

Cyclone AILA

25 May 2009

Initial Assessment Report

With focus on Khulna District



Acknowledgement

This report is an output of the assessment study on Cyclone Aila (25 May 2009) affected areas in Bangladesh with focus on Khulna District, undertaken by the Unnayan Onneshan, a centre for research and action on development, based in Bangladesh. This study was carried out and published in association with Nijera Kori and Humanity Watch. Authors of this report wish to express their gratitude to the resource persons from both of the organizations for the insights shared by them. The report also has immensely benefited from the insights shared by the grassroots people, journalists, and government officials in the Aila affected areas. Mr. Rezanur Rahaman Rose and Mr. Hasan Mehedi task managed for Nijera Kori and Humanity Watch, respectively.

Analysis and Integration

Kushal Roy

Uthpal Kumar

Hasan Mehedi

Statistics and synthesis

Tania Sultana

GIS mapping

DM Ershad

Survey and Information Collection

Moshiul Azam

Uthpal Kumar

Mamunur Rashid Tito

Mohammad Ali Swapan

Sharat Chandra Munda

Zakir Hossen

Mokhlesur Rahaman

with

people from affected communities

Date of Publication

23 June 2009

Cover Photo: NOAA / Modis Rapid Response

This report should be cited as:

Roy, K., Kumar, U., Mehedi, H., Sultana, T. and Ershad, D. M., 2009. *Initial Damage Assessment Report of Cyclone AILA with focus on Khulna District*. Unnayan Onneshan-Humanity Watch- Nijera Kori, Khulna, Bangladesh, June 23, 2009. pp-31

Forward

The cyclone Aila hit the southern coastline of Bangladesh hard in the month of May this year and the hardcore poor are the worst victims. Compared to the devastating cyclone Sidr that hit Bangladesh in 2007, Aila may not be leaving huge death toll, but the aftermath of the cyclone is releasing its horror slowly as half a million people are already on the verge of migration due to permanent waterlogged conditions in the affected areas. The “infamous” Aila left many areas waterlogged and destroyed thousands of acres of crop fields, causing deaths to thousands of livestock, damaging sources of drinking water and forcing an approximate 50,000 people homeless. As seen in the satellite pictures and notified by the government officials, several breakings in the embankments are the main cause of flooding of saline water in the entire southwestern affected region.

The Aila reminded us yet again how ill prepared we are. The underlying issues of Aila, knocking a devastating blow to the livelihoods of the coastal vulnerable and marginalized people, cast serious doubts and induce debates. For example, more than half the embankments around the coastal region were swept away by the Aila, raising the question of the level of disaster preparedness of the government. Issues like illegal shrimp culture and related activities around the embankments, negligence and lack of awareness in protecting the embankments and lack of proper planning and maintenance etc pose serious questions. Add to those are the government’s down-plying of the issues of Aila by not declaring emergency in such a worst case situation.

Under these circumstances, the Ecology and Environment Unit of the Unnayan Onneshan undertook an initial assessment to understand the magnitude of damages caused during and post Aila. The team focused on Khulna district and tried to identify the current situation with a long run view relating to the roots of such consequences.

Our deepest sense of gratitude to the community, despite their devastations, has helped us in conducting the assessment with commitment and passion, which inspire us to remain active in this region. I would like to express gratitude to Humanity Watch and Nijera Kori for providing close assistance in the study by providing resource, information and sharing insights. I also like to appreciate the hard work invested by the team members, especially the authors, analysts, statisticians, GIS analyst and each and every member of the survey team who collected information from the affected areas.

Rashed Al Mahmud Titumir
Chairman, Unnayan Onneshan

Summary

The devastating cyclone Aila struck the southwestern coastal region of Bangladesh and eastern coast of the neighboring West Bengal province of India on the mid-day of 25 May 2009. Unlike the Cat-4 cyclone Sidr of 2007, Aila is a Cat-1 cyclonic storm and hunted less lives, but its chain of devastation stayed active longer, even after two weeks of the storm passed. The worst two affected districts are Satkhira and Khulna followed by Bagerhat, Pirojpur, Barisal, Patuakhali, Bhola, Laksmipur, Noakhali, Feni, Chittagong and Cox's Bazar. This Initial Assessment Report is prepared focusing on Khulna District only.

The worst affected upazilas of Khulna district are Koyra, Dacope, Paikgacha and Batiaghta. According to the official statistics 545,954 people of 118,757 families are affected in Khulna while death toll stands on 45 as of 3 June 2009. Loss of livestock and poultry has been reported as 2080 and 24505, respectively. In total 367 km of road has been fully damaged while 1065 km of road is partially damaged. About 7392 acres of agricultural land has been damaged although estimates of crop damage are not confirmed yet. The horrifying fact is about 594 km of embankment has been damaged which is still letting the river water to freely flow on land and lengthening the stay of waterlogged conditions. Diarrhoea has broken out in the district as 3700 and 4500 people are reported as affected in Dacope and Koyra, respectively.

The scenario revealed by the unofficial sources and the survey teams are more horrifying. Death toll, as on 3 June 2009, climbs up to 109 only in Koyra and Dacope. In these two upazilas, incidents of diarrhoeal diseases have crossed 16000, reports quoting locals. Six (6) deaths due to diarrhoea till date also have been confirmed. Loss of livestock and poultry, as observed, might well exceed 13000 and 23000, respectively. Figures of injured livestock and poultry also might well surpass 60,000 and 200,000 respectively, of which a major portion is on the verge of near death. Aila took a heavy toll on agriculture and fisheries. A total of 23,905 hectares of *gher* and 435 hectares of ponds are still inundated in Khulna and the survey team observed a total loss in culture fisheries. Koyra, Dacope and Paikgacha upazilas also suffered a total loss of crop.

Cyclone Aila inflicted a heavy damage on coastal livelihoods. Water, dry food, shelter and proper medication are four highest priority areas for assistance now. There is also a dire need for proper sanitation facilities. Restoration and repairing of roads and embankments are also high priority areas of concern. As repair of embankments should take a while, emergency assistance is required for the affected people to cover up to 3-4 months of food

and shelter security, while extended relief assistance might be needed in some worst affected areas. There is also an urgent need to start recovery and rehabilitation program as Aila features a mammoth damage on physical structures. Special and emergency assistance are required for the people of remote areas who are still surrounded by water. The expansion of safety nets for relief, and an early start up of public work schemes are necessary to generate employment and household income in the area might be the key strategies for early recovery. Immediate recovery, long term recovery and rehabilitation and repair of embankments should serve as the strongest elements of a sound planning with emphasis to investigate the causes of this mass destruction from a relatively weak cyclone and taking proper action to reduce future risks.

We observed that, despite being a Cat-1 cyclone, Aila took a heavy toll on the coastal people's livelihoods. The main damage was done by the flooding of water breached through the damaged embankments all round the district. It was found that there is a one-to-one relationship between the damage of the embankment and breaching activities by the shrimp farmers near the particular embankment. Affected communities reported that, frequent breaching of the embankments to lift saline water in *ghers* made the half-century old embankments quite weak and led it break down during the tidal surge inflicted by cyclone Aila. Negligence in properly repairing the embankments with a buffer zone in a place has also contributed to the damage of the embankment. Moreover, silting up of the river beds in region has also forced the tidal surge and usual river flow to put immense continuous pressure on the embankments to make them even weaker. It's not Aila that solely responsible for the havoc in the coast of Bangladesh, rather it's the failure of the embankment to protect the coastal belt from storm surge that is majorly responsible for the said wreckage.

Background

Cyclone 02B, later named as Aila hit the south-western coastline of Bangladesh and eastern part of the West Bengal province of neighboring country India on the midday of May 25, 2009. On 3 June 2009 official estimated from both the countries place the death toll at 296 which is still expects to rise. That makes Aila deadliest cyclone so far in 2009. Satkhira and

Khulna districts of Bangladesh suffered the heaviest damage along with Bagerhat, Pirojpur, Barisal, Patuakhali, Bhola, Laksmipur, Noakhali, Feni, Chittagong and Cox's Bazar. Aila made landfall with sustained winds between 65 and 75 mph (74 mph is the lowest threshold for a Category one hurricane). When landfall occurred, it brought with it a deadly storm surge between 10-13 feet high along the western Bangladesh coastlines. This strong storm surge forced the embankment to breakdown in the vulnerable points and flooded the coastal areas. The whole incident took about 4-5 minutes leaving the people no time to move to safety, thus inflicted heavy damage on human lives, livestock and poultry, infrastructures and crop. The cyclone Aila affected at least 12 coastal districts with heavy damage to mainly Satkhira, Khulna, Bhola and Noakhali.

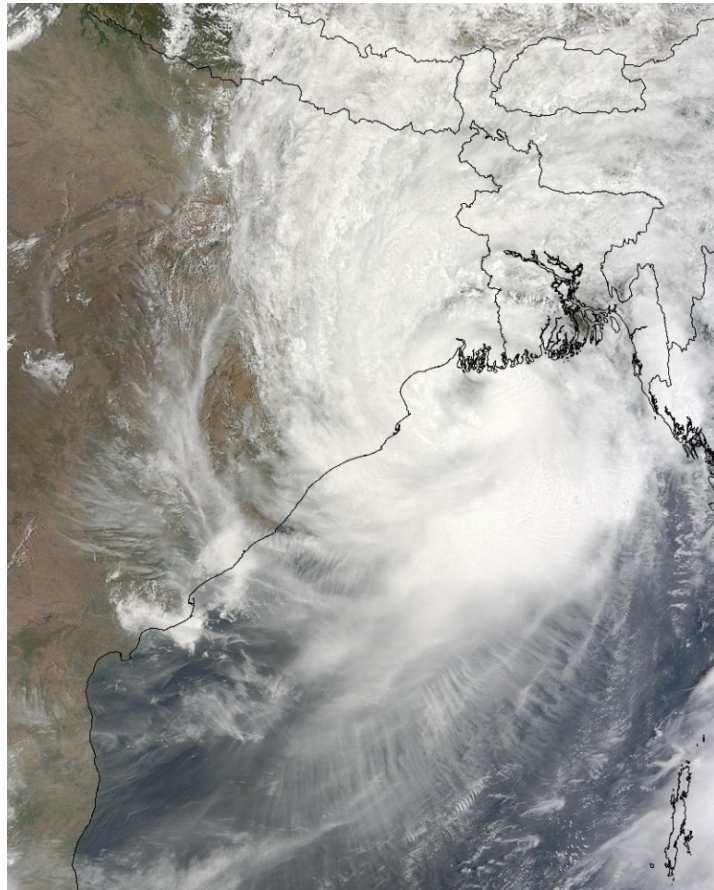


Photo: NASA's Terra satellite saw Aila on May 25 over India and Bangladesh (Image Credit: NASA/MODIS Rapid Response)

An emergency team was fielded jointly by Unnayan Onneshan (UO), Humanity Watch (HW) and Nijera Kori (NK) to assess the huge damage posed by Aila and to observe and document the humanitarian conditions in the affected areas. The team focused on Khulna as all the organizations involved in the survey team mainly work within Khulna district, and hold special interest in the humanitarian conditions and damage situation in the region.

The purpose of this document is to provide a preliminary understanding of the damages and humanitarian conditions in the Aila affected areas of Khulna District. This document also assessed the needs to support an effective and timely humanitarian response for the cyclone victims. There is also a preliminary analytical report added to this document which attempts to answer the question why Cat-1 cyclone like Aila inflicted such a heavy damage in the coastal region of Khulna.

Acknowledgements

The UO-HW-NK team worked with the local staff of UO, HW and NK throughout the assessment exercise. Most of data used in the assessment report were collected directly from the survey team. The assessment team is also grateful to the UNOs of the affected districts for providing time to time information and cooperation while collecting information. Local journalists and many representatives of the affected communities who are somehow involved with the mentioned three organizations were major assets to the assessment team. Besides that, Upazila Agriculture Offices provided important information time to time. And last but not the least, synthesis of the news provided by the local newspapers also helped the assessment team immensely.

Methodology and structure of the report

The assessment team was consisted of 9 members representing Unnayan Onneshan (UO), Humanity Watch (HW) and Nijera Kori (NK). Members of the assessment team visited Koyra, Dacope, Paikgacha and Batighata and assessed the situation between 26 May and 3 June 2009. The assessment report is based on the following methodology:

1. Analysis and interpretation of primary data

- Area survey by the survey team and collection of information from households with the help of the affected communities
- Observations and experience of each members of the survey team and interpretation and integration of those observation and experiences
- Interviews of the UP Chairman, members in affected areas
- Personal interviews of the communities in the affected areas



Physical Features of Aila

- The system moved in a near northerly direction throughout its life period.
- Its intensification was rapid only a few hours before landfall.
- The system maintained intensity of the cyclone even up to 15 hours after the landfall.
- It is the first cyclone in the month of May to cross West Bengal after 1989.



- Community Focused Group Discussions (FGDs)

2. Analysis and interpretation of secondary data

- Basic data from the GoB district authorities
- Damage data from division, district and upazila administrations
- Analysis and integration of published reports in national and local level dailies
- Satellite imagery collected from NOAA and statistical analysis performed after developing an integrated data set on damage

This initial assessment report is organized in three major themes: (a) damage assessment; (b) livelihood assessment and (c) special situation assessment of the forest people in the affected area.

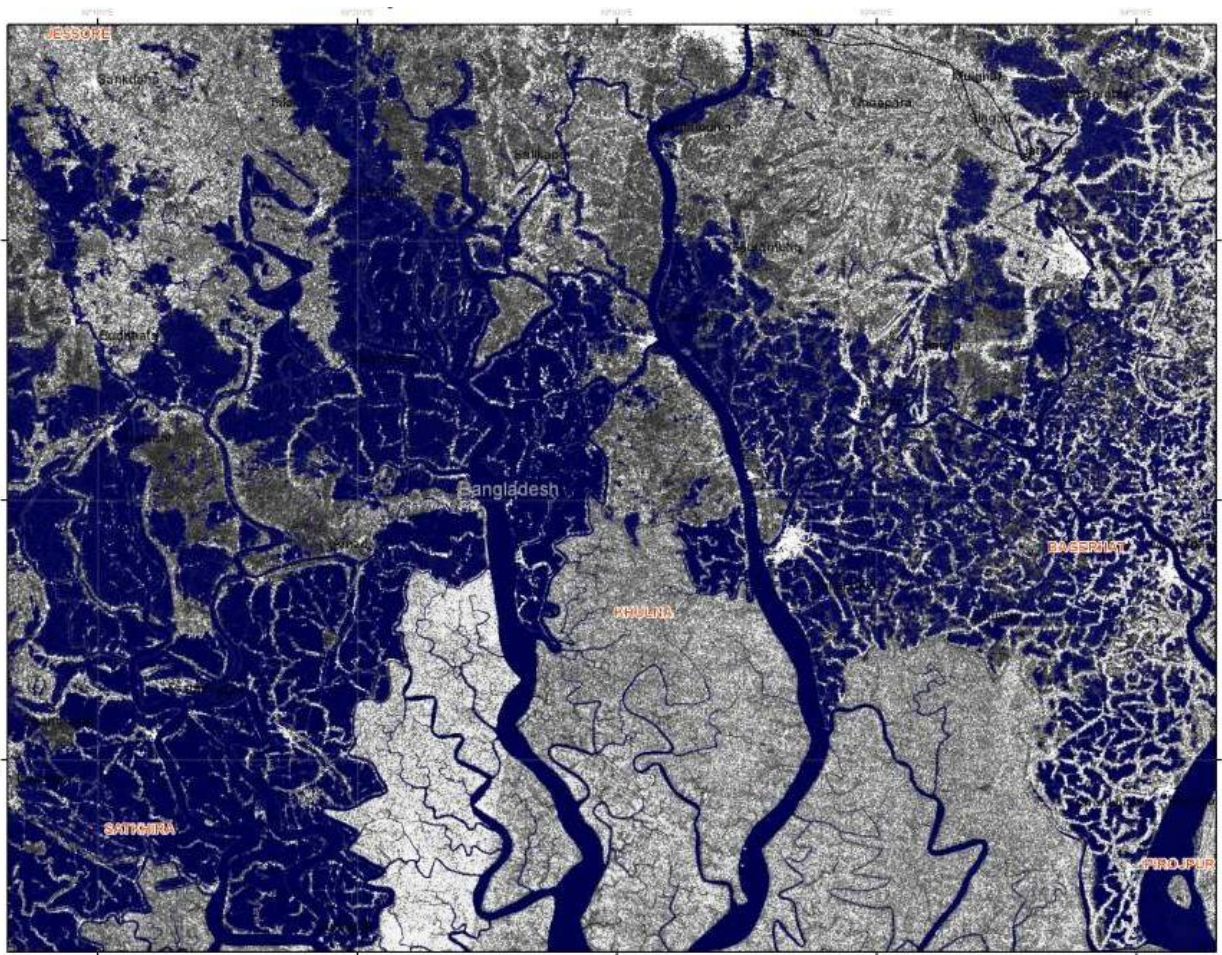


Photo: Flooded area in the Southwestern coastal zone as seen in satellite map after Aila hit the coast. Blue color shows flooded area and the map shows the situation of 30 May 2009. Satellite Data: COSMO-SkyMed © ASI 2009, Resolution: 30m, Map Production: ITHACA

Overview

In Khulna district 6 upazilas out of 9 have been hit by Aila. Reports say 545,954 people are affected in the district which includes 120,203 families. Official death toll to date (7 June 2009) stands on 49 whereas 543 are reportedly injured. As of June 3, 2009 the unofficial sources confirmed 109 deaths in Koyra and Dacope. Satellite data available on 27 May 2009 confirmed at least 30 percent of the district's total populated area was submerged under 1-3 feet of water. About 35 breaches in the embankments around the district were reported through which water is freely flowing into the low-lying regions. The government officials reported about 597 km of embankment been damaged due to the breaches. In terms of number of people affected Paikgacha tops the list with Koyra, Dacope, Batiaghata, Dumuria and Rupsha to follow, while in terms of deaths Koyra (41 as of official count) and in terms of damaged crop Dacope (3280 acres) tops the list. In most of the area water is yet to recede, and with the full moon approaching, there is a possibility that water level will hoist. Migration from the affected areas due to waterlogged conditions has been a feature of the post Aila scenario. Aila also features a severe damage of the earth-made structures (mostly households and embankment) and massive death of livestock. In this time of the rainy season, it is not possible to repair embankment properly as commented by the locals. There is a possibility of permanent waterlogging in the area which is already forcing large scale migration and heaving the number of homeless and unemployed people. Social unrest is increasing throughout the area and harassments of the relief workers and others are increasing rapidly.

Damage Information

Food security

Cyclone Aila had the worst impact on the local food security in situation Khulna District. Damage of 7392 acres of standing crops has been reported officially, of which 3412 acres (46%) are fully damaged. Dacope upazila tops the list of worst affected standing crop (3280 acres, 44% of total standing crop destroyed in Khulna District) with Batiaghata (2080 acres) and Paikgacha (1364 acres) to follow. The main crops damaged are dry season vegetables, sesame, pulses and *Boro* paddy. A complete official estimate of total agricultural land being damaged is not yet available. However, information is available from the Upazila Agricultural Offices and local journalists, UP Chairman, members and locals. The Upazila Agricultural Office of Paikgacha reported a total destruction of 260 ha of Jute, 32 ha of *Aus* paddy, 271 ha of dry season vegetables, 29.6 ha of *Aman* paddy, 111 ha of banana, 98 ha of papaya, 49 ha of sesame and 42 Mtons of mango. Batiaghata upazila suffered a heavy damage on sesame (3245 acres) followed by vegetables (511 acres), *Aus* paddy (20 acres) and Banana

and papaya (100 acres). About 7000 acres of cropland and white fish ponds (locally known as *gher*) have been destroyed in Koyra, confirmed reports quoting locals.

The Fisheries department confirmed a loss of total of 59,045 acres of land under shrimp *ghers* along with 1,074 acres land under ponds culturing white fish. The official estimates of the economic loss in Dacope, Paikgacha and Batighata is about BDT 900 million. However, locally available reports from many other parts of the affected areas like Koyra give rise to the estimate up to BDT 1.5 billion. Most of the affected areas are still under water to date (15 June 2009) and there is a concern among



Photo: Kushal Roy

Photo: No pond fishery in the affected areas escaped the fate like this one

the local people that this waterlogging is going to be in the locality. Long term waterlogging will cause damage to the seedlings as well as to the soil quality in the region which in consequence will affect the upcoming *Aman* season, locals said. As a result, the chain of economic loss in the agricultural sector might be continuing in future.

Local food markets in the Aila affected areas are not functioning well as many food markets are still under water. The survey team observed a shortage of food in the markets which are still functioning and the price range is quite high that that of usual. In Koyra upazila only one food market was found functioning on 10 June 2009 which is at the center of the upazila, locally known as Koyra Sadar. Most of the shops were found closed during the time of high tide, as the market place went under two feet of water. In Dacope and Paikgacha some scattered food shops were found functioning rather than in a market as a whole. There is a serious scarcity of dry foods among the affected dwellers. Cooking fuels are short or almost non-existing and dry places are rare in the affected areas. Lack of fuel is also restricting people to cook foods that are sought from elsewhere. Mr. Shamsur Rahaman, Chairman of Dakshin Bedkashi Union Parishad said local administration is distributing rice among the affected people, but they cannot cook due to lack of fuel, and because there are no high lands nearby.

Livestock and Poultry

Alia took a heavy toll on livestock and poultry in the affected areas. And the death toll is still increasing even after two week gone past since the cyclone hit. Official estimates confirmed 15,785 deaths of livestock in Khulna district. No estimate of deaths of poultry is provided yet. Dacope tops the list of death of livestock (6691) followed by Paikgacha (3749), Koyra (2762), Dumuria (2218) and Batiaghata (365). The UO-HW-NK survey team estimated about 24,000 deaths of poultry with over 800,000 injured as off 1 June 2009, quoting the District

Livestock Officers and local Union Parishad Chairmans (Table-1). About 33560 families reported loss of livestock and poultry in Khulna District (Paikgacha: 18000; Dacope: 8400; Koyra: 6500; Dumuria: 600 and Batiaghata: 60) confirmed the District Livestock Officer. Local reports from Koyra, Dacope, Paikgacha, Batiaghata and Dumuria estimates about 18,500 acres of grazing land been destroyed with an estimated damage of 1624 mtons of livestock feed. Locals say the actual estimates of deaths of livestock and poultry might well exceed the official estimates and all the figures might end up at least doubled. An official estimate of economic loss regarding the livestock and poultry sector yet not available. However reports quoting the many Upazila Chairmans confirmed the cumulative loss might well surpass BDT 40 million loss of livestock and poultry.

Damage of households and status of shelters

The official estimates from the Relief Control Cell of Ministry of Food and Disaster Management says 109,842 households have been affected by Aila in Khulna District (58,499 Households fully damaged, 51,343 Households partially damaged). The UO-HW-NK survey team found almost 99 percent of earth-made households turned into ruins in the flooded areas. As those flooded regions are slowly turning into waterlogged areas, the remaining partially affected earth-made households have no chance to stand tall, commented locals. Given the local estimates, the economic loss due to destructions of households should stand well over BDT 450 million.

Table 1: No of Deaths of Livestock and poultry in Dacope, Paikgacha, Dumuria, Koyra and Batiaghata hit by cyclonic storm Aila on 25 May 2009 (Source: Compiled by the UO-HW-NK survey team)

	<i>Injured</i>	<i>Dead</i>
Cow	112820	322
Buffalo	2380	No data
Goat	45310	12017
Lump	23000	269
Hen	754780	23313
Duck	77280	953

According to the official estimates about 46,600 people took refuge in the night of Aila. However the survey team found that, a lot more people than the official estimates are still in shelters. Most of the affected people in Dacope, Paikgacha and Koyra took shelter on the dry places on the embankments on the day of Aila and since then living there , although there is a serious question regarding the safety of these 'shelters'. In fact these people are living under the open sky



Photo: Kushal Roy

Photo: Aila washed away their households

with nothing to use as roof. Many others are still in the refuges like cyclone shelters, local concrete made educational institutions, office rooms of various NGOs and Government Wings etc. Locals from Koyra reported at least 10 percent of the total affected population in the Upazila took shelter in safe places like concrete made buildings, as mentioned earlier. About 80 percent of them were forced to take shelter on the drier embankments and roads while the rest took shelter on tree tops and rafts nearby, and are still staying there. The survey

team found many people in Koyra and Dacope living on trees and boats. People in the affected areas are now trying to build elevated platforms of wooden or brick made materials on road sides to use as shelter and temporary settlements. More than 5000 temporary settlements/shelters were observed in Koyra. In Paikgacha and Dacope, number of such temporary shelters/settlements might exceed 6000. In Dumuria and Batiaghata the number of such

Photo: Kushal Roy



Photo: People in their own shelter

temporary shelters/settlements is quite less (more or less 1000).

Roads and embankments

'Roads and embankments' is one of the worst affected sectors in Aila. The local Roads and Highway authorities confirmed full damage of 367 km of road and partial damage of 1065 km of road only in Khulna District. Locals report about 35 breaches in the embankment system around the district, while the officials of The Disaster Management Information Centre estimated about 597 km of embankment been damaged. The government has taken initiatives to repair the embankments. However, reports from Koyra, Dacope and Paikgacha divulge that in those places most repairs haven't been successful due to high pressure of tidal prism and continuous water flow through the breaches.

Critical infrastructures

Critical infrastructures like the hospitals, clinics, food storage, power relay centers etc haven't

Photo: Kushal Roy



Photo: People queuing for collecting drinking water from a nearby deep tubewell

been much affected by Aila except being waterlogged in some areas for long time. Most of these infrastructures are functioning to their full capacity. Aside this, educational institutes suffered a heavy damage. Official record says 10 educational institutions have been fully damaged while at least 334 educational institutes took heavy blow. Both electricity and telecom

infrastructure were widely disrupted during Aila. However no critical damage was done as the telecom services has been faster to come back on line, whereas electricity is still disrupted in many remote and worst hit areas due to critical damages to the poles holding the distribution networks and heavy risk of electrical shocks on wet surfaces.

Health and sanitation

Diarrhoea has broken out in Cyclone Aila-hit coastal areas of Khulna as an acute scarcity of drinking water and food worsened sufferings of thousands. Although no official data available on the Diarrhoeal deaths, 15 deaths have been reported by the locals in Koyra, Paikgacha and Dacope. In Koyra alone, at least 10,000 people are attacked by diarrhoea claimed locals. About 5,000 more attacked by diarrhoea in Dacope and Paikgacha confirmed the local UP Chairmans. Being isolated from the mainland by at least 3 feet of flood water and cut-off from the pure drinking water sources, affected areas of Koyra and Dacope became vulnerable against the attack of diarrhoeal diseases, they commented.

At least 95 percent of the affected and waterlogged areas are out of the safe sanitation coverage, observed the survey team. As the water is still staying well over ankle height in most of the areas, toilets, bathrooms and other sanitary structures remain submerged. Most of the safety tanks are overflowing and leaching out to the surface water. People taking refuge on the embankments are forced to defecate on open water and use the polluted saline water for household use.

Damage to the Sundarbans

Unfortunately there are no official estimates of the damage of the Sundarbans has been damaged during Aila. The mangrove forest is a remote place to enter and it is much harder in the rainy season when the height of tide water reaches the highest. The Sundarbans was inundated with 6 m (20 ft) of water as per the media reports. Considering the astronomical tidal wave at the time of landfall, which was about 4-5 meters, the maximum storm surge over Sundarbans area may be estimated to be about 2 m¹. Officials from the Forest Department, Sundarbans West Division, informed the survey team that, a large number of trees were uprooted; infrastructures damaged and seized logs of Sundari trees swept away by 10-12 feet high tidal surge whipped up by Aila. The Divisional Forest Officer (Sundarbans West Division) also told the survey team that at least 35 percent of forest camps in the west part of the Sundarbans have been totally damaged. The Forest Department has been forced to withdraw its manpower from the forest camps in the Sundarbans except keeping one or two at each camp who are in-charge of the camps by rotation. The reason behind this is the acute scarcity of drinking water inside the forest.

¹ Regional Specialized Meteorological Centre- Tropical Cyclone, New Delhi India Meteorological Department, Mausam Bhavan, Lodi Road, New Delhi-110003

Loss of Diversity

Apart from agriculture and fisheries, floral and faunal diversity has been the least attractive point of news in the medias covering Aila. But they are most important considering their contribution in the local peoples' livelihoods. The loss of faunal diversity is difficult to assess. However the survey team observed many numerous dead frogs, snakes and ground hogs floating on water especially in Dacope, Koyra and Paikgacha. It can be assumed that because of the saline waterlogged conditions, an anoxic condition is prevailing in the affected areas might cause a colossal loss of the soil living organisms. This may affect the fertility of soil when water starts to recede. The hallmark of plant diversity loss is the dying trees in the waterlogged areas. Mostly Jackfruit, Mango and Litchi trees are dying in the areas. Many other varieties of trees are also on the verge of death in Koyra, Dacope and Paikgacha area. Locals say at least 50 percent of the local trees in the affected areas might die in the process. And if, waterlogged condition stays longer, the damage might exceed 80 percent.

Livelihoods assessment

Migration

Mass inter upazila and inter district outward migration is one especial features of the aftermath of Aila. Massive amount of population are leaving the waterlogged areas of Dacope, Koyra and Paikgacha towards safer places like Dumuria, Rupsha upazilas of Khulna District as well as some parts of Satkhira District. A rapid and intense migration was observed immediately after the Aila

struck the coasts. People who could not reach to safe shelters started migrating to much safer elevated places within the reach of the affected areas. They tried to stay closer to the affected areas as they wanted to keep an eye on their ruined and abandoned households and to get easier access to the reliefs. Families who stocked dry foods to use during critical periods like this holed their positions on the drier parts of the embankments or concrete made buildings,

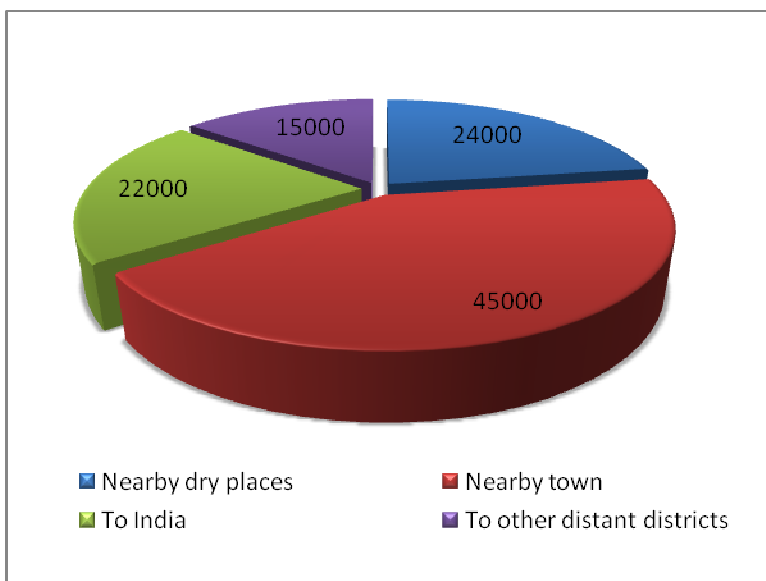


Figure: Destinations of current migration, Information collected from Dacope, Koyra and Paikgacha only.

where they took refuge. Some families who could rent boats, stated to migrate towards the areas close to Khulna and Satkhira City. Due to waterlogged conditions, remoteness of the affected areas and pace of the water flow restricted the relief workers to reach to the families who took refuge on the embankments (the survey team found about 70 percent of the total affected population in Dacope, Koyra and Paikgacha took refuge on the embankments and many of them are still there).

Lack of access to relief (mainly dry food and drinking water) dragged most of the affected families to the points closer to the towns where they can access those, but again lack of dry



Photo: Kushal Roy

Photo: People are trying to escape from the waterlogged conditions as soon as possible

places and shortage of reliefs forced them to migrate further. Adding to that, situations like absence of income facilities, lack of household capital and no place to live have forced a massive migration in the affected areas. Unlike Sidr, when people from outside migrated to the affected areas to get access to the reliefs, the case of Aila is an outward massive migration. According to Mr. Ebadat Ali, Chairman of Amadi Union Parishad,

Koyra about 45,000 people has migrated from Koyra Upazila. In Dacope and Paikgacha the estimates are 35,000 and 25,000 respectively. Again some 14,000 families from Uttar and Dakshin Bedkashi union have taken shelter in Amadi union of Koyra, he added (Note that Amadi is of the less affected unions of Koyra upazila).

Locals said some families who migrated earlier prior to Aila tried to come back to their households. But the prevailing waterlogged conditions which further deteriorated due to the full moon condition and excessive recent rainfall (due to low depression) they were forced to migrate from the area. Observations quoting locals say recently people from manual labor class like the rickshaw pullers; three wheeler pullers etc are increasing in the city of Khulna

and Satkhira. Much of them are migrated people from the affected areas who had been forced to do these jobs for food.

Local occupants of the affected areas commented that the present waterlogged condition might sustain at least 4-5 months, until the rains end. At this time of the year, when the rivers are mighty with the mammoth upstream flow of water, it is quite impossible to repair the embankments. This might cause the recent migration to turn in to permanent shifting of settlement. Judging by the amount of land to host them in other areas, required amount of employments, sanitation system, costing and materials required for housing etc, this might well turn into a humanitarian disaster. Mr. Majid Sardar, a bawali (wood cutter) from Koyra made it clear; “Aila did not strike the coast as a rattle snake, rather It is slow poisoning our livelihoods”.



Photo: Kushal Roy

Photo: People in Koyra are trying to move their cattle away to a safer place. People who do not have the privilege are selling them to the middlemen.

Loss of household assets and livestock



Photo: Kushal Roy

Photo: Phoenix people trying to live up their lives

Koyra Sadar Union informed the economic loss due to loss of households and assets might exceed BDT 170 million only in Koyra. The survey team made a quick assessment of the

Tidal surge induced by Aila breached the coastal embankments and washed away the earth-made houses of the poor communities. In the affected areas of Koyra, Dcaope and Paikgacha, at least 90 percent of the families lost their households. Along with those, they lost their every day essentials like cooking equipments, earth-made burners (locally known as *Chula*), furniture and many others. S M Sahabuddin, Chairman of the

economic loss in Dacope and Paikgacha area in terms of household and household assets. The amount reached to BDT 350 million.

Even in this emergency time, new kinds of businesses have emerged. Especially in Dacope, Koyra and Paikgacha the survey team found some middlemen (locally known as *faria*) who are buying household assets and livestock from the affected families, whatever left with them, for cheap. They are selling those to others in the town for a higher price. People are forced to sell their livestock and household assets to them to buy food and materials for shelter. As waterlogged condition is getting permanent, more and more livestock would sell in the next few weeks, locals said. Livestock won't survive under waterlogged condition, so people will sell them eventually, they informed.

“I am making 30,000 a day”

Sheikh Akbar Sardar, Age 25, Paikgacha Sadar

When we were walking on the submerged roads of Koyra, we noticed one old man is negotiating with a young guy. We were curious and went closer to them to know what's happening. When the old man was asked what is going on, he told us he is trying to sell his cattle to this young guy and they are negotiating over this. The old man, Mr. Raghob, told us that his cow is worth more than BDT 20,000 but the young buyer does not want to raise the price over BDT 16,000. Finally Mr. Raghob agreed to sell the cow on the buyer's demanded price. Mr. Akbar, the buyer was happy with price and told us he is happy to the cow and will try to sell it for BDT 22,000. When asked why Mr. Raghob is trying to sell his cow for such a low price he replied, “Look around you! It's water everywhere. Do you think my cows are going to survive this mess?”

We met Mr. Akbar later when he was coming back from the village. “I bought 5 cows and 7 goats today”- he told us. I am going back to Paokgacha sadar, where I live and will come back with more cash to buy some cows”- he added. We asked him why he is doing that. He replied that the situation won't last much long and he has to make profit as much as he can. “I am making 30,000 a day”- he said.

Loss of agriculture and livelihoods

By tradition the people of Koyra, Paikgacha and Dacope and other Aila affected areas are dependent on agriculture. Aila took the heaviest toll on agriculture which will affect the



Photo: Kushal Roy

Photo: Mr. Akbar, a middleman working in Koyra who is buying cattle form the affected families very cheap and selling them at a high price to the other at town.

livelihoods of people in the area. The damage done to the crops and fisheries are already known (see damage report). The concerns are about the crop of the upcoming rainy season, *Aman* paddy. As the waterlogged conditions continued and salinity is expected to rise in the soils- anoxic conditions might restrict this season's *Aman* cultivation and affect the forthcoming winter vegetables. This would further whip the hardcore poor people who lost their crop already in the tidal surge of *Aila* and there will be nothing left for them. Aquaculture (white fish) will also not be possible in long time because of salinity and pollution.

Reshma Begum

Age 25, Village: Horidhali, Paikgacha, Khulna

Mrs Begum lives with her parents as her husband works away. Her five member family depends on her father's income. Besides this, she has her own income source from the *bel* trees she planted on her homestead areas. She earns about 12-15 thousands taka per year from the tree added to her father's annual income of about 24,000 take. She was doing quite alright until the *Aila* hit her family hard. She lost her house, her homestead is still under two feet of water and most impotently her only source of income, *bel* trees are uprooted. She can't talk right now. When we are talking to her father, she was looking at us, silently, like she lost everything in the world.



Photo: Uthpal Kumar

Photo: Reshma Begum, in front of the uprooted *bel* trees, her only source of income



Photo: Uthpal Kumar

Photo: "Nothing would stand tall"- promised *Aila*!

Loss of agriculture and further possibilities of agricultural failure are prompting people for large scale permanent migration. Agriculture dependent livelihoods are in peril and people are seeking alternative livelihoods that they have no knowledge about. Thus there is a possibility that a large portion of the affected population might shift their settlement to other places from the *Aila* hit areas. Many affected families taking refuge far from their settlement

tried to return to their homeland recently, but were forced to come back because of the lack of agriculture based income opportunities, reports quoting locals.

Loss of income in the affected areas is evident. The UO-HW-NK survey team found at least 87 percent of the affected families in Koyra have no alternative source of income other than agriculture. Although much of them (almost 80 percent) do not hold their own agricultural land, but working as an agricultural labor in the area, which is their main source of income aside white culture fisheries. Blockage on the income source is forcing the people to leave their settlements (or used to be their settlements) and search for jobs elsewhere. This is increasing unemployment in the affected areas well as the in places where the people are migrating.

Khitish Chandra Mondol

Age 40, Village: Choto Byerjopha, Paikgacha, Khulna

Khitish Mondal is a poor day laborer of Choto Byerjopha village in Paikgacha. He earns about Taka 70-80 a day when he gets a job. But this is not enough to run his family. Thus, he started a small fish-meal supply business. He thought this business might do well in such a shrimp *gher* dominated area. To start, for the first time he took loan from a *Mohajon* on high interest and bought about Taka 25,000 worth fish meal and lime. He started the business on the mid of May 2009. But what luck, Aila crashed his shop and all his materials on the night of 25th. Now Khitish is speechless. His thinking is now around how he is going to repay his debt to the *mohajon*.



Photo: Uthpal Kumar

Photo: Khitish Chandra Mondol

Unrest and chaos

Social unrest and chaos are increasing in the affected areas. On 29th May hundreds of people surrounded and humiliated the Koyra Sadar Union chairman Mr. S M Sahabuddin Gazi. They informed the survey team that Mr. Gazi was supposed to release 10 kg of rice per head as government relief, but instead he released 6 kg per head. Mr. Gazi is still under police protection. In Dacope and Koyra affected people are well concerned about the contribution of the shrimp *ghers* in letting the embankment being breached. About a week ago people from Kalinagar union of Dacope caught 3 shrimp *gher* related people red-handed and beaten severely while trying to make breach in the embankment to let pour saline water in the *gher*. Besides these news like people humiliating the UP Cahirmans and members demanding relief or even humiliating government officials are quite available in the affected areas.

People migrating from the affected are also causing chaos in the areas where they have taken refuge. In places like Dumuria, Khan Jahan Ali thana, Rupsha thana etc migrant people are living in temporary shelters. They are looking for jobs while are some are involved in the odd

jobs in the mean time. In addition to that, certain increase in population in the refugee areas are causing health and sanitation problems. All these are heaping the conflicts between the locals and the migrants.

State of relief activities and impacts on livelihoods

The government or official relief that is reaching in the affected areas is inadequate, locals say. In the remote areas the situation is much worse. The water trapped people of Dakshin Bedkashi didn't receive any relief even after a week of the disaster. The authorities confirmed that about 90 percent of the government relief has been converted to 'food for work' by the Upazila Nirbahi Officers (UNOs). The affected people can only access to this relief if they work in the embankment repairing programme undertaken by the government. To date, many NGOs could not reach the remote affected areas to distribute relief.

Government officials say military and civil defense teams, who are already on the field, are struggling to deliver food, water and emergency shelters, to some 430,000 people who are marooned. There exists a shortage of medicines in the affected areas. According to the District

Civil Surgeon, the central government (Dhaka) has sent 50,000 'orsalines' along with other medicines to distribute in the affected areas. However, the fund to transport those 'orsalines' and medicines from Khulna to the affected areas like Koyra are not available. Due to such mismanagement the medicine distribution in hospitals in affected areas are hindering. There is also a lack of coordination and communication among the



Photo: Uthpal Kumar

Photo: Ashoke Kumar Das has lost his betel garden, his only earning source.

relief workers. Therefore, up-to-date information of reliefs being distributed is either unavailable or confusing. There is a comprehensive database shown in the CDMP (Comprehensive Disaster Management Program) website maintained by the Government. But the locals informed, much of this stated amount of reliefs being distributed are nonexistent in the affected areas.

Impacts on Forest People and ethnic communities

About 90,000 Sundarbans dependent people live around the coasts of Koyra and Paikgacha upazila of Khulna District. Aila hit these marginal and poor people hard in those two areas. In Koyra 2 unions are worst affected: Uttar Bedkashi and Dakshin Bedkashi. About 40,000 forest people use to live in these areas along with 450 families of *munda* (ethnic communities) communities. Locals report about 50 percent of these people are *bawalies*, 30 percent work as fishermen inside the Sundarbans (locally known as *jele*) and rest are *mawalies* (honey collectors), *chunaries* (snail collectors) and others. Except few most of these affected forest people have become homeless and moved toward the town areas to access the reliefs.

One of the *Mawalies*, Latif Sardar (65) informed, they won't able to enter the Sundarbans at least within 6 months because the forest would be under 2-5 feet of tidal water. The production of honey will be reduced in the Sundarbans because of this. Ismail gazi (43), one of the *golpata* (*nypa*) collectors also concerned about the next years *golpata* production in the



Photo: Damaged road in Koyra

Photo: Kushal Roy

Sundarbans. "Aila made us homeless you see, but what you cannot see that Aila might make us life-less. What will we do if *golpata* production reduces next year? Who is going to give us a job?" - He questioned.

Amadi and Bagali union of Koyra Upazila are two most densely populated areas with the forest people, mostly *bawalies* (67%) and *mowals* (little less than 30%). Fortunately these two unions of Koyra are the least affected.

However, Gorikhali union of Paigacha Upazila is one of the densely populated areas with fishermen (more than 90% of population). Locals said, most of the union is actually washed away during the tidal surge of Aila. About 10 people were missing as of 29th May. Almost 99% of the households in the union were washed away and people were forced to move away from the embankments and take shelter on the elevated and dry areas. Relief activities in Goroikhali were not observed that much except one or two NGOs are distributing reliefs in

the area. There is a severe scarcity of drinking water in the area but people cannot move away further from the region because of the waterlogged conditions.

Table: Summary of damage done during Aila in two unions of Koyra Upazila (Source: UO-HW-NK survey team)

Description	Name of Union (Koyra)	
	Dakshin Bedkashi	Moharajpur
Total population	23,000	35000
Total household	6533	8000
Total villages	12	-
Cyclone shelters	3	7
Capacity of cyclone shelters (per shelter)	600	1200
Deaths and migration		
People dead	54	No data
Injured	2000	350
Missing	No data	Do data
Migrated people (of total population)	45%	25%
Permanently migrated (of total population)	10-15%	10-15%
Livestock, poultry and fisheries		
Death of Poultry (of total)	70%	50%
Death of Livestock (of total)	25%	15%
Fisheries (shrimp farm of total coverage)	No data	100%
Economic loss (BDT)	55 million	No estimate
Educational and religious institutes		
Govt. Primary school	Total = 5 Damaged = 2 (Partial)	Total = 12 Damaged = 2(Partial)
Non-govt. Primary School	Total= 4 Damaged = 1(Partial)	Total= 6 Damaged = 2(Partial)
High School	Total=2 Damaged= 1(Partial)	Total=5 Damaged= 1(Partial)
Community School	Total = 1 Damaged= 1 (Full)	Total = 17 Damaged= 7 (Full)
Mosque	Total = 23 Damaged = 2 (Full), 2(Partial)	Total = 7 Damaged = 3(Full)
Temple	Total = 17 Damaged = 2(Full)	Total = 3 Damaged = 1(Full)
Critical infrastructures		
Tubewell damaged	Total = 50 Damaged= 50 (Partial)	Total = 62 Damaged=10 (Partial)
Bridge damaged	Total= 3 Damage= 1(Partial)	
Culvert damaged	Total= 10 Damaged= 3(Full)	Total= 5 Damaged= 3(Full)
Road damaged		55km
Agri land damaged	100%	100%
Tree damaged	80%	70%
Diarrheal attacks (persons)	35% of total population	200

Critical observations regarding Aila: A man-made disaster?

As observed by the elders of Koyra, Paikgacha and Dacope, Sidr in 2007 struck harder than that of Aila and left a devastating path of destruction. But what happened in the aftermath of Aila is water free flowing through the breaches in the embankments and waterlogged conditions are prevailing for long. This waterlogged condition might stay further six months, which would turn into further disasters in the livelihoods of the people living in the coastal areas. Bimol Chandra (68), an elder in village named no. 4 Koyra said he hasn't seen such water flowing thorough the village in his life. Tidal surge also affected them in 2007 during the Sidr but this year (Aila), it is much severe. He thinks this water in not going to recede until the embankments are repaired and it is not possible to repair those embankments until the rainy season ends.

Like Bimol, many people in Koyra and Paikgacha believe that Aila is not a cyclone that could make such a disaster to them. For example Khatish Mondol (40) lives in a village called Choto Bayerjhopa in Paikgacha. He thinks it's the waterlogged condition that is doing the damage. "You city living people don't want to call a disaster when people like



Photo: Kushal Roy

Photo: Uttar Bedkashi people are isolated from the main land of Koyra

us are not dying. But look around us! Do you see anyone is eating; anyone has anything left to live? Anything left to start over again? Aren't we dying here?"-he asked the survey team.

In fact the affected people of Koyra, Dacope and Paikgacha seem to know what had caused this havoc to them. The reason is simple; the embankments broke with the pressure of high tide during Aila and flooded the affected areas to submerge it at least 3 feet of water. In absence of a proper drainage system, this water cannot recede as much as expected. In addition to that, the rain water from upstream are increasing and pushing the tidal prism to spread wider in the lands. The survey team talked to several people from Koyra, Paikgacha

and Dacope to understand why the embankments were broken so easy and found these interesting answers:

- Embankments were breached mostly near the shrimp gher areas. Locals said shrimp *gher* owners normally make holes through the earth-made embankment to lift saline water from rivers. These holes weakend the embankments from base and the vulnerable spots have been breached by the tidal surge during Aila.
- Saline soils are less compact and can be easily broken into pieces. This kind of soils can be easily washed away by water. Shrimp *ghers* make soil saline. Embankments that are close to the shrimp *ghers* have been destroyed mostly because of loose textured soil.
- Some of the areas of the embankments were repaired before the tidal surge. Government officials repaired the embankments with 'dry and granular soils', according to the locals. Compaction of soil (which is a measure of soils holding capacity) is an important factor while repairing the embankments. Dry and granular soil easily loses the edge. That is what happened during the tidal surge of Aila and those vulnerable spots in the embankment broke apart.
- At the time of recent repairing of the embankment, the BWDB official did not make slope at both sides. This is normally done to minimize the impact of tidal surge. This made the embankment vulnerable.
- Usually a buffer zone of planted area and elevated soil-made places are prepared between the river and embankment to protect it from tidal surge. This year, during the repair this buffer zone was overlooked by the officials.
- Usually the government acquires land from people to build 'ring' embankments and compensate the people for acquiring their lands. This year officials decide not to compensate the people for their land. Because of this, while building the 'ring' embankment the BWDB did not find enough space and made the embankment lot thinner than it was originally designed. This thin embankment could not hold the huge pressure of tidal water.

Beside these, there is also an environmental cause behind the tearing off the embankments. The elders of Koyra and Dacope informed the river beds are silting up and getting elevated. Therefore, tidal surges are being deflected on those elevated river bed and dissipating along the banks, ultimately creating huge pressure directly on the embankments. Bharat Cgandra Munda (69) is a dweller of Uttar Bedkashi. He was explaining the cause of breaking of the embankment in his area: "At first embankment was broken in no 6 Koyra at 2

PM, before the day Aila hit the coast (24 May). Tide was little bit higher than usual. We knew the embankment is not going to hold much longer. So we were preparing to move. But the whole thing just happened

in 4-5 minute. We did not stand a chance. We saw water was rising rapidly, and within a minute or two it was 3 feet above the ground. We had nothing to do. The river bed is getting elevated each year. Every year we see some part of the buffer zone outside of the embankment is going into the river. So we knew it was coming. Only if we knew it was coming so fast!" Along with the cause Bharat explained, he thinks this region is subsiding each year. Coupled with the elevated river beds and subsiding of the area, Bharat thinks, they are living in a 'bowl' which is surrounded by water. "This 'bowl' may explode any

Table: Summary of damaged embankments in Koyra upazila (Source: UO-HW-NK survey team)

Name of location	No of breaches	Length (km)
A. Bedkashi union		
1. Jorshit	7	6
2. Binapani	2	0.5
3. Gokhali	1	1
4. Ponnopukur (North & south gate)	1	1
B. Moheshoripur union		
1. Gilabari sikari bari (both sides)	2	2
2. Noyani gate (south side)	1	1
3. Besides Jotibabu's bari	1	0.5
4. Near to kodak kata khal	1	1
5. Besides Bijoybabu's bari	1	0.5
6. Gazi bari	1	1
7. Chowkuni	1	0.5
8. Faruq's bari	1	1
9. Rania Khali Forest station	1	0.5
10. Nitai babu's bari	1	1
11. Baniakhali kheya ghat	1	1
12. Hodda gazi fish	1	0.5
13. Kathal tola	1	1
C. Koyra sadar union		
1. No. 6 koyra	1	0.5
2. Gobrakhali, Katakhal, Horikhola	3	1.5
3. No.2 Koyra	1	1
4. No 6 Koyra	1	0.5
5. Modinabad	1	3
D. Moharajpur union		
1. Doshali Kheya ghat	1	3
2. Pabna	1	3
Total	34	32.5

time and the area would be flooded", he added, "as it did during Aila".

Bharati Rani Munda (47) is leaving Uttar Bedkashi (Koyra) for India with her children. When she was asked why she is leaving, she replied, "Aila or no Aila, the embankment will break again and again. The government can repair it as they like, but it will fall apart down eventually. I cannot live in such a dangerous place. So I am leaving."

Kamal Krishna Sarkar (45) of Koyra Sadar believes, Aila is a man-made disaster, so as Ashoke Das (45) of Paikgacha and Sidasm Chandra (60) of Dacope. Many people that the survey team

talked to believe the same. The fact is the illegal and unplanned activities around the embankments, not realizing the importance of maintaining this coastal safety system and negligence in protecting the system has caused this havoc to these poor people and left with no choice but homeless in their own lands.

“Come back if you can stop shrimp, or don’t come back at all!”

Latif Sardar (45), No 4 Koyra

It was 26th of May 2009. We are trying to approach Koyra Sadar but were obstructed by a ‘pothole’ on the broken road. It looked like a mountain river is flowing with a fierce speed in front of us. While we were planning how to get passed this, one middle aged man approached to us. He was sitting on the other side of the little “river flow” and watching us closely. He quietly came to us and told us where to put our footsteps in the deep water. Then he asked us, what we were doing there. We told him that we want to collect information on damage that Aila has done to them. He replied, “Why do you people come to see us when we are in distress? You people live in the cities and force us to do shrimp *ghers*. And look at what you have done to us. You people take the cream, while we take the hit.” Mr. Latif showed us his roadside homestead in no 3



Photo: Kushal Roy

Photo: Latif Sardar's agricultural land is under 3 feet of water. Water from the broken embankment is freely flowing on his land and he has nothing to do but watch helplessly.

Koyra in Uttar Bedkashi. There was nothing left of his household. On the other side of the road, there is a huge *gher* where, in his language, ‘people from city invest and make profit’. “I have a little land just beside this *gher*. I want to grow paddy here and feed my family”-he added, “but see what they have done to my land! They always lift saline water from river and make channels though the embankments to bring that water to this *gher*. Because of them my land is getting saline and I cannot grow paddy anymore. Now look over there, this part of the embankment has been broken where they made those breaches. They flooded their land. But they are rich, and they can start investing there next year. But I have lost everything.”

In fact Mr. Latif was living in a shelter beside the ‘pothole’ we were trying to cross. His whole family was on bed, tightly tied between two branches of a tree. He lost two cows and a goat and trying to sell out the rest. The main road is on the higher lands than that of his homestead land and there is a little possibility to rebuild his house there within next six months. He is quite furious with the shrimp *gher* owners for making this mess of

him. "Do you want to help us?"- he asked, "Then try to stop shrimp *ghers* in this area. Come back to us if you can stop the shrimp, or don't come back at all!"

Emergency needs

The emergency humanitarian needs resulting from the Aila's disaster is large, and immediate life saving relief assistances are urgent. The assessment team came to the conclusion that the three primary things; food, shelter and alternative livelihood option (i.e., cash for the moment) are of utmost importance. Support for water and sanitation sector are also urgent as diarrhoeal diseases and dysentery are spreading rapidly in the affected areas. Repairing of the embankments are the priority demands among the affected people. Women and children are especially vulnerable in the prevailing waterlogged situation. In some areas skin diseases are spreading out and people need proper medical assistance. Immediate drinking water supply is needed for at least 100,000 people. Sufficient human and material resources must be dedicated to properly coordinate the relief operation. Reaching the relief to the remote areas has to be confirmed. A careful observation on the large scale migration has to be established and government assistance in the process is expected. Monitoring Law and order situation and reconstruction of the roads and culverts are also of high priority.

The implementation of the public work schemes and the safety nets either using the cash for work or the food for work programmes are critical at this very moment. Generation of alternative employment is going to be a great challenge for the government. In-depth assessments are required for a more accurate understanding of the needs and programming options.

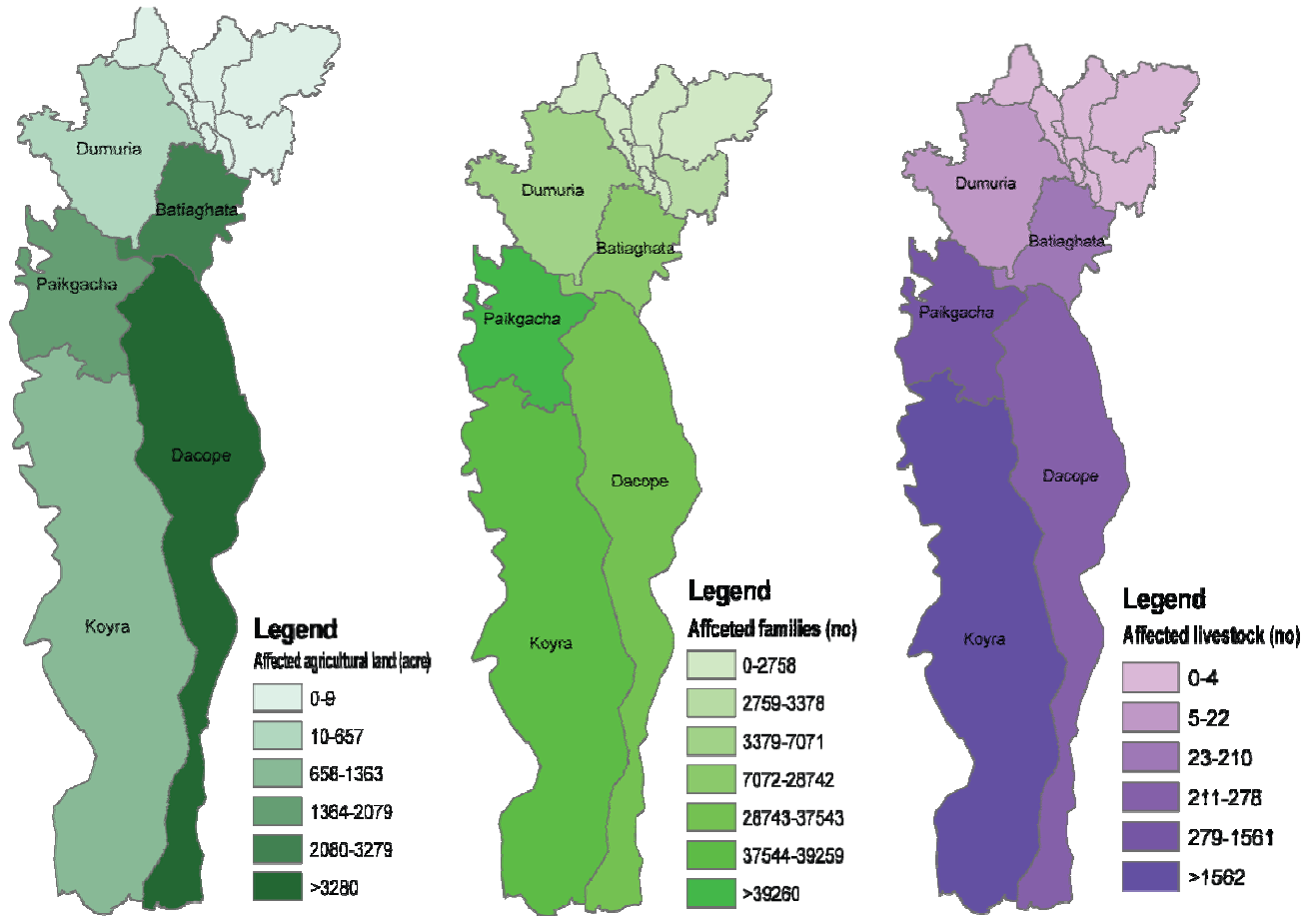


Figure: Comparative maps of Aila's destruction on Agricultural Land, No of Families and Livestock in Khulna district. The maps are produced by UO GIS cell.

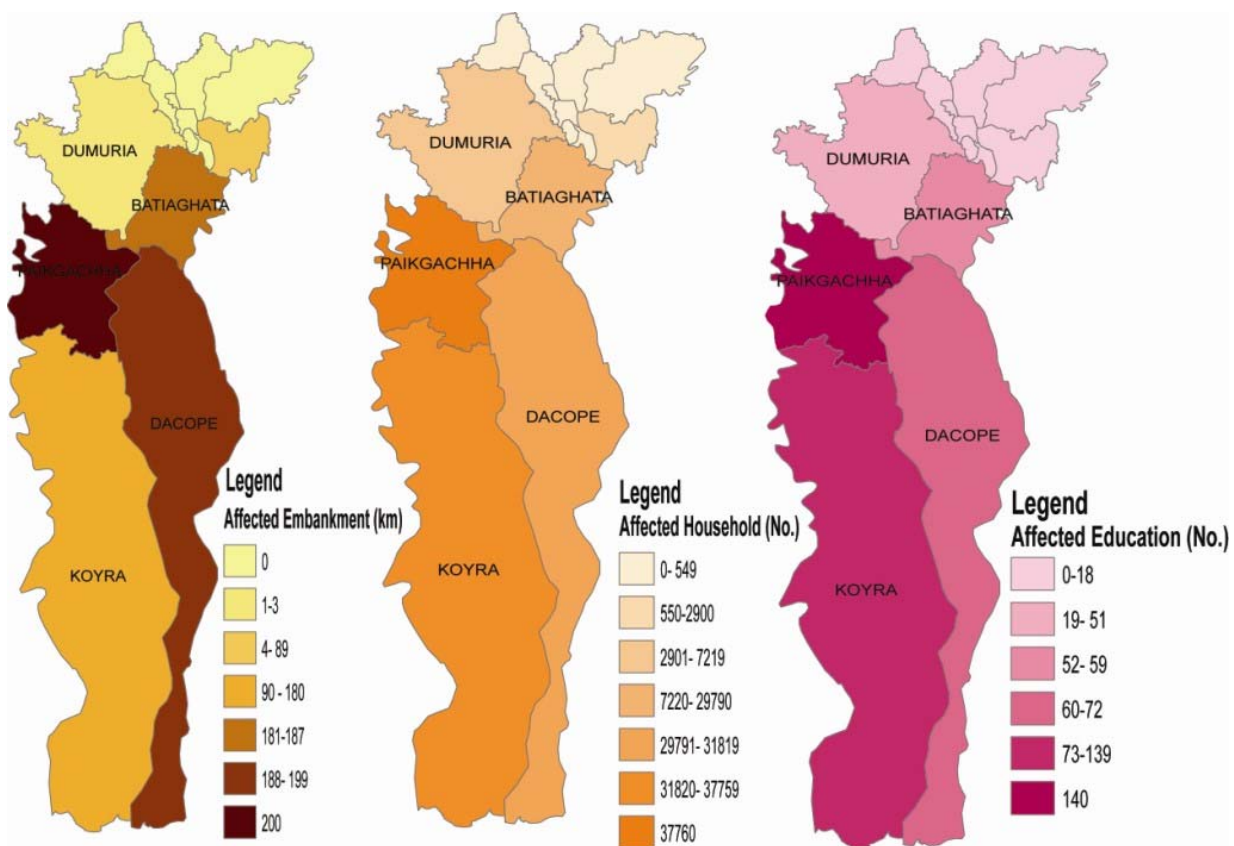


Figure: Comparative maps of Aila's destruction on Agricultural Affected Embankments, Household, Education in Khulna District. The maps are produced by UO GIS cell.