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Economic Impact of Climatic Catastrophes among Penniless Communities in Bangladesh

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Abstract

Bangladesh is one of the most vulnerable countries to floods, cyclones, storm surges and droughts. Climate change has already impacted people's economy, life, and livelihood in the coastal regions. Bangladesh observes severe exposure to such risks because of its geo-morphological, demographic and socio-economic temperament. Climatic Hazards also remarkably affect agriculture in the haor and char region. It has a tremendous negative effect on water security and food security. SDG-10 calls for the reduction of economic inequality, whilst SDG-13 calls for mitigation of climate change. It denotes this relationship is characterised by a vicious cycle, whereby inequality makes disadvantaged groups suffer a disproportionate loss of their income and assets, resulting in greater subsequent inequality. It functions in three ways, increased exposure of underprivileged groups to climate hazards, increased susceptibility to damage caused by climate hazards and decreased ability to cope with and recover from the spoil. This paper clarifies a linkage between economic inequality and climate catastrophes in haor, char, urban and coastal regions.

Keywords *Inequality · Climate Change · Water · Food Security · Adaptation ·*

1. Setting the Scene

Looking worldwide, we see that low-income countries are more exposed to the adverse effects of climate change. More of these countries are, among other things, located in tropical areas; have low elevation; lie in hurricane, cyclone, and tsunami zones, and are situated in arid regions already facing water scarcity. Consequently, they are more exposed to climate change effects such as sea-level rise, salinity intrusion, increased incidence, scope, and ferocity of cyclones, hurricanes, and

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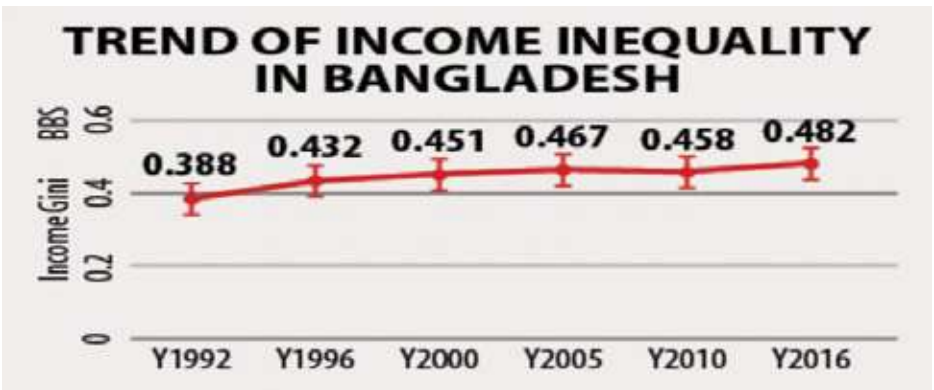
precipitation imbalance. By contrast, most high-income countries are located in cold and temperate zones, where some people welcome in- temperature crease, arguing that it will elongate the crop growing season, increase the crop area, and reduce home heating expenses, leading to leading to increase in output and well-being. While experience has tempered some of these early expectations, it remains the case that these countries are generally less exposed to sea-level rise, increase in the incidence of hurricanes, and other adverse consequences of climate change. Thus, it is historically given that low-income countries are generally *more exposed* to the adverse effects of climate change. Low-income countries are also more susceptible to the damages caused by climate change effects. The reasons are not too far to see. For example, the Netherlands – a high-income country – is low-lying and exposed to sea-level rise. However, it has built sea walls and other structures so that it is not as susceptible to damage caused by sea-level rise as many low-lying, low-income, tropical island countries. The low-income countries also have less capacity to cope with and recover from the damages caused by climate change effects. For example, unlike in high-income countries, most people in low-income countries lack insurance, so they cannot muster private resources to cope with and recover from climate damage. Also, low-income countries have fewer public resources devoted to helping the affected people overcome their losses. We thus see that low-income countries, in general, are more exposed to the adverse effects of climate change.

Unequal distribution of wealth affects the nation's overall progress in several ways, all of which produce profound adverse effects. One of the most dangerous of these is that less affluent people are so busy surviving a country that they have little time to think of progress and development. A garment factory worker's children have little hope of avoiding the fate of becoming garment factory workers themselves in the future. It is simply because standard education costs are well beyond their reach. They can dream of no luxury other than sustaining their physical existence in an unfriendly and unsympathetic world. Garment factory workers are deprived of a just salary because the owners want to pay only what would keep these unfortunate employees physically able to come back for more work tomorrow.

Along with poverty, rising inequalities have always been considered a significant policy issue in Bangladesh; such inequalities are not merely about disparities in outcomes. It is also about inequalities in opportunities regarding age, sex, disability, race, ethnicity, origin, religion, or economic status. In Bangladesh, where disparities in opportunities are so evident in every sphere of life that focusing only on economic inequalities provides a partial picture of inequality's status and policy agendas. One Sustainable Development Goal (SDG) is to reduce inequalities within and across countries. The SDG framework identifies inequality as a critical issue since reduced inequalities can ensure inclusive development and drive human progress towards sustainability and universal well-being.

The Gini coefficient or Gini index is a statistical measure (the value of a Gini coefficient varies between 0 and 1, where a value of zero signifies perfect equality and 1 indicates maximum inequality) generally used to examine a country's degree of income inequality that exists at a particular point in time. The Gini coefficient for Bangladesh fluctuates around the trend line, but the overall trend is declining from 48.9 in 2000 to 31.5 in 2010, indicating declining income inequality. But a much clearer picture of income distribution emerges when one looks at the income distribution between the poorest 10 per cent and the wealthiest 10 per cent. The notion appears: that the income share of the poorest 10 per cent is 3.85 per cent compared to 26.92 per cent for the wealthiest 10 per cent in Bangladesh. In effect, the income share held by the highest 20 per cent is 41.48 per cent. This indicates a situation where very few benefits of economic growth are trickling down to the poor, the people who need it the most.

Figure 1: Trend of income inequality in Bangladesh



At independence, Bangladesh was primarily an agrarian economy marked by largely subsistence farming. Agriculture has now become more commercialised and accounts for only 15 per cent of gross domestic product (GDP). Manufacturing and services now account for the bulk of output. Economics Nobel Laureate Amartya Sen lauded Bangladesh's social development in many fields, such as gender equity, women's empowerment, mortality rate, life expectancy and immunisation. Despite significant improvement in Bangladesh's economic performance, formidable economic challenges still lie ahead. With a per capita income of US$ 2000.00, the country remains one of the least developed countries in the world. An estimated 63 million people live under the poverty line in a country of 163 million. Bangladesh has also witnessed rapid urbanisation, with more than a third of the population now living in urban areas and continuing. Although the population growth rate has come down to 1.2 per cent per annum, the country remains one of the most densely populated countries globally. This urbanisation has been spurred by the structural changes in the rural economy resulting from the increased commercialisation of

the agriculture sector and widespread rural poverty. But this rapid urbanisation has caused heightened urban poverty with deplorable living conditions for these rural migrants and severe urban congestion.

One good indicator for looking at the worst form of income inequality is the Palma ratio, which focuses on the extremes of the inequality-the proportion of incomes at the very top to those at the bottom. In Bangladesh, the changes in these extremes are most noticeable, while the share of income in the middle is relatively stable. The Palma ratio at the national level has consistently increased from 1.68 in 1964 to 2.93 in 2016; in urban areas, it rose from 2.00 to 2.96 while, in rural areas, it grew from 1.38 to 2.51 over the same period. Over the period, the share of the middle 50 per cent has remained relatively stable; while the poorest 40 per cent have generally lost in income share, the wealthiest 10 per cent have gained. In the case of income, one of the targets of SDG10 is to progressively achieve and sustain income growth of the bottom 40 per cent of the population at a rate higher than the national average by 2030. The national data since the 1980s show that the average per capita household income (at 2010 prices) from 1986-to 2016 grew by 1.43 per cent while the same for the bottom 40 per cent grew by only 0.28 per cent. The worst form of widespread inequality in the country is inequality of opportunities, both the cause and consequence of inequality of outcomes. Reduced inequalities have both economic and social benefits. It strengthens people's perception of a fair society, improves social cohesion and mobility, and boosts employment and education with beneficial effects on human capital and development. Without equal opportunities, systemic discrimination and exclusion prevent the poor and disadvantaged groups from accessing economic, political and social resources, resulting in 'inequality traps' and the persistence of inequality across generations.

We always debate how climate change exacerbates economic inequality, but rarely do we think the opposite: that inequality itself can be a driver of climate change. What's missing from the conversation is what our inequality crisis is doing to our planet. How unequal societies inflict environmental damage than more economically even societies. One key topic still overlooked is how ecological degradation and climate change are the toxic by-products of our inequality problem. Many people who live in low-income communities, for example, cannot afford to retrofit their homes to make them more energy-efficient, meaning they use more power than necessary, generating more pollution. We are talking about how inequality functions in our society, which has changed since the global financial crisis. People assume that raising incomes will increase personal consumption and, as a result, also increase carbon emissions, which would do little to alleviate climate change. But there are so many more mechanisms at play, including how power disparities hobble communities from protecting, for example, their air or their water. We need good jobs, a solid tax base, a sound healthcare system, and criminal justice to preserve nature.

2. Unequal Access to Pure Potable Water in Bangladesh

Arsenic (As) concentration in natural water varies widely depending on the sources of water, sources of As and local conditions. Arsenic concentration in river water is low, between 0.1 to 2.0 mg/l, but polluted river water can have a higher concentration of As. High As concentrations are found in some alkaline closed-basin lakes due to increased evaporation and geothermal inputs. In Bangladesh and West Bengal, alluvial Gange's aquifers used for public water supply are polluted with naturally occurring arsenic, adversely affecting millions of people's health. The arsenic derives from the reductive dissolution of arsenic-rich iron oxyhydroxides, which are derived from the weathering of base-metal sulphides. As many as a million water wells drilled into Gange's alluvial deposits in Bangladesh and West Bengal may be contaminated with arsenic. Measured arsenic concentration reached up to 1,000 μg/l, which is above the limit set for drinking water in Bangladesh (50 μg/l) or that recommended by the World Health Organization (10 μg/l). Consumption of this contaminated water has led to widespread death and disease. Arsenic has been reported to derive from the oxidation of arsenic-rich pyrite in the aquifer sediments as atmospheric oxygen invades the aquifer in response to lowering the water level by abstraction. The arsenic-rich groundwater is mainly restricted to the alluvial aquifers of the Ganges delta. Therefore, the source of arsenic-rich iron oxyhydroxides must lie in the Ganges source region upstream of Bangladesh. Weathered base-metal deposits are known to occur. The Ganges basin, weathering these arsenic-rich base metal sulphides, must have supplied arsenic-rich iron oxyhydroxide to downstream Gange's sediments during Late Pleistocene - Recent times. The arsenic-rich iron oxyhydroxides are now being reduced, causing the present problem. Reduction is driven by a concentration of sedimentary organic matter of up to 6%.

Barkat's study in six arsenic-affected villages in Bangladesh showed that 10.2% of the population are affected by visible signs of arsenicosis (*i.e.,* keratosis, melanosis, and kerato-melanosis), with 16.1% among the poor, 5.4% among the non-poor, and 1.7% among the rich. The actual rate of arsenicosis would be much higher than the rate with visible symptoms because many affected persons are yet to display visible signs, and many others will have multiple organ complications with suppressed visible symptoms.

Arsenic-affectedness is not an economic status-neutral phenomenon. The above study revealed that poor people are disproportionately highly affected by arsenicosis than their non-poor counterparts in the same villages. In these rural areas, poor people (*i.e.,* land poor, income poor, food-intake poor) constitute 44% of the total population, but they represent over 70% of all the arsenicosis patients having visible symptoms (keratosis or melanosis or kerato-melanosis); non-poor constitute 56% of the total population, but 30% of all the arsenicosis patients and the rich constitute about 8% of the total population but representing only about 1.4% of all arsenicosis patients. The estimated odds ratios show that the poor and

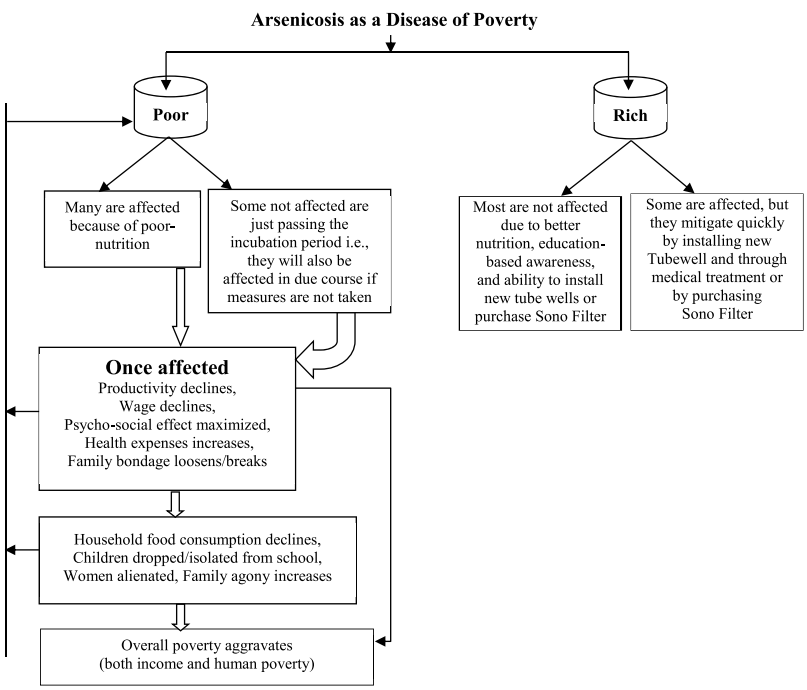
non-poor have 3.4 times greater chances of getting arsenicosis, which is about 11 times higher for the poor than the rich. This highly skewed inequality in the distribution of arsenicosis patients in rural Bangladesh provides enough evidence that arsenicosis is a disease of poverty.

The human rights challenge of *arsenicosis as a disease of poverty* gets more complex because arsenicosis is a poverty-aggravating or poverty-perpetuating disease. It is so because once a poor person is affected by arsenicosis (with multiple organ complications), s/he loses their ability to work and, in the absence of any financial assistance, the poor household gets into perpetual poverty – a new type of poverty trap (Barkat and Hussam, 2008). Therefore, we have discovered two kinds of poverty associated with the drinking of arsenic-contaminated water in Bangladesh, which are:

Type 1: *Poverty-mediated arsenicosis*, implying that poor people are disproportionately highly affected by arsenicosis compared to the non-poor.

Type 2: *Arsenicosis-mediated poverty*, implying the aggravation of poverty due to arsenicosis whereby the arsenic-affected poor people become poorer/pauper due to economic, social, and psychological reasons.

Figure 2: Arsenicosis as a Disease of Poverty



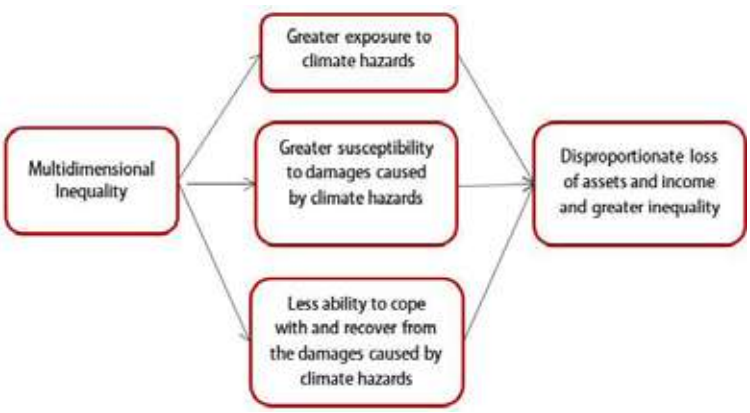
***Source**: Barkat and Ahmed, 2007.*

This dual poverty – poverty-mediated arsenicosis and arsenicosis-induced poverty – is a new type of poverty trap for Bangladesh. The income reduction effect and consumption shocks are the two major pathways through which the economic burden of arsenicosis works (Barkat *et al.,* 2002). This trap poses a real challenge to the National Goals of Poverty Reduction because the conventional approaches address everything (income poverty, consumption poverty, employment poverty, credit poverty *etc.*) – but not the poverty associated with drinking arsenic-contaminated water.

3. Constraints to Adapting to Climatic Catastrophes in The Coastal Belt

Crop agriculture in the coastal area is susceptible to climatic variations. The adverse impacts are evident, including sea-level rise, salinity intrusion, increasing frequency and intensity of tropical cyclones, storm surge, tidal surge and erratic rainfall over the study area. Different hazards have a different extent of influence on cropping patterns. To minimise the loss of crop production, it is imperative to identify the significant dangers with their time and degree of impact on cropping patterns. Salinity intrusion is one of the most significant hazards causing a huge yield reduction. Also, cyclones, storm surges, erratic rainfall, tidal surge, pest attack, and waterlogging significantly influence crop yield reduction. Local farmers identified hurricanes, salinity and tidal surge as significant constraints to crop production. Cropping patterns and seasons are changing due to climatic variability. Evidence shows that inequality often compels disadvantaged groups to live in areas more prone to flooding, thus increasing their exposure to flooding caused by climate change.

Figure 3: Three effects of inequality and climate change



Source: *Nazrul & Winkel, 2017*

3.1 Climatic State of Coastal Area of Bangladesh

The coastal areas of Bangladesh contain more than 30% of the country's cultivable land. Tidal and estuarine floodplains cover 98% of this 30% of the total area of the coastal belt (Haque, 2006). The crop production is deficient in this coastal region due to salinity intrusion, low soil fertility due to excess salinity and drought in the dry season. Delta regions are predicted to get low yields of Aman, Boro and transplanted Amon rice (Ali and Wakatsuki, 2002). The coastal belt cropping intensity range varies from 62 to 114% compared to the national cropping intensity is 179% (Razzaque and Rafiquzzaman, 2007).

3.2 Salinity Problem in Coastal Belt

Salinity is a common problem in the coastal area of Bangladesh. In the dry season, the water level drops to 240 km in the western part of Bangladesh, causing a severe saline problem in 30 Upazila in Bangladesh. Sea level rise would produce salinity impacts surface water, groundwater and soil. According to Samshuddhoa and Chowdhury (2007), 10% more land will be saline affected, and intensity will be increased by 10% in the next decade. Soil salinity can decrease crop production. In the future, the transplanted Aman crops area will cover only 18 to 20% because of high salinity.

3.3 Climate Vulnerability in the Coastal Area of Bangladesh

During the pre-monsoon and post-monsoon seasons, the coastal zone of Bangladesh is primarily prone to tropical cyclones and intense storms. The coastal site of Bangladesh has its extreme vulnerability to cyclones and storm surges. The coastal belt is a geographical death trap. The frequency of natural disasters increases daily in the coastal belt from changes in climate patterns such as increasing temperature, increasing the frequency of cyclonic storms, and rising sea levels. Salinity intrusion, river erosion and waterlogging are caused by sea-level rise. In the coastal area of Bangladesh, Climate vulnerability is a significant concern. The coastal belt of Bangladesh has been delineated based on three criteria: the limits of tidal fluctuation, salinity intrusion and cyclonic risk. The oceans and coastal resources are threatened by coastal inundation, and the need for particular interest in analysing climate change risk to coastal areas (Shea and Dyoulgerov, 1997). The coastal belt of Bangladesh is a low-lying area, so it is vulnerable to monsoon flooding and storm surges. Abnormal floods will inundate 30% of the common lying land in Bangladesh, and during insignificant flooding periods (1988, 1998 & 2004), more than 60% of the land has been inundated; the Bangladesh coastal belt faces a significant cyclone on an average once per year, and tidal surge may go up to 6-10m.

3.4 Impacts of Climate Change in the Coastal Area of Bangladesh

The coastal region of Bangladesh covers 29,000 sq. km or about 20% area of the country, and the coastal areas cover 30% of the cultivable lands of Bangladesh (Rahman and Parkinson, 2007). Ayers and Haq (2008) stated that the Bangladesh coastal area might be the front line of climate change impact and response in South Asian Countries. The coastal area plays a vital role in increasing the country's GDP. Ali and Wakatuski (2002) showed that agriculture contributed 32% to the GDP sector of Bangladesh, and 72% of this contribution comes from rice-cultivated areas. BBS (2002) declared that the modern rice varieties cover about 62% of total rice areas, contributing to about 77% of the total rice production in Bangladesh. A quarter of the population of Bangladesh lives in the coastal zone, and about 80% of people depend on agricultural activities. When Bangladesh could lose 15% of the land and up to 25 million people could be refugees with a 1-meter sea-level rise in the coastal area of Bangladesh. This condition may lead to a decline in the country's GDP from 57% to 27% through decreasing crop production.

Figure 4: Soil salinity in Shibbari, Paikgacha Upazila, Khulna

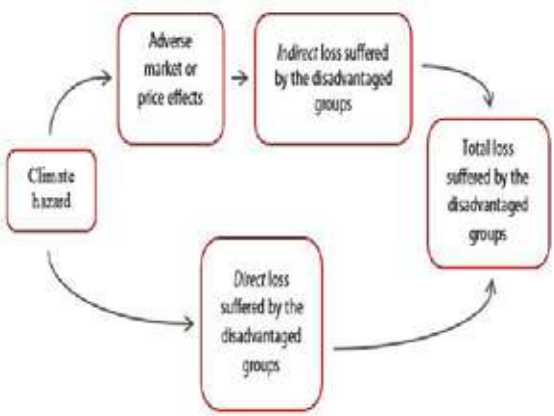
Among all living in the flood zone, the disadvantaged groups prove to be more susceptible to the damages caused by flooding. For example, their houses are washed away seriously because they are often made of flimsy materials. By contrast, the more well-to-do homes suffer minor damage because these are generally made of sturdier materials, such as brick and concrete. Finally, the disadvantaged groups have less ability to cope with and recover from the damages caused by floods. For example, the rich may buy the insurance and thus compensate for the damages. By contrast, the disadvantaged groups may not be able to afford such insurance and therefore have to absorb the entire loss, leading to a more significant loss of their asset position.

4. Environment, Climatic Vulnerability and Livelihood in the Char-lands

Bangladesh is a highly disaster-prone land, with regularly floods and cyclones affecting the country. Hazards occur when these potential threats to human lives and resources, in terms of loss and damage, emerge from the intersections between extreme geophysical events and a vulnerable human community.

Char-lands are the sandbars that emerge as islands within the river channel or as attached land to the riverbanks due to the dynamics of erosion and accretion in the rivers of Bangladesh. The Chars are, thus, home to some of the poorest and most vulnerable people in Bangladesh. These areas are particularly prone to frequent climatic shocks (floods, drought and cyclones), which increase the precariousness of poor people's lives by wiping out their assets and pushing them deeper into poverty. Char comes to about a total area of approximately 7,200 square kilometres. In addition to the significant physical risks associated with the rivers, Char-dwellers, particularly, are marginalised from the benefits of mainland Bangladeshi society through their poor communication networks. The Char dwellers mainly depend on agriculture and agriculture-related activities. Opportunities for off-farm activities are marginal.

Figure 5: Effects of climatic hazards on disadvantaged groups



Source: *Nazrul & Winkel, 2017*

Therefore, livelihood strategies linked to environmental change and variability are mobile to cope with steady erosion. These areas have not focused on the development efforts of Bangladesh's public or private agencies. The lack of essential services and governance representation and dependence on limited and seasonally variable resource access demands highly innovative and diversified livelihood strategies in the Chars, leading to considerable social inequity. High food insecurity and low-income results in the out-migration of at least one household

member to find employment, leaving women and children to exist. Many women-headed households in the Chars and poorer women are burdened with household, crop cultivation and income-generating demands.

In Char areas, interventions to increase agriculture productivity without addressing the vulnerability context of peoples' livelihood strategies will do little to affect poverty dynamics. It may not offer options for those poorest families unable to incorporate the technologies introduced from the outside. Therefore, sustainable management of disasters through mitigation measures requires increasing the livelihood options to gain more control over their lives and the environment. Sustainable development requires harmonising environmental protection and action to protect and enhance the natural resource base. Institutions are established to promote equitable growth, which is essential for reducing disaster hazard risk and vulnerability. Diversification of livelihoods will need to be addressed to relieve pressure on natural and common property resources. Poor Char dwellers need to effectively sustain their livelihoods and engage in the local and national economy by broadening economic opportunities and strengthening productive livelihood strategies. It will reduce food insecurity; increase employment opportunities and income, and permit people to accumulate assets, improving their ability to cope with future livelihood shocks without falling deeper into poverty.

Inequality implies fewer resources for the disadvantaged groups to commence coping and recovery measures. These resources can generally take four forms: households' own (private) resources, community resources, resources provided by various non-government organisations (NGOs), including religious and philanthropic organisations and philanthropic activities of private companies, foundations, and public resources provided by the government, including local governments. The interventions for the future can include a) building the influential voice of poor Char dwellers as citizens to demand services; b) building accountable and responsive institutions in public, private and civil sectors to supply pro-poor services and infrastructure; c) providing Char dwellers with choice in service provision and diversified channels for access to services.

5. Economic and Livelihood Challenges in Haor Region

The status of biodiversity and the integration of flora and fauna have made ‑ haor one of Bangladesh's most beautiful places. As the haor region is a marginalised area of the country, women and farmers face enormous challenges in the daily struggle for survival. In the haor constituency, the highest population lives in Sylhet (3.36 million) and the lowest in Moulvibazar (2.10 million).

Table 1: Geographical Distribution of Haors in Bangladesh

Haor District	No. of Haor	% of Total no. of Haor	Major Haors
Sunamganj	95	22.9	Dekhar, Kalikota, Naluar, Pagner, Tanguar
Sylhet	105	25.4	Boro Haor, Patharchuli, Dhamrir, Banaiya
Habiganj	14	3.4	Gungiajuri, Ikram-Sangar, Makalkandi
Moulvibazar	3	0.7	Hail, Hakaluki, Kawadighi
Netrokona	52	12.6	DingiPota, Medar Beel, Talar
Kishoreganj	97	23.4	Khunkumi, Mithamain, BoroHaor
Brahmanbaria	7	1.7	Dattakhola, Tikkar Par

Although a little more than half of the population (53.67%) depends on agriculture, the corresponding figures for Sylhet and Netrokona districts are not similar. Only 35% of haor dwellers depend on agriculture, while the rate is 71% in Netrokona. However, instead of limiting themselves to agriculture, the haor inhabitants depend on various occupations for their livelihood. A portion (12.52%) of haor people makes their living through business. Others are employed in non-farm labour (6.13%), service (5.65%), fishery (2.59%), and transport (2.39%). A substantial percentage (3.41%) of the population depends on remittances sent by family members working abroad.

Table 2: Flash flood in Haor Districts

Region	Crop loss (% of total)	Fish loss (% of total)	Damaged fodder (% of total)	Total loss (% of total)
Sylhet	10.26	1.88	10.26	10.22
Sunamganj	44.75	5.5	44.76	44.59
Habiganj	15.07	88.57	15.08	15.38
Netrokona	10.56	0	10.54	10.5
Maulavibazar	5.6	2.78	5.6	5.6
Kishoreganj	13.67	1.27	13.67	13.61
Brahmanbaria	0.09	0	0.09	0.09

5.1 Socio-economic and Environmental Losses

An average 50% cropped area in haor lost its crops, mainly Boro rice. However, the community reports the damage to be much higher, close to 90% in many areas. For example, according to the official statement, Kishoreganj lost 90% of its rice crops according to the community; which was 31.8 % on average. An immediate impact on the fishery was ponds being washed away. The fish loss was reported in Sunamganj, Kishoreganj, Netrokona, Moulvibazar and Sylhet. In Kishoreganj, it mainly was a culture fishery. An estimated 903 MT of fish loss was reported.

According to the fisheries office of Sunamganj, fishes of 20 haors from 11 Upazilas suffered from murrain. Among the Upazilas are Sadar, South Sunamganj, Jagannathpur, Dharmapasha, Dirai, Tahirpur, Jamalganj etc. Among the Haors are Dekhar, Dharam, Dhankuniya, Cheptir Haor, Chayar Haor etc. Haor flood not only damaged human food but also drowned animal food. It means a loss of fodder (straw), estimated to be 452,189 MT for all seven affected districts. This made the environmental biodiversity of the region vulnerable to an extreme food crisis. Farmers and the local cattle industry suffered from a food shortage and fodder for their cattle. They are reportedly selling away their cattle at low rates. In addition, poor water quality and disease have killed ducks in many areas, further adding to the damage. In the remote villages of the district, by drinking the polluted water of the haor, ducks and ducklings also died.

5.2 Common Constraints in Haor

The overriding challenge of the inhabitants of haor is that they have limited livelihood options if natural calamities disrupt their existing livelihoods. The complexity of this challenge restricts their livelihood options—holding them back from joining the journey towards national progress. The haor inhabitants mainly rely on Boro crops and fishing, while a smaller section depends on livestock rearing and small business. Hence, enhancing the climate-resilient livelihood of haor inhabitants—a livelihood that can sustain its essential functions (food, income, poverty reduction) and absorb the impacts of disasters and shocks without causing significant disruption in the day-to-day operations —is their utmost need in line with the priority of SDGs and 7th Five Year Plan (FYP) of Bangladesh. An underdeveloped communication infrastructure also leads to various challenges, insufficient private sector investment, and small-scale entrepreneurship in these areas.

6. Climate Change, Migration and Urban Poverty

The genesis of migration lies in people's quest to live or subsist in a form better than their present status. Some migrate for sheer survival, that is, to escape poverty; others improve their quality of life, while others still search for fortune. Since each of these pursuits is made by people from different socio-economic strata and hence has a different purpose for moving, migration is quite a heterogeneous phenomenon. However, in contemporary low-income economies, people mainly move due to the worsening productive-resource-to-human-power ratio, stemming primarily from rapid population growth and external demand for local resources. It has compelled large sections of the populace to migrate to look for work as a part of their survival strategy. People move seasonally, for fixed periods, or permanently depending on their needs and circumstances. In this sense, the transition economies of South-East Asia, some of which are among the poorer ones in the world, present a picture typical of other low-income countries.

6.1 Slumization and Poor Urban Settlements

The role of migration in urbanisation is evident in all societies and at almost all times since urbanisation and urban growth take place through a combination of three components such as (a) natural increase of the native urban population, (b) area redefinition or reclassification or annexation and (c) rural-urban (or other forms of internal) migration. In a condition of developing urbanisation, migration is even more pronounced. In contrast, in the state of advanced urbanisation, where urban growth is almost stagnant or even declining, internal migration plays a minor or almost no role. Rural to urban migration may again take many forms, such as (a) permanent migration, (b) temporary migration, (c) seasonal migration, (d) circular migration and (c) commuting. The process ranges from short-distance mobility (commuting) to long-distance and long-term movement or permanent migration. In the case of Bangladesh, the status of academic and planning studies on internal migration is not too bad. However, all dimensions of internal migration might not have received enough attention. Considerable literature exists on determinants or causes of rural to urban migration. A Bangladeshi scholar working at an American University has, in a recent paper, classified the models of causes of migration into two groups (i) one which isolates migration as a domestic phenomenon and (ii) the other which places causes of migration within an international politico-economic framework. Migration is the combined effect of both push and pulls factors, and it is often difficult to separate the role of the two. Within the Push-Pull model, push factors (at the rural end) may be identified for Bangladesh as 1) Population pressure, adverse person-land ratio, landlessness and poverty; 2) Frequent and severe natural disasters (particularly riverbank erosion); 3) Law and order situation and 4) Lack of economic opportunities.

The impact of rural to urban migration is diverse and deep, both at the urban destination end and at the rural origin. Most of the research has been on the urban lot. Urbanisation and urban growth due to migration has both positive and negative consequences and impacts. Some of the positive effects of urbanisation are the following: Economic benefits: higher productivity, better income etc.; Demographic benefits: lowering of the age at marriage, reduction of fertility rate; Socio-cultural benefits: modernisation; Political benefits: empowerment, democracy; Improved access to information technology; some of these have already been discussed in the preceding sections. Urbanisation is not an unmixed blessing. Its negative consequences are of great concern. These assume a critical role in the situation of rapid and uncontrolled or unplanned urban expansion. The adverse effects can be grouped as the following: Environmental consequences; Encroachment on productive agricultural land and forests; Extreme pressure on housing, growth of slums and the pressure on urban services; Economic consequences, leading to income inequality and poverty, ill effects of globalisation; Social consequences, resulting in increased violence and crime, social Degradation; Cultural influences: entry of alien culture, loss of national cultural identity; and Criminalization of politics.

6.2 Hidden Impacts of Climate Change among Urban Poor

Climate change refers to any change over time, whether due to natural variability or due to human activity. This usage differs from that of the United Nations Framework Convention on Climate Change (UNFCCC), which defines "climate change" as: 'change in climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural variability observed over comparable periods".

Climate change can directly affect health because high temperatures stress human physiology. Changes in temperatures, place, and precipitation, including extreme weather events and storms, can cause deaths or alter the environment, resulting in an increased incidence of infectious diseases. Higher temperatures and humidity can exacerbate air pollution. Finally, virtually all effects of global climate change, ranging from sea-level rise to impacts on agriculture and human infrastructures, are linked to human health.

The incidence and severity of many health problems increase with increasing temperature. As temperatures increase, the body expands added energy to keep cool. Heatstroke is the most immediate consequence if the body's temperature rises above 410 C. This disturbance to the body's temperature-regulating mechanism results in fever, hot and dry skin, rapid pulse, and sometimes progresses to delirium and coma. Also, temperature stress can exacerbate many existing health conditions, including cardiovascular and cerebrovascular disease, pneumonia, asthma, and influenza. Mortality from such diseases, especially among children and the elderly, increases dramatically during periods of usually hot weather. Quantitative algorithms based on historical data that relate morbidity and mortality to weather conditions suggest that global warming increases heat-related morbidity and mortality.

The combination of higher temperatures and potential increases in summer precipitation could create the conditions for greater intensity or spread of many infectious diseases. However, risk in the human health sector is low relative to climate change-induced risks in other sectors (such as water resources) mainly because of the higher uncertainty about many health outcomes. Increased risk to human health from increased flooding and cyclones seems most likely. Changes in infectious disease are less specific. The causes of infectious disease outbreaks are complex and often do not have a simple relationship with increasing temperature or changes in precipitation. It is unclear if the magnitude of the change in health risks resulting from climate change will be significant compared to current threats. It is also unclear if increased health risks will appear in the next few decades. Climate change is expected to present increased risks to human health in Bangladesh, especially in light of the poor state of the country's public health infrastructure.

Climate change is a recurrent phenomenon in Bangladesh. Human health will suffer from many aspects of climate change. Direct impacts include increasing incidences of thermal stress, leading to cardiovascular and respiratory morbidity and mortality. Indirect effects will probably result from increases in specific vector-borne diseases.

7. Concluding Remarks

Climate change impacts tend to be regressive, falling more heavily on the poor than the rich. Inequality is not inevitable; it is a policy preference. There is mounting evidence that the current levels of inequality are not the result of efforts and risk-taking but somewhat windfall income from 'rent-seeking' activities. The policymakers in Bangladesh will have to work to develop a more human society with greater equality as the primary aim in coastal, char, haor and urban settlements. A comprehensive policy framework is necessary to help policymakers better navigate the complexities and challenges of framing appropriate policies to address inequality based on three related pillars: moderating income inequality, closing gaps in health, nutrition and education, and addressing social exclusion by combating discrimination and transforming inequality-producing cultural norms. These can get together to empower mass people to adapt to climatic catastrophes. Regarding sustainable urbanism, policymakers should eliminate primate city favouritism; improve urban efficiency to lower the cost of the living curve by dealing with urban crowding and providing public goods; eliminate the biases that lead to squatter settlements with a reasonable titling policy and urban deregulation; and not discourage internal migration, which fosters an efficient allocation of the population and has an equalising effect across places.

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