

***Poverty and Climate Change in Urban
Bangladesh (ClimUrb): a case study of Magbara,
Khulna***

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ClimUrb Case Study 1: November 2012



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Abstract

This paper is a case study of Magbara, a low-income urban settlement in Khulna, Bangladesh. It looks closely at how the urban poor are adapting to increased vulnerability due to climate change, as well as at the ways in which powerful actors help and/or hinder their adaptation strategies. The case study examines the lives of urban poor people and their adaptation to a climatic event (Cyclone Aila in 2009) in particular. Cyclone Aila caused a significant influx of migrants to Magbara, causing extra pressure on an already inadequate resource base that affected the living conditions and livelihoods of the urban poor. The research shows that, when determining their satisfaction with their living conditions, people consider not only the resources available to them, but also the attitude of the settlement owners. Research also revealed that, though there are some innovative practices in making the best use of resources, these are mostly trivial in nature. With limited resources and limited incentives to carry out adaptive practices, given the private ownership of their rental houses, in most cases, tenants simply try to live with the waterlogging, mosquitoes and flies, bad smells and incomplete toilets that they face regularly. They are also limited in their ability to change their economic condition, given their reliance on landowners and job intermediaries. Lacking adequate social capital and job skills, these poor people cannot exercise their own agency.

Keywords: Urban poverty, low-income settlements, climate change, natural disaster, Bangladesh

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Introduction

This report is a case study of a low-income urban settlement in Khulna, Bangladesh and is a part of a three-year research project on '*Community and Institutional Responses to the Challenges Facing Poor Urban People in Bangladesh in an Era of Global Warming*'¹. The research seeks to create policy-relevant knowledge about how climate change impacts on the livelihoods and living conditions of poor urban people and communities in Bangladesh. The project looks closely at how the urban poor are adapting to increased vulnerability, and at the ways in which public institutions and market forces help and/or hinder their strategies. Six selected poor urban communities from Dhaka, Chittagong and Khulna are being studied for this purpose.² This report is based on one case study community in Khulna – *Magbara* (Figure 1).³

Khulna is the third largest metropolitan city of Bangladesh. It stands on the banks of the Rupsha and the Bhairab rivers. The city covers an area of 47 km² and has about one million inhabitants. In climate change terms, the city is located in one of most vulnerable locations (southwest) in Bangladesh. In Khulna, the consequences of climate change are expected to be particularly severe because of its geographical location. As a deltaic plain the land is flat and poorly drained. The whole metropolitan area is only approximately 2.5m above mean sea level. In a recent report, the Institute of Water Modelling identified severe climate-variability-induced vulnerabilities for the city.⁴ Urban poor people living in poor quality dwellings/shacks in vulnerable locations are likely to suffer most. According to a 2005 survey, about 0.19 million poor urban people (about 20 percent of the city's population) live in 520 low-income communities in Khulna.⁵

Study sites and methodology

Study site

The selection of the two communities in Khulna was based on a reconnaissance survey of five case study candidate low-income communities and an assessment of their suitability as case study sites.⁶

The Magbara study site has two important characteristics that influenced its selection. First, all the urban poor households in this site live in houses owned by legitimate private landlords. Thus, unlike typical slums, the residents enjoy a certain level of tenure security as long as they are able to pay rent. However, due to the fact that houses are owned by individual landlords, the urban poor people

¹ The project is funded by the Economic and Social Research Council (ESRC) and the Department for International Development (DFID).

² See Roy et al. (2011).

³ All names have been changed, to preserve anonymity.

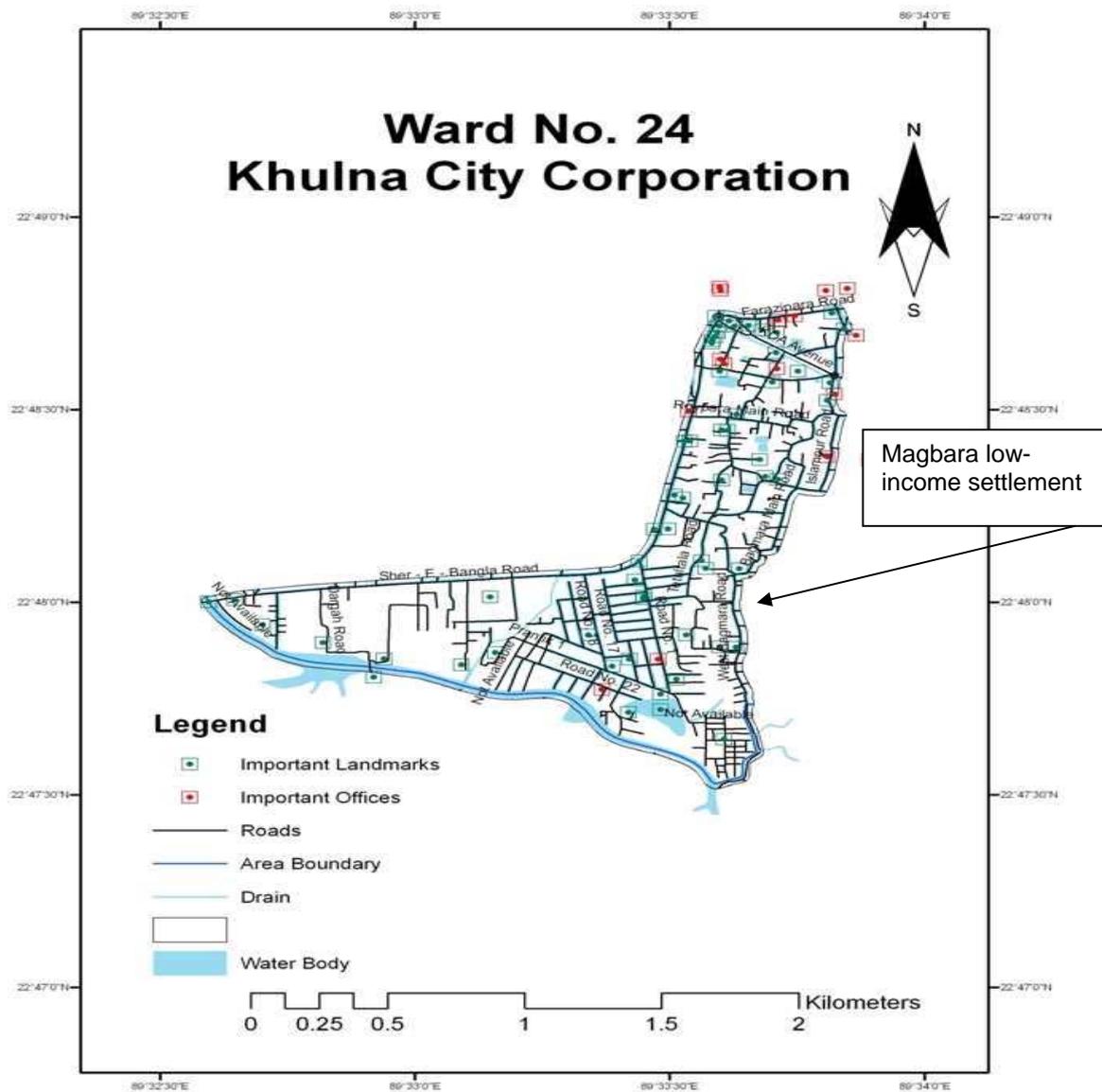
⁴ See IMW (2010). The report predicts: a rise in extreme rainfall incidents (50, 100 or 150mm rainfall in 6 hours) by 2050; a plausible sea level rise of 20-40 cm by 2050; a subsidence rate of 9.55mm per year may exacerbate the impact; trends of rise in temperatures; a rise in intensity and frequency of both coastal flooding (from sea and river water), and inland flooding (river/rain water); a decrease in river flow; and increased scarcity of safe water and salinity.

⁵ CUS (2006).

⁶ The following six criteria were used to assess suitability: socio-economic diversity; presence of adaptation practices; presence of institutional structures – to be able to understand institutional roles in poor people's practices; diversity of tenure/security; not atypical; and existing environmental problems.

in this area are not organized in any collective forum (and thus are unable to negotiate collectively with their landlords). They rarely receive any government or NGO pro-poor development interventions (because they are perceived as people living in privately owned houses and thus are not eligible to receive assistance and development interventions applicable to slum dwellers). A significant number of Cyclone Aila-induced migrants live as tenants in these settlements.

Figure 1: Location of Magbara



Methodology

Once the six low-income mini-settlements owned by six different individuals in Magbara were selected, we conducted a household listing. An initial mini-survey was conducted to collect the basic information on the household members and their poverty status. Participatory appraisals and focused group discussions (FGDs) then collected information on the common problems that the tenants face and the coping strategies they use to minimize them. Forty settlement dwellers (both male and female) participated in FGDs and appraisals. Eight in-depth household-level (encompassing interviews with a total of 24 household members across these) and seven organizational case studies (e.g. schools, NGOs, hospital, Construction Workers' Association) were completed. A further 67 key informants and stakeholders (e.g. ward councillor, City corporation officials, government line agencies and administration, NGO personnel, academics) were also interviewed during the study. Finally, a policy dialogue was held halfway through the research. Fifty participants from available stakeholders' groups were present to convey their opinion on the research, as well as to discuss the way forward for the Khulna city. Together, these mixed methods gave us a rich insight into livelihoods in Magbara settlement, both of the lived realities of residents and the external perceptions of stakeholders.

Magbara: evolution of settlements

In Khulna city, the process of urbanization has been relatively slow compared to other big cities in Bangladesh. At present, the city (area covered by the city corporation) is divided into 31 wards. Residents of Magbara said that five decades ago the population was very small, but there were also no public infrastructure or urban facilities available to them. According to 65-years-old Magbmara resident, Abu Torab:

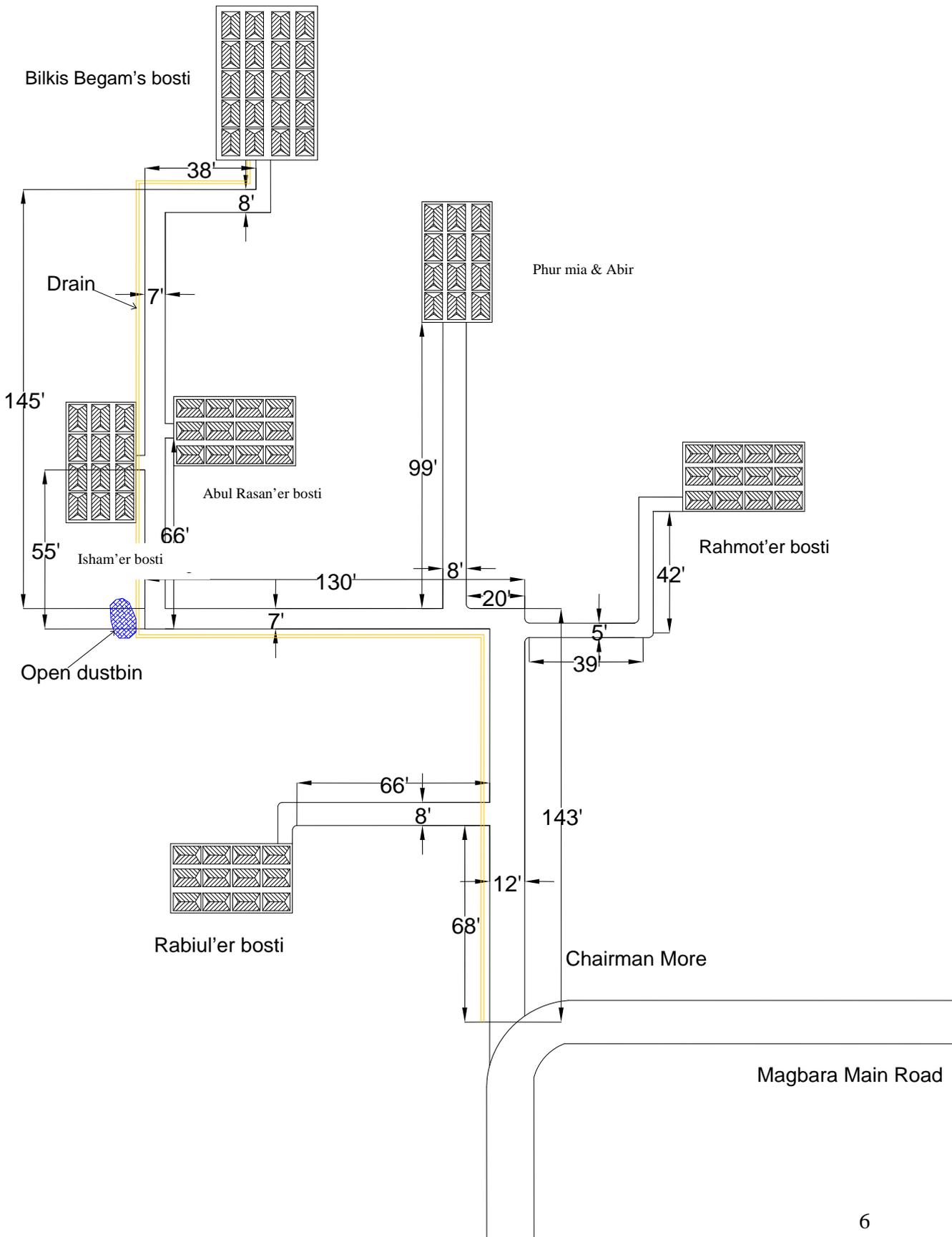
I still remember when I was young; there were low-lying lands at the eastern and southern corners of that school and if you would look around, you would only see forests and bushy areas. This was a fertile land and people used to cultivate various crops here. ...Things started to change as we were growing up. We saw people filling out the low-lying lands and building houses.

During this initial period, poor people started to move in and as time went by, the rich also joined them.

In the Magbara area, six individual low-income settlements were selected for the study. Being in proximity to one another, each of these six settlements has at least eight or more tenant families, a significant number of whom are recent migrants following Cyclone Aila in 2009 (Figure 2). In contrast to other low-income settlements in Bangladesh, Magbara settlements are not situated on government lands. Instead, private landowners have constructed low-cost houses on their land for rental purposes. Each settlement is named after the land owners, such as as *Bilkis Begam⁷'s Bosti* (*Bilkis Begam's* settlement). One benefit of their geographic location is that all six of the settlements are well connected to the city, situated near the Magbara main road.

⁷ Pseudonyms have been used throughout the paper to protect the privacy of the respondents.

Figure 2: Magbara low-income settlement at a glance



Box 1 provides a brief description of evolution of Bilkis Begam's settlement. Our interviews with different settlement owners reveal that, like Bilkis Begam, they have either bought or inherited the necessary land to establish the settlements and, like Bilkis Begam, they too have gradually increased the amount of lands and number of houses that they own.

Box 1: Evolution of Bilkis Begam's settlement

Bilkis Begam was born in Khulna and has been living here ever since. In 1990, she was married to Sohrab and came to live at Magbara. Her husband was a businessman who suffered from a huge loss of 10/12 lakh taka in 2003. After this, he went to Saudi Arabia, where two days before returning in 2005, he died of a massive heart attack. This made Bilkis a widow with two young daughters aged 12 and nine. Bilkis did not want move to her father's house and instead decided to live with her in-laws, which allowed her to secure inheritance for her daughters from them.

Previously, Bilkis and her husband had bought 2.5 katha of land in 2003 from the savings of her husband and with help from her brother. When she bought that piece of land, there were five small rooms on it. She rebuilt those rooms and was looking for tenants. However, no-one was interested in renting there, given it was near both a ditch and a graveyard. Moreover, the communication was poor and there were no electricity facilities. Bilkis arranged the electricity connection in 2004 and in that year, she got her first tenants.

From 2004 Bilkis started to buy more land when her husband started sending her money from Saudi Arabia, and after his death in 2005, she started to build houses on these lands. According to her: 'after the death of my husband, I started building more houses. My father told me to leave this place and live with him. But I did not agree with that'.

Bilkis Begam has developed and implemented some specific rules for her settlement-dwellers, which include: (a) everyone's relative can visit any time of the year; (b) no quarrelling is allowed. She is aware of the problems that tenants of the settlements face and tries to help them as much as possible. She says: 'my tenants often come to me for help, be it monetary or any kind of advice. I try to help them as best as I can. Many a time, they fail to pay rent on a regular basis and request more time. I always give them this extra time. Sometimes they come to me for food. I never disappoint them'. The settlement dwellers agree with her. In fact, there exists a complex patron-client relationship between Bilkis Begam and her tenants (to be described later).

Physical features, housing conditions and utilities

Housing types: In the six settlements studied, we have identified six types of houses based on their construction materials (see Table 1).

We did not find any direct relationship between the economic status of the household and the quality of their dwelling. Apparently the old tenants live in better houses, as they are given 'first choice' when a house is available and so over time they can rent the better quality units within their rental band. New tenants start off by renting the worst dwelling.

Table 1. Housing types, construction materials and features

Type of house	Construction materials	Size	Veranda
T-1	Walls and floors of brick and cement, roof of corrugated iron (known as tin)	64 sq.ft to 270 sq.ft	Some have and some do not
T-2	Bamboo walls, concrete floors, tin roof	100 sq.ft to 108 sq.ft	Some have and some do not
T-3	Bamboo walls, mud floors, tin roof	Variable	Yes
T-4	Wooden walls, concrete floors, tin roof	Variable	No
T-5	Tin walls, concrete floor, tin roof.	108 sq. ft	Yes, 12 ft x 4.5 ft
T-6	Bamboo walls, mud floor, palm-leaf roof	Variable	Yes, sometimes used as a kitchen, sometimes as additional sleeping area.

Rent and utility bills: Rent varies across the six settlements and there is no uniform pattern of rental prices followed by settlement owners. According to qualitative data, rents range from Tk.550 to Tk.1,200 per month. While the rents vary, variations cannot be explained by the variation in housing quality. For instance, Pintu Sheikh and his family live in a T-2 house without a veranda and he has to pay Tk.550 per month. On the other hand, Shariful lives in a T-2 house which has a veranda, although he pays the same rate. This would suggest that personal relationships with the settlement owner are an additional factor in deciding rental prices on a tenant-to-tenant basis. While the variation in rental prices suggests some level of arbitrariness in calculating rents, the owners in general consider three factors while deciding the rent: size of house; type of house; and the need or economic condition of the tenant household. An individual household's 'need' plays an important role in determining the increased rate. It is notable that recent Aila-induced migrants live in the smallest houses. The 'need' factor here is important, as it explains why the Aila-affected people are living in these settlements while paying a higher rate compared to other tenants. Their lack of option and their urgency have forced them to make choices which are not necessarily beneficial for them. Since they are recent migrants, they also lack the relationships with the landlords that may invoke sympathy or a lower rental price.

In these settlements, there are two arrangements for paying electricity bills. In almost all cases, the rent includes one lightbulb and one black-and-white television. Those who want other facilities like colour television, fan, etc. can opt for one of two options – they can take a sub-meter, which allows them to pay as per usage, or they can pay extra (e.g. Tk.100 for an extra fan, Tk.50 for a colour television) to the settlement owners as electricity bills. The tenants do not have to pay any other utility bills.

Associated facilities: All these settlements have common kitchens, toilets and water-source facilities. Table 2 provides a list of households and facilities in the six settlements.

Table 2: Settlement populations and facilities

	Total households	Total population	Toilet	Bathroom	Source of water*	Kitchen
Bilkis Begam's Bosti	26	111	5	2	A = 2; B = 1	3
Isham' Bosti	8	34	1	1	A = 0; B = 1	2
Abul Rasan's Bosti	9	36	2	1	A = 0; B = 1	1
Phur Mia and Abir's Bosti	13	52	4	2	A = 1; B = 2	2
Rahmot's Bosti	12	53	2	1	City supplied water	2
Rabiul's Bosti	5	24	2	1	A = 0; B = 1	1

*Source of water: A= Deep tube-well (drinking water); B= shallow tube-well (saline water; used for household activities other than drinking and cooking).

In all these settlements, a **kitchen** is shared by multiple households. For instance, as Table 2 shows, in Bilkis Begam's settlement, three kitchens are shared by 26 households, making an average of nine households sharing one kitchen with several earthen stoves. Households use their own firewood for cooking, which they keep in their own main dwelling room to prevent theft. In almost all cases, the walls of these kitchens are built with bamboo (*chatai*) fences and the roofs are built with palm-leaf (*gol pata*). All the kitchens are built with very good ventilation to avoid excessive smoke.

The **toilets** have brick-built walls and roofs and corrugated iron (tin) doors. However, in some cases, toilets are unusable.⁸ Table 2 clearly shows that the number of toilets and bathrooms is inadequate. Whereas in the best case scenario, there is one toilet for 12 people, in some settlements there are 27-34 people per toilet.

All the settlements except for Isham's have a common drainage system that is connected to the kitchens and the bathrooms. These drains are further connected to the city corporation drainage system. In some settlements (Rabiul's and Phur Mia's) which do not have septic tanks, this in-built drainage system also acts as the sewerage system, as human waste from the toilets also flows through them.

⁸ One of our researchers commented: 'I strongly believe that everyone should take a look at these toilets. However, the risk is if you just take one look, you may not be able to eat anything for three days. The pans of these toilets are built of cement. Now these have broken into parts and human waste often get stuck into these. It does not matter how many buckets of water you use, you will not be able to clean them'.

As Table 2 indicates, there are **two sources of water** available to the settlement dwellers – deep tube-well and shallow tube-well. Through the shallow tube-well, the dwellers mostly obtain saline water, which they use to wash clothes and other necessary items. For water for drinking and cooking, they have to depend on deep tube-wells. Of the six settlements, only one has deep tube-wells, which is also inadequate to meet the demand of 111 people. As a result, residents go to the main road to collect water from the government tube-wells.

Characteristics of households studied

There are 73 households living in the six settlements included in our case study. In this section, we describe the key characteristics of these settlement dwellers.

Table 3: Basic facts on households studied

Type	Number
Total household members	311
Average number of people living per household	4.44
Maximum members in a household	9
Minimum members in a household	2

The settlements are religiously and ethnically homogenous. Given the geographical position of Magbara, the ethnic homogeneity is understandable. All households also belong to one religion, Islam. One possible reason may be the significance of informal networks (especially with relatives) in developing the settlements. As described in later sections, before migrating to the big cities, people communicate with their relatives and try to find places to live with their help. This informal communication system may have played an important role in developing this homogeneity.

The 73 households we interviewed may be divided into three categories:

- Local people (original residents of Khulna city living in these settlements);
- Disaster-affected people from the southern part of Khulna (mostly Aila-affected, who were forced to leave their villages and migrate to Khulna); and
- People who migrated from different parts of Bangladesh in search of a better livelihood (not directly disaster-induced migrants).

Fifty-eight percent of households have come to the settlements within the last three years. The three-year timeline is significant, because the natural disaster, Aila – which hit and affected the livelihoods of the people of this region – occurred in 2009 (within the last three years during the data collection). There is a strong possibility that Aila affected the lives of most of the settlement dwellers in a significant way. We asked all households their reasons for living in Khulna city. Forty-one percent of respondents reported that they came to Khulna in search of a better livelihood and 26 percent of respondents stated that natural disaster was their reason for moving to the city. Altogether, 70 percent of respondents moved to the city as they lost their traditional livelihood

options in their villages. This migration thus may be linked to both sudden and slow onset events caused by climatic variability.⁹

Main challenges facing people living in Magbara and their coping practices

Our research indicates that the urban poor living in these settlements are mainly suffering from the following problems, which have been ranked in terms of their severity and significance by the FGD participants (settlement residents).

Table 4: Problems and ranking

Problem	Ranking (votes received)	Relationship with climate change/variability
Unemployment/low income	1 (59)	Sudden and low onset events and cascade effects
Low quality and scarce open market sale rice	2 (52)	No apparent relation (rather a distribution and governance problem)
Toilet and bathroom problems	3 (50)	Cascade effect
Heavy rainfall	4 (31)	Slow-onset event
Water problem	5 (28)	Cascade effect

Unemployment/low income

Unemployment and low income have been identified as the main problem facing Magbara residents. According to the mini-survey data, most of the household heads are either construction workers (36 percent) or rickshaw-pullers (19 percent). Recent migrants lack the necessary skills for performing any specialized jobs, relying upon unskilled labour options or on accessing other opportunities through their contacts. Almost all household heads are unskilled daily wage earners. The same trend is reflected in female employment. Of the 40 percent of the total female population who work, 92 percent work as housemaids. Only eight percent of women are engaged in skilled work such as private tutoring and tailoring.

In more than half of households (53 percent), more than one household member is engaged in income-generating activities. If we consider the fact that in 60 percent of cases the female members do not go for outside jobs, this may mean that these households are sending their children to work, rather than letting their wives engage in different jobs. Children's education data also support the possible existence of child labour. Only 55 percent of children (aged between six and 17 years) attend school.

The average monthly income of the households is Tk. 4,462. According to Mark Schreiner's poverty score card, most of the households (64 percent) are ultra-poor.¹⁰ Whereas it is difficult to reduce

⁹ For details see, Roy et al. (2011).

poverty with only one member's income, even when two to four persons in a household are engaged in income-generating activities, most households are very poor. Non-skilled daily wage work compels these urban poor people to remain poor.

Limited education acts as an obstacle to securing better jobs. Of the total household members, 90 percent are more than five years old. Of these people, 79 percent are either illiterate or only completed up to class five at school. Only two percent have passed the Secondary School Certificate examinations and only one percent have passed the Higher Secondary Certificate examinations (up to class 12). Of 49 children between the ages of six and 17, only 27 (55 percent) were attending school and the rest were not. If we link the employment and livelihood statistics, it becomes clear that these poor urban people cannot access good livelihood options due to lack of institutional education and technical skills.

The above data on income, employment and education clearly support the FGD participants' prioritization of employment as a core livelihood struggle. Moreover, there is an indirect relationship between unemployment and climate variability-induced natural disasters. For instance, during the post-Aila period, when too many workers were available in the market, the dwellers found out that especially in cases of rickshaw-pulling, construction work and wood-processing their scope for regular work has been affected significantly. The experiences discussed below shed some light on how climate variability-induced natural disasters had severe impacts on the lives of the urban poor and how they try to adapt in such a situation in order to survive.

Rickshaw-pullers: After Aila, there was a sudden influx of new rickshaw-pullers in the city. With new migrants lacking skills and searching for employment in the urban labour market, rickshaw pulling offered one option that has limited barriers to entry. One settlement resident complained:

during that time, we had to face some problems. There were too many rickshaw-pullers as the Aila-affected people were eager to get any job to survive. Every rickshaw of the garage was rented and sometimes, I had to wait for hours to get any rickshaw. As a result, my income declined.

At the same time, rickshaw fares declined, as the Aila-affected people were willing to take any trip and did not care whether the fare was based on a market rate. Another rickshaw-puller said, 'the people quickly realized that these people were new in town and had no idea about the rate of fare. As a result, they paid them less'. However, people who used rickshaws were also not satisfied: 'The rate of accidents increased at that time. The reason is these new people had no idea how to pull rickshaws'.

¹⁰ Poverty scoring is a tool for measuring poverty. It is based on existing national expenditure surveys from which 10 indicators are selected as proxy for poverty. The indicators are quantitatively summarized through a statistical procedure – adding up 10 non-negative positive integers – to give a score, which represents a probability of being poor. The indicators are simple and inexpensive to collect, as well as easily verifiable, such as selected housing features and ownership of consumer items (e.g. type of latrine and roof, radios, kitchen material, etc.) See: <http://www.intercooperation.ch/finance/download/#pvsc>. Accessed 29 November 2012.

Construction workers: After Aila, construction was another sector where new migrants tried to find employment. As one mason commented: 'most of them just came to the labour market after coming down from buses. However, they had no skills and did not have any idea about doing the work'. The people of the settlements were quite sympathetic to these people. Another mason said: 'I tried to help them as best as I could. In many cases, I took them as my helpers or requested others to take them'. This created problems for residents: 'The wage rate declined. However, it was our duty to help them and we did that'.

Kathgola (wood-processing) labourers: Like the masons, these labourers also tried to help the Aila-affected people. However, one wood- and log-processing labourer commented: 'In our jobs, having physical strength is not enough, you need to learn the techniques. And that was the major problem with these people'. Due to this excess availability of labourers, the wage rate also declined:

usually we used more people to perform a job that could have been done by a less number of skilled workers. As a result, whereas in the past, we shared the total income among 10 labourers, during this period we had to share the same income with 12 labourers.

From these examples of three specific sectors' workers' experience, our research indicates that the practical experience of the urban poor coincides very well with the three different kinds of climate change events¹¹ (sudden onset and slow onset events and cascade effects) and their impacts. Moreover, these challenges are eventually inter-related.

Food crisis (open market sale rice)

Food crisis was ranked as the second most serious problem faced by the settlement dwellers, with households struggling to afford their minimum food requirements. A government rice sale programme, known as 'open market sale' (OMS), allows people to buy rice below the present market rate. The long queues involved in accessing rice this way mean that it is primarily the poor who access it. Interviewees complained: 'in order to get this rice, we have to stand in line for a long time. If you stand in the early morning, you will not get anything till 11 am. Moreover, the quality of rice is not good and often we get sick after eating this rice'. However, despite complaints about food and availability of rice, and despite 64 percent of the studied households being ultra-poor, only 10 percent of them reported that they were suffering from acute food insecurity, while 47 percent perceived themselves as food-secure. The qualitative research also reveals that the food consumption of most households can avail at least two meals per day.

Toilet and bathroom crisis

Poor provision of toilets and bathroom was ranked as the third most severe problem by the dwellers. These problems were exacerbated by the influx of climate-induced migrants, as the infrastructure and facilities remained the same while the number of residents rose. One respondent mentioned: 'In our settlement, there are only five toilets for 111 people. Each morning, we have to stand in line to go to toilet. Moreover, some of the toilets are actually out of order'. The tin doors are

¹¹ See Roy et al. (2011).

often perforated and thus inadequate to protect the privacy of the users. For instance, in Rahmat's settlement, the tin-made door has been broken down and has become half of its original size. As a result, 'even if a chicken goes to the toilet you can see it from outside'. The dwellers also have the same complaint of inadequacy about the bathroom facilities: 'both male and female have to stand in line to go to the bathrooms. Privacy is a big concern here as when we (the females) take a bath, the males can easily see'.

In all the settlements, the septic tanks used for storing human waste are near the toilets and houses, and remain mostly uncovered. For instance, in Bilkis Begam's settlements, out of three tanks, only one is completely covered, another is half-covered and the remaining one has no cover. In another settlement, there is just one uncovered septic tank for two toilets. During heavy rainfall, the tanks overflow, which creates unbearable living conditions for the settlement dwellers.

Heavy rainfall

The majority of houses are built with bamboo and tin, which is not adequate to protect the dwellings from heavy rainfall, allowing houses to become dirty and wet. This is a common scenario throughout every rainy season, affecting nearly all households. This situation is particularly exacerbated if rains continue for several days. One interviewee commented:

we cannot even go to the toilets. Besides, due to the rainwater, the nearby ditch overflows and water enters into our houses. The problem is, we dispose the human wastes into this ditch every year. So you can clearly guess the quality of its water. So when water overflows and enters into our houses, it becomes so smelly that we cannot eat anything.

Kitchens can also become submerged during heavy rain. To tackle this problem, settlement dwellers of Bilkis Begam's settlement have introduced an innovative practice, described by one respondent: 'Especially during the rainy season, water can easily enter into the kitchen. To solve this problem, we have set up the stoves at least six inches above the kitchen floor level'. Another coping mechanism adopted by some households is to set up their stoves inside their dwelling room. This has negative implications for their health, however, with their rooms filling up with smoke each time they cook.

Heavy rainfall also adversely affects the livelihood of most dwellers. No outdoor construction work can be undertaken during rain. The rickshaw-pullers also often become sick while working in rain.

Water crisis

As well as there being too few tube-wells to meet demand for water, as described above, there is also the problem that the shallow tube-wells are often out of order.

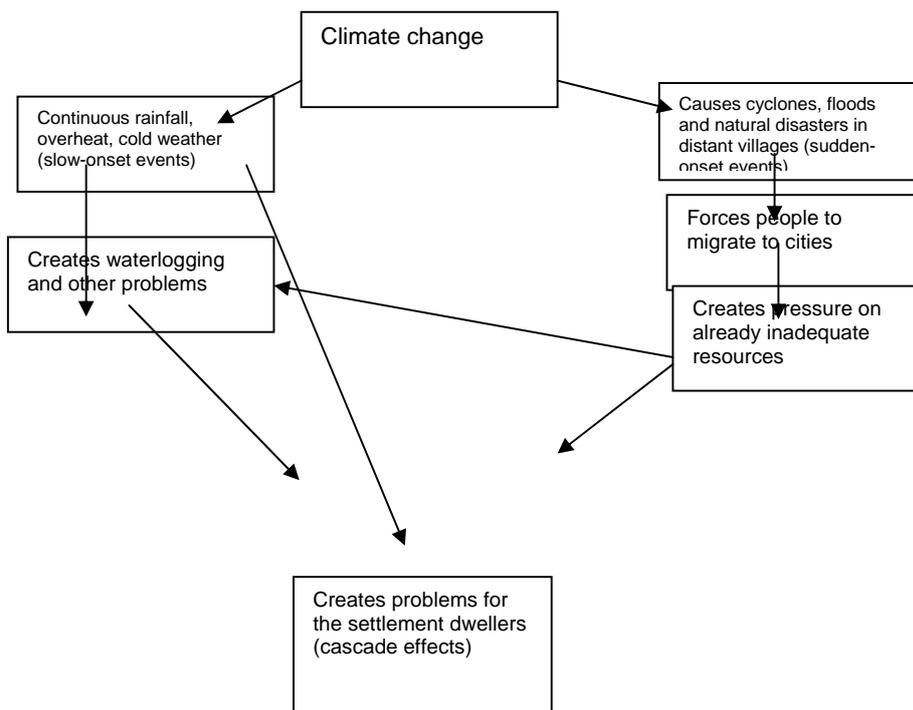
The water crisis is mainly caused by an inadequate supply of water sources. According to one dweller:

in this settlement, there are only two tube-wells for the 26 households. Besides, these tube-wells often go out of order and it takes at least one or two days to repair them. During the summer time, it becomes severe. As it is really hot, people need to drink more water and take frequent showers. This increased demand creates pressure on the already inadequate water sources and also as they have to pump the tube-wells frequently, they go out of order more often.

After Aila, a number of people moved into these settlements and the owner built additional housing for them. However, the sources of water supply were not increased in proportion and more people are now depending on the same sources of water. This has exacerbated the condition.

Our research indicates that people living in these settlements are suffering from problems created by all three types of events (sudden onset and slow onset events, and cascade effects). First, people had to accommodate the Aila migrants, which was the result of a sudden onset event. Second, people reported problems that are directly related to climate variability, such as frequent rainfall, which can be termed a slow-onset event. At the same time, there are some problems which are not directly related to climate change or variability, but which are largely influenced by it (cascade effects). Figure 3 identifies the two types of problems and shows their interaction.

Figure 3: Problems faced by urban poor and their relationship with climate change



As Figure 3 shows, in these settlements climate variability has mostly indirect effects. As Khulna is a major city, whenever climate variability causes a major natural disaster, i.e. whenever sudden-onset events take place, people tend to leave their villages and migrate to Khulna to find jobs and

secure their livelihoods. The failure of infrastructure and services to expand in line with expanding populations has an adverse affect on the lives of the settlement dwellers. Regular weather events also create problems for. Too much rain not only disrupts their livelihood activities, but also creates problems in their dwelling places. Waste-disposal tanks or ditches overflow and disrupt the drainage system. As such, slow-onset events directly affect the people living in these settlements.

In these settlements, as resources are scarce and as, in most cases, the additional people (who come due to sudden and slow-onset events) create extensive pressure on already scarce resources. Though the number of kitchens, toilets, bathrooms or water-supply facilities does not increase, the number of people dependent on these services gradually increases.

This indirect effect of climate variability has another important consequence. The migration of skilled/semi-skilled and unskilled labourers to the cities creates more competition in the job market. Recent migrants' willingness to work at a lower wages brings the market wage in Khulna down. The following case study (Box 2) indicates how a directly affected person has to migrate to the city to survive and how the natural disaster disrupts his way of living.

Box 2: How an Aila-affected person has come to Khulna for survival

Abdul Hannan lived in Gilebari village of Maheshwarpur Union. Poverty is nothing new for Mannan. He started earning when he was 11 years old as a labourer. When he grew up, he started to help his father in his vegetable-trading business. In 2001, he got married and from the next year he got engaged in the rice-selling business. He bought paddy at a lower price during the winter (*Poush*) and sold with a small profit during the rainy season (*Ashar-Srabon*). When the Aila hit, he had 50 sacks of rice (worth Tk. 50,000) in storage. According to him:

We all knew that Aila was coming. However, as the rain and the wind was not that severe, we thought that it was not that dangerous. Besides, the disaster shelter was two miles away from our home and it was really difficult to go there. On that fateful day, I came to my home for lunch when the Aila hit. My house was only one-and-a-half km away from the embankment and we could hear the flow of water. Within 15 minutes the whole house was flooded. I could not save a single thing and all my stored rice was washed away. We saw my house washed away. The waves were like 10 ft high. We swam to the embankment. We lived there for two weeks. My mother-in-law came after a few days and she helped us a lot. There was also enough relief supplied by the government, however, I could not get anything. The elites of the village stole everything.

When life became really difficult at that village, Hannan started to look for other options. His brother-in-law invited them to Khulna. After coming to Khulna, he lived at his brother-in-law's house for one day and then moved to Abul Rasan's settlement. He rented a house at the rate of Tk. 650/month. However, Hannan did not like that place:

...the landowner was not a good man. He did not care for the tenants and called us bad names even if we are only one or two days late to pay the rent. One day I had severe quarrel with him and then decided that enough is enough, I really should move to another place. Then I moved to Isham's settlement. Though he wanted Tk.900 per month and one month's rent in advance, I described my situation and told him that it was not possible for me to pay more than Tk.700 per month. Finally, he agreed and I had to pay Tk.200 as advance.

After coming to Khulna, Hannan was looking for work and started pulling rickshaws. However, 'I could not earn enough money from it and it was bad for my health'. Seven years before Aila, Mannan was engaged in fish-business. When he decided to give up rickshaw-pulling, he thought about starting this business again: 'This was not a new field for me, so I decided to give it a shot. With the capital of Tk.2000, I started it and managed to make profit of Tk.150/200 per day, which was quite good'. He also started selling fruits at this time. In order to do this business, he took a loan of Tk.5000 from his brother-in-law. However, he sold his entire business to pay back the money after three months. Now, he is thinking of taking a loan of Tk.10,000 to start a bigger business. Now, the only income source of Hannan is selling fishes. He is facing some problems:

I am not making enough profit. The situation could be better if I could sell fish in the market. However, in order to get a 'position' in the market, you need to pay Tk.5000 to the market committee and I do not have that much money at this moment. As a result, I have to sell fish at the main road. The problem with fish business is you cannot keep the fishes for the whole day. Eventually they will rot and you have to sell them before that happens. I have fixed customers and if I fail to sell all the fishes, I go to their houses and sell fishes at a lower price.

Hannan is also worried about future:

I cannot go on like this. If I live here for the rest of my life, I will not be able to do anything good for my children. I have taken some loan from the NGO and gave that money to my mother-in-law. She is using that money for land cultivation and this year I have got 100 kg of rice through this venture.

Adaptation of urban poor people

The above descriptions of the lives of settlement dwellers provide a bleak picture of their everyday ordeals. In their struggle to survive, they receive assistance but also non-cooperation from actors and institutions. The following two sub-sections shed some light on these actors and institutions.

Powerful actors and power structure

In the lives of the poor residents of these settlements, there are four types of people who exercise considerable power over them. They are:

- **land or settlement owners**, who provide them with dwellings;
- **employers**, who provide them with jobs (e.g. rickshaw garage owners, contractors, wood merchants etc.);
- **job intermediaries** (sub-contractors, people who help them in acquiring rickshaws, etc.); and
- **powerful political leaders/activists**, who connect them with various outside facilities.

Figure 4: Powerful actors in the lives of the urban poor

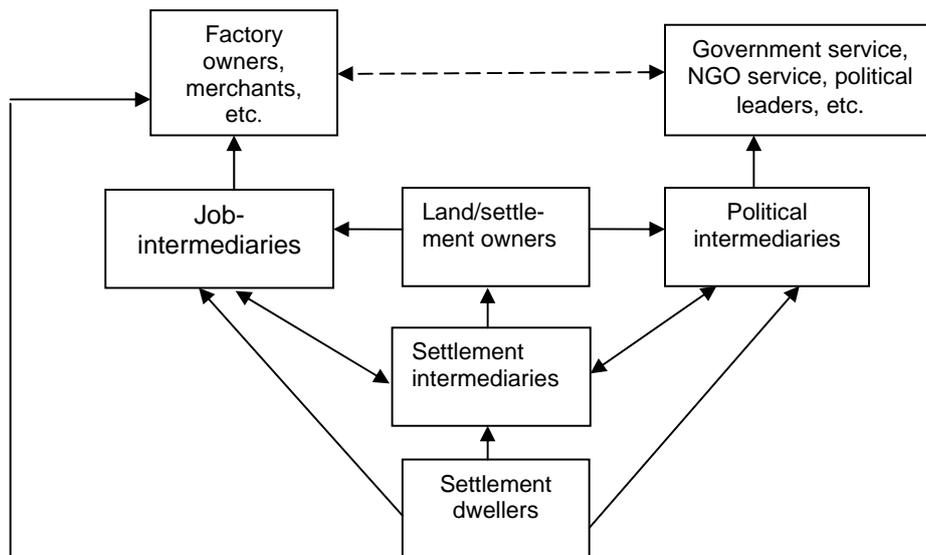


Figure 4 shows the detailed power structure. It reveals that the general settlement dwellers reside at the bottom of the power structure. In effect, they possess no resources other than their basic labour power. Almost all the settlement dwellers fall into this category. However, a few can rise to the level of settlement intermediary, whereby they become the connecting line between the settlement owner and the ordinary dwellers. The source of this power is mainly their length of stay

in the settlement and the closeness of their relation with the owner. For instance, in Bilkis Begam's settlement, this role is played by the Shafiq. As one dweller commented: 'In order to solve our problems of settlement, we have to depend on Shafiq. His wife has a close relation with the owner and she can relay our message to her. And, in most cases, that works'. The intermediaries enjoy a degree of influence over the ordinary settlement dwellers due their position. They earn some respect and fear from their position and the settlement dwellers hesitate to complain about them. In another settlement, this role is played by Natasha, who is, in economic terms, the poorest person of that settlement. However, she has maintained a close connection with the owner and for a brief period was given the responsibility of collecting rents. This authority has made her an influential figure in that settlement. She lives by rearing goats, which often create trouble by destroying the property of other households – but no-one complains or says anything against her.

Landowners constitute the next level of the power structure. Although at this level, power is exercised in one direction (i.e. from the owners to the dwellers), it is also possible to have a patron-client relationship. In these cases, the owners not only exercise power or exploit the dwellers, but also help them and provide them with some necessary assistance and thus serve as their patrons. However, the patron-client relationship comes into existence only when the patrons have something to gain from the clients. For example, Bilkis Begam has developed this patron-client relationship in an effective way. According to one dweller, 'When I got sick, Bilkis Begam gave her own blood to cure me. She took care of us in all the possible ways. Whenever we need anything, we just go to her and believe me, we never return empty-handed'. In exchange, Bilkis Begam uses the name of the settlement dwellers to collect loans from different banks and micro finance institutes that cater for the poor, for which she herself is not eligible to apply.

The job intermediaries reside in the next level of the power structure. They perform two specific tasks. Firstly, they connect job-seekers to employers. For instance, in interviews the rickshaw garage owners highlighted their dependence on these intermediaries for providing references for rickshaw-pullers unknown to them. According to them:

Many a time, some local people come to us and request us to give the rickshaw to their known people. Lending rickshaw is a risky task and you need to believe the rickshaw-pullers in order to give the rickshaw to them. As a result, when the local people come to us, we consider them as guarantor.

This system of recommendation is also found in the construction sector. Contractors requiring labourers often depend on intermediaries to find additional workers, as do those in skill-intensive jobs, such as masonry. This particular level of power structure has played a very important role for the Aila-affected people. One worker explained:

After the Aila hit, a number of people migrated to Khulna, who were not skilled enough to perform any kind of job and needed experiences to understand the nature of job. However, as they were not experienced, no one actually wanted to employ them. What we did was simple – we included them in a group and sent them to work. However, soon it was discovered that they were not experienced and they were fired. We again included them in another group. After doing this four or five times, these people got the required experiences.

Although during the post-Aila period, this power structure was sympathetic to the needs of the workers, actually this level works on basis of reciprocity. The intermediaries always expect something in exchange for providing opportunities. As one worker commented, 'The sub-contractors usually earn a good amount of money. As he picks up the workers, he decides their wage and the workers have to be satisfied with it'.

Besides these people, there are political and social actors who also perform the role of intermediaries. These political actors provide the link between the settlement dwellers and outside services and resources available to them (e.g. government services like ration cards; NGO services like micro-credit, loans, etc.). These individuals are more influential than the job intermediaries, gaining their power and influence through their political identity and connections with powerful political leaders, government and NGOs. For instance, in Natasha's settlement, Rintu performs the role of the political intermediary. He has three different identities which help him to establish and strengthen his power. First, he is a member of '*Shahana Daridro Durikoron Prokolpo*' (Shahana Poverty Alleviation Project), which provides micro-credit to the urban poor. Second, he is involved with local politics. He is involved with the politics of the ruling party (Awami League), his cousin is the elected councillor of ward no. 27, and he maintains a good relationship with the councillor of ward no. 24. His own political connection and his relationship with the councillors of these two wards allow him to exercise considerable influence on the people of living within these two wards. Thirdly, Rintu is also involved with a non-government organization, 'Rupantor', serving as the Secretary General of its Youth Citizen Forum. These three separate, yet interrelated, identities have provided Rintu with a unique position which allows him to provide different services and facilities to the settlement dwellers and serve as their patron.

At the highest level of the power structure are various powerful businessmen, such as wood merchants, shrimp businessmen and factory owners (who live outside the settlement). It is with these individuals that the job intermediaries provide linkages. In effect, these people play very important role in the lives of the poor settlement dwellers, while remaining almost invisible. The powerful political actors, such as ward councillors, or political leaders, who control different social safety net programmes, are at the same level as the business actors. However, their linkage to the settlement dwellers is mediated by political intermediaries. Unlike the business actors, the political actors are visible and have a strong influence on the lives of the poor settlement dwellers. For instance, in Magbmara, the *Haji* family is considered an important actor, and in the past, Haji Hashem, a renowned political leader of the locality, single-handedly prevented the government's effort to evict a market situated on government land.

An important aspect of this power structure is the presence of an informal consensus among the two most influential actors regarding maintaining the patron-client relationship, which allows them both to serve their own interests. These two actors (businessmen and politicians) rarely intervene in the activities of each other, which allows them to co-exist. However, power struggles take place when one actor intervenes in the activities of the other and it often gets ugly. The case of Councillor Bithar (Box 3) provides an example of this power struggle.

Box 3: Ill fate of a pro-poor ward councilor

Bithar was a popular figure in no. 24 ward. He worked for the poor and made every effort to help them:

People could go to him to solve any of their problems and he would help them in every possible way. Even when people did not tell him about his problems, he would go to their houses when he would hear about them and tried to help them. He was a member of the ruling political party but was acceptable to everyone. Leaders and activist of other parties loved and respected him.

However, his immense popularity made him dangerous, as he challenged the powerful *Haji* family of the locality. He decided to run for the commissioner election and easily won that. Soon after becoming the commissioner, he decided to challenge the authority of the powerful business actors. When he decided to solve the waterlogging problem of this locality, he soon realized that the reason behind the waterlogging was the poor condition of *Mayur* river. The drainage system of this locality was connected to this river and it was expected that all the water from the Khulna city will finally flow into this. The problem was that the flow of the drainage system was disrupted as the powerful businessmen of this locality built embankments on the government land and sealed the drains to farm shrimp and other fisheries. As such, water could not flow to the river and waterlogging became a common phenomenon in low-lying areas of Khulna city.

Bithar decided to take action and one day, he destroyed these embankments and made all drains work again. There were two consequences of this action. Ont one hand, the problem of waterlogging was solved, and on the other, the businessmen became angry with him, as he challenged their vested interests and authority. A power struggle became evident and Bithar had to fight not only against the businessmen but also against his own political leaders, who did not want to disrupt the status quo.

Eventually Bithar was brutally killed by 'unknown assassins'. Though there is no direct proof, everyone thinks that his murder is related with his attempts to challenge the power position of the businessmen.

Institutional support for adaptation

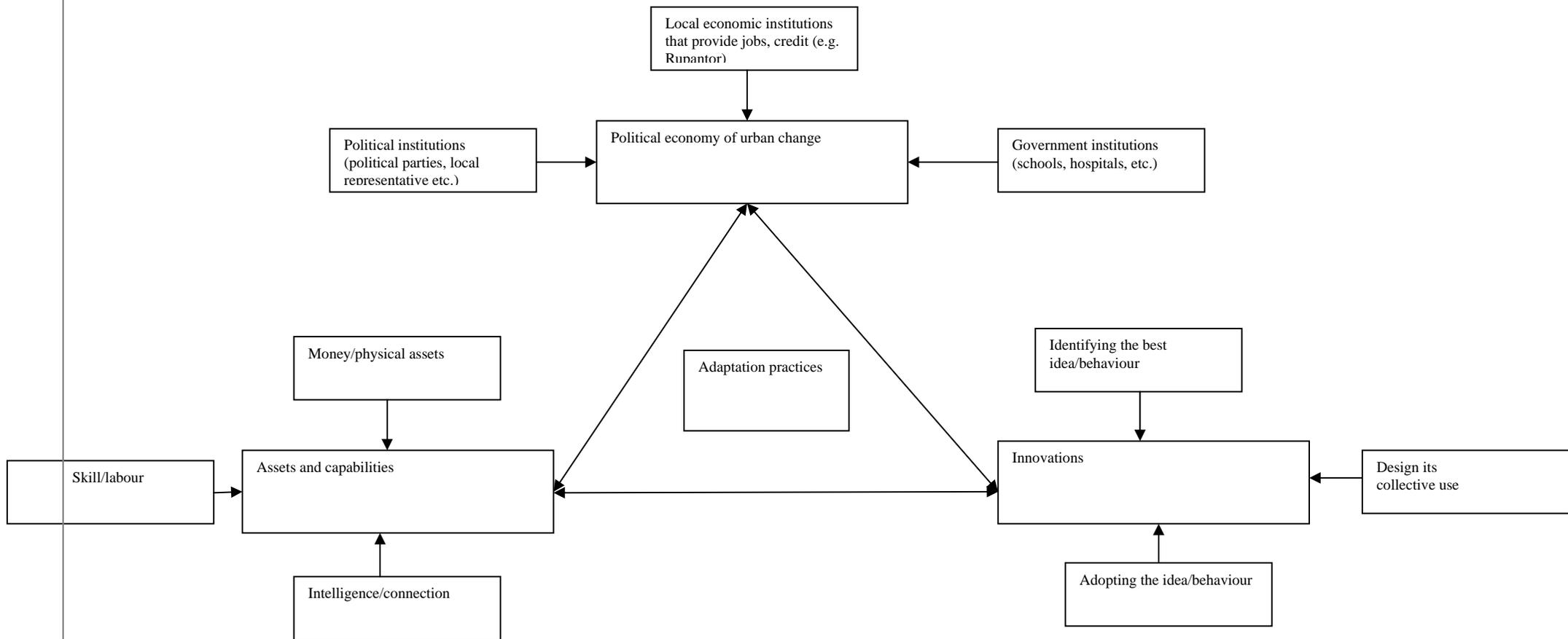
The analytical framework developed to understand the relationship between climate change and urban poverty suggests that the adaptive practices adopted by the urban poor rely on three interrelated concepts,¹² namely:

- political economy of urban change;
- assets and capabilities; and
- innovations.

We have applied this framework in our research and, based on the findings, we have developed the following framework:

¹² Roy et al. (2011).

Figure 5: Political economy, capacity, innovations and adaptation



As Figure 5 shows, in the six settlements of Magbara area, the role of economic institutions – like various NGOs, factories, rickshaw garages – the role of political institutions – like the elected representatives (ward councillors), political leaders, labour unions – and the services provided by the government institutions altogether constitute the political economic environment. Together, this environment determines the feasibility of accessing different services from these institutions within the settlements. Similarly, as the framework suggests, the urban poor living in these settlements have their own resources, like their intelligence and skills, which determine their capabilities. The resources they draw upon are rarely enough, however, and a key factor is how the urban poor use these resources to expand their access across these broader institutional arrangements.

As our study indicates, the innovative urban poor tend to utilize their connection, use their resources in an efficient way and adopt some collective arrangements to reflect their innovative practices. In other words, the urban poor eventually engage in different levels of network relationships which determine their access to institutional arrangements and allow them to use their assets in an effective and efficient way. This adaptive practice, which is largely informal in nature, is explained in the next section.

Understanding the adaptive practices of people in Magbara

Our research has identified an informal social network which plays a significant role in the survival of urban poor people living in the settlements. The urban poor who have migrated from villages have to go through four specific levels of life-events. These are:

- **Migration level.** This is the starting point of the network. At this level, a person negatively affected by climate change, natural disasters or other idiosyncratic shocks finds him/herself in a helpless situation. S/he has to take a tough decision, i.e. whether to stay in the village or migrate to a bigger city. At this stage, the most important players in the life of poor people are their relatives, who give them advice/suggestions about what to do. Most of the time, these relatives have already migrated and are living in the big cities.
- **Building threshold for survival.** Once disaster-affected households decide to migrate, two things take place. First, reliance on the network actor, i.e. relatives, increases. People migrate to big cities and for the first few days are helped with shelter and food by their relatives. With their limited income and savings, they start looking for and eventually find a place in a settlement. At this stage, their network expands, as the landowner or settlement owner becomes a significant part of the network upon which they depend for their shelter and other facilities. They also seek advice from relatives about opportunities for employment in light of their skills and abilities. Their networks expand as they start building relationships with their neighbours. Such relationships can be either sympathy-based or a quid-pro-quo relationship. Our research reveals that those households who are unable to consolidate these networks – who cannot reach this threshold level – eventually return to their village.
- **Searching for/obtaining job level.** At this stage, a further expansion of the network takes place. The poor person engages in a patron-client relationship with power-holders and elites

in order to access employment, usually through intermediaries. In some cases, landowners can also play this role. They still rely on relatives, although this reliance is mainly for advice/suggestions.

- **Survival level.** This is the most complex level of the network structure. At this stage, the urban poor are fully engaged in a fight for survival. For their secure livelihood, they tend to rely on powerful intermediaries, as mentioned earlier, and often serve their designated role as agents. Moreover, they also depend on land-owners, neighbours and relatives to protect them from external shocks.

As indicated in the discussion and shown in the case study, the urban poor have to deal with four different actors in this network structure – their relatives, landowners, power-holders and neighbours. An important feature of this network is that the poor are passive actors. As they remain in a vulnerable condition, they always seek to obtain resources necessary for survival through the network. However, as they do not have command over the resources, they cannot control this network. In contrast, control always lies with the more powerful actors. The reason behind this is that more powerful actors have command over all resources, including advice, suggestions or tangible resources. Their social networks determine to whom these resources are distributed. Our research indicates that powerful actors’ decisions to provide resources depend on two things:

- **Resource availability**, i.e. whether the powerful actors have enough resources to provide.
- **Willingness to provide.** Having adequate resources is not enough until and unless these actors are interested in sharing these resources. Their willingness depends on two factors – whether they are sympathetic to needs of the poor and whether they can serve their own interests by helping them.

The interaction between willingness and availability may create four different scenarios, as shown in Table 5.

Table 5: Four network scenario

Resources \ Willingness	High	Low
High	Strong network	Collaboration leading to competition (weak network)
Low	Apathetic network	Absence of network

In the case of Magbara residents, the poor resource base of both the powerful and passive actors means that we mostly see either a weak network or an absence of any network. The poor are left to depend on themselves to survive.

Conclusion

The Magbara case study reveals the lives of urban poor in general and their adaptation to a climatic event in particular. A natural disaster like Cyclone Aila caused a significant influx of migrants into Khulna city, exacerbating the pressures faced by those living in low-income settlements. Our research reveals the following key points:

First, although the services available to the dwellers are quite inadequate to meet their demands, their satisfaction or dissatisfaction does not depend only on the availability of resources, but also on whether a landowner is perceived to be helpful and sympathetic to their residents.

Second, although there are some innovative practices in making the best use of resources, these are mostly trivial in nature. In most cases, people try to adapt to the present situation. As such, they try to live with waterlogging, mosquitoes and flies, bad smells and incomplete toilets.

Thirdly, due to their reliance on landowners and job intermediaries, the majority of the urban poor have few opportunities through which they can improve their economic condition. In the absence of adequate social capital and job skills, these poor people cannot exercise their own agency. As a consequence, we see the development of patron-client relationships, in which the urban poor have weak social networks. In some cases, more powerful actors are sympathetic to the urban poor, even when their resources are scarce. In these cases, the urban poor get some sympathy and an opportunity to serve their own interests. Over time, however, as their resources become scarcer, either the sympathy evaporates and the network moves towards disruption, or those households who are unable to access adequate resources through these channels lose interest in being part of the network. In this resource-poor, weak network situation, where the poor lack bargaining power, the powerful actors are not interested in engaging with them. Only patrons with limited resources – like the landowner, Bilkis Begam, or the social actor, Rintu – come forward to develop a reciprocal relationship in which the powerful (Bilkis or Rintu) gain more than the powerless (poor settlement dwellers).

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