and again go. Those who go for agricultural work go twice, once for sowing/transplanting and once for harvesting. Those who work in garment industry or other industry/factories go for longer time. They usually come for holidays.	Those who goes for agricultural work and wage labour (construction labour, brick field etc.) usually work for 4-6 months a year. Those who pulls rickshaw work for 15-21 days and come home for a week or two and then they again go to cities.

Chars	Jatrapur federation	Goruhara Gram Unayan Samity	Porarchar Gram Unnayan Samity
	<p>since 1990 but never moved more than 2 miles. However some people moved 2 to 3 times within last one year. 10 years back less people were migrating and going to adjacent towns or areas such as Rangpur, Bogra etc. But now more people move and go to further places where they can get work.</p>		
Pros and Cons of migration	<p>During flood people temporarily go to the higher ground, schools, embankment, roads. Some people stick in their homestead or on the boat near their homestead. Respondents said that the shelter place become overcrowded. They face shortage of drinking water and latrine and place for cooking as none provide cooked food. Relief was not enough. Women suffer from lack of security and privacy.</p> <p>Males from almost every household migrate seasonally/temporarily outside the area for work. As there is very few opportunities for work in the area, the male members have to go to the cities and even to other places for work. They earn money there to maintain their families. Those who earn a better wage can afford to rent a room where 4/5 people share. Those who are construction worker often sleep in the site. The agricultural labour have to find out places to sleep nearby their contraction sites. They go in a group and stay there until their specific job is finished. But getting work everyday is uncertain for other wage labour. In the dry season work is available in the area but in monsoon they have to come back home to help their families. They have to work hard to earn money. Moreover, they are always in worry about the family they left at home. Sometimes people fall in trap and get involve in drugs and other crime. All of them complained about quality of accommodation and food they eat. Construction labourers complained about getting their wages on time and they</p>	<p>About half of people moved to embankment and protected mainland temporarily.</p> <p>During temporary evacuation on the embankment or in the shelter they suffer from space problem. Too many people have to stay in the same place crowded where cooking and sleeping, sanitation are bigger problem. Getting clean drinking water most of the time causes water borne diseases. Women face problems like unhygienic environment and lack of security. People who leave their original place tend to stay in unhygienic environment and insecure places. Men who migrate to cities for work usually sleep in crowded places, mosques, park benches, footpath railway station etc. They have to face problem for food, clean drinking water, toilet and also theft. Those who come with family often end up sleeping on roadside shacks which they have to dismantle during day time.</p> <p>Shortage of drinking water, toilets are expose them to health problem. However, they also mentioned about travel cost to and from the working place.</p> <p>Women left in the house have to bear all the problems at home-shortage of money (as men may not be able to send money on time), health problem of herself and the children etc.</p> <p>The good thing is that they can earn there and can send money for the maintenance of the family left behind.</p> <p>Besides, they have to borrow money in advance to give to the family before they leave at a high interest rate. Some family send their school going children for work to cope with the situation.</p>	<p>There was very little evacuation. People lived in their own house due to fear of theft and with the hope that water will recede quickly. When men migrate to cities or to other places for work they have to live in unhealthy environment facing problem of cooking, accommodation and sanitation. They are forced to sleep in public places, on the sidewalks, mosques, railway station, bus station, under the shade of shops in local markets etc. If the contract for agricultural labour includes food they get food but mostly for other work they have to cook themselves. For the other labourers this is also applicable. Rickshaw pullers have to do hard work and they cannot continuously work for days. Often they fell sick and weak. But they earn for the family. If they stay back they cannot earn anything in their own locality. Some fell in the trap of Mahajan who give loan on high interest rate and rip off all the money they earn. The CBO has it's own credit system and they can borrow from the CBO. Besides NGOs also provide short term loan. Most takes advance for their work and has to fulfill their job at any cost.</p> <p>In case of garment workers, the main problem is job security and personal security. These people get less salary than the others. There is problem for getting rental houses. The ones they get can not afford. They are forced to stay in low cost houses and in crowded places where they are not connected to water supply and gas.</p>

Chars	Jatrapur federation	Goruhara Gram Unayan Samity	Porarchar Gram Unnayan Samity
	<p>never get full payment. Those who pull rickshaw/van sleep on the sidewalk in shacks made of plastic paper. All of them said that they face water, sanitation, food and shelter problem. Besides, rickshaw pullers have to pay police. Others like street vendors have to pay local mastans and police.</p> <p>Women living at home take care of the children and the family, livestock etc. They have to face different problems (health, food etc.) all by themselves. Sometime they do not get money from their male partners on time. They have to loan from local Mahajans on high interest. They also mentioned about getting proper work in cities.</p>		
Permanent migration	<p>People who have money they buy land outside the area and go permanently, but the percentages are very small. Some went to India and never came back. People go to cities, specially women for work in garment industry can only come home during festivals or long holidays. They only get one day off weekly. But some work overtime to make more money.</p>	<p>This year none migrated permanently as they wanted to stick together with their family and be secure and get help from each other. They said they are afraid of moving from their birth place and they do not have money to buy better land outside the area and they do not know other there.</p>	<p>None migrated permanently from this area. But from 20% household members go to cities to work in the garment industries for longer time.</p>
Duration stayed outside the homestead in 2016 after flood	16 days	20 days	15
Status of livestock during flood/erosion	<p>Cattle were moved to higher ground such as school ground, embankment and higher land and remained there for 16 days until the homestead dries up. Very few livestock died. People usually keep cattle as safety net. In 2016 they fattened cattle before flood and sold them during Muslim festival Eid-ul-Azha. But they could not get proper price as middlemen paid less knowing their inability to sell cattle by themselves due to flood and shelter. This is a common practice. As India restricted cattle movement from India to Bangladesh and there was huge demand for cattle during this festival, people fattened cows to sell.</p>	<p>They do not keep many cattle for longer time. Some of the household fatten cattle and sell them before monsoon. Some move their cattle to the protected area where there is higher ground, near school premises and on embankment and remained there for a month till they feel secured. About 1% livestock died and 30% were sold to recover from the after flood shock. It is not easy to maintain livestock in the chars during monsoon but during dry season there is plenty of grasses for the cattle. Households keep their cattle on the higher ground/boat. During flood they have to stall feed cattle but the feed they can provide was not enough and the livestock health was at stake. But they can sell livestock during at high prices</p>	<p>Almost all households keep livestock. When flood comes they move the livestock in safe places. 50% households sell their livestock during monsoon or before monsoon.</p>

Chars	Jatrapur federation	Goruhara Gram Unayan Samity	Porarchar Gram Unnayan Samity
Status of embankment	Within the adjacent chars there are 3 km embankment of which 1km was breached in southern and northern sides in 2 places. There are 4 shelters (higher ground, killa) in this area	Western part of the embankment was breached in 2010 and Eastern part eroded in 2013. The breached parts have not been repaired.	There is no embankment
Initiatives to help people	Early warning was given by different NGOs, and Government and Union Parisad. However, looking at the river current and rainfall in upper riparian areas char people realized that there will be mass disaster. They moved to higher ground in the main stable area. CBO has helped them to move.	Early warning by NGO and Government was provided. Embankment and schools were used as shelter. Government provided some relief although people complained it to be not enough.	In 2016 there was little erosion. The CBO members did not get receive much help as there was very little damage. They got help from the CBO
CBO role during flood/erosion	One of the main activity of the CBO is disaster management. The CBO members received training on early management and formed volunteer group. They relocate people by using their boats and man power, find out space for the people and their livestock to move. They report to RDRS (a regional NGO) for relief and help. They also keep contact with the government departments for post flood/erosion rehabilitation. They provide early warning through own miking system. They also cooperate Union Parisad during relief distribution.	CBO members have helped people to move and build new houses or repair damaged ones. However, as the members are all poor and they have very limited funds they have not been able to do much. They prepared list of flood and erosion victims, appealed to NGO and government agencies for help for the victims. They also communicate with the Union Parisad.	The CBO has provided information on the flood and erosion to their members. In 2016 they provided Early warning and helping vulnerable households to move to the safer places by CBO boat before flood. They also provided water purification tablets and tablets for diahorrea.
Impact of embankment	Normally embankment is used as shelter during flood and erosion and also used as road for communication. But this year embankment was breached in the adjacent char and flood water flooded the road cum embankment. As most of the char area is unprotected they have not been able to protect their standing crop (Aman rice, Mashkalai and peanuts) during 2016 flood. Sand deposition on the agricultural land also indicates that within next 2 years they will not be able to harvest better crops.	Embankment was built in 1996. Embankment have saved people before breach. There was not much flooding before and they had fish ponds, different crops and good irrigation system in the mainland before they moved to the new chars. . But now they have to move frequently due to erosion. Although embankment provides shelter to the flood and erosion victims, it also logs water inside the protected area when it rains a lot ad sometimes all standing cops go under water. Erosion victims build houses and live on the embankment. There is one shelter in the mainland area.	No embankment.
Disasters in last 10 years	Flooding happens every year but was not so high. Flood affected in 2010, 2014 and in 2015 due to high rainfall. Erosion every year but severe in 2015 and	Flood causes misery every year but in more in 2013, 2014, 2015 and 2016. Erosion every year but severe in 2013. Drought: 2010, 2011 and 2015	In 2016 Dharla river current was stronger than in 10 years back, erosion and accretion are frequent. It takes 5-6 years to accrete land now in comparison to 30-40 years before.

Chars	Jatrapur federation	Goruhara Gram Unayan Samity	Porarchar Gram Unnayan Samity
	2016 Drought: 2011, 2012, 2013 and 2014 Excessive rainfall: 2010, 2015 Now a days the period of other natural calamities shifted a month ahead. Untimely rain, drought, fog, shorter winter and less winter rain are evident.	Excessive rainfall: 2014 and 2014 Other natural calamities decreased but thunderstorm and fog increased now. During 1998 flood homestead was not flooded but continuously there was standing water for 3 months on the agricultural land.	According to the respondents, flood in 2016 was little less than 1988 flood but river was violent in 2016. They suffer from heavy rain and strong wind in 2016. Flood water stayed for longer time on the agricultural land. Flood usually came in August/September before but this year it started in July. Flood also affected the area every year but it was little higher in 2011, 2012, 2013 and in 2014 than other year. According to the respondents water level in the area was higher on the homestead in 2016 than in 2015. Drought affected the area in 2010 and in 2015/2016. Fog in high in 2014 caused severe damage to the winter crops.
Impact of flood	Damaged houses, infrastructure, crops (Aman, Mash kalai, peanuts), seedbeds were under water, sand deposit on agricultural land	Damaged houses, infrastructure, crops (Paddy), seedbeds were under water. In exposed areas	Some people have to move several times. They have to dismantle their shacks and build it again. They lost all their agricultural land due to sand deposition. About 1.5 to 2ft sand deposited on the agricultural land. Some standing crops were buried under sand. , they have to sell their livestock.
Impact of erosion	Houses eroded, agricultural land eroded, people moved to safer places.	Houses eroded, agricultural land eroded. As they have to stay in the open space they are exposed to rain and thunder shower. They have to move which caused financial loss. They have to sell some livestock and be separated from the original community.	Very few houses eroded but lost standing crops.
Coping with Flooding	Loan from NGO, Mahajan, sell livestock, agricultural land, migrate for work for longer time	Loan from NGO, Mahajan, sell livestock, catch fish in the river, migrate to work in other cities.	Loan from Federation and Mahajan, sold livestock, sold fixed assets, lease land out, migrate to work in other cities.
Coping with Erosion	Migration, Loan from NGO, Mahajan, sell livestock	Loan from NGO, Mahajan, sell livestock, catch fish in the river, migrate to work in other cities	Loan from Federation and Mahajan, sold livestock, catch fish in the river, migrate for work in other cities.