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CLIMATE-INDUCED POVERTY IN COASTAL BANGLADESH: POLICY IMPLICATIONS

by Saleh Ahmed

SUMMARY

Anomalies in weather and climate patterns are increasingly evident in many parts of the world. This is particularly challenging for the people in low-income developing societies because of their limited resources and capacity to cope with the stress factors involved. 180 million people in Bangladesh are increasingly being exposed to climate risks. Even though the entire country is exposed to different types of climate-induced disasters, people in coastal Bangladesh are at the frontline of adverse climate impacts. This Poverty Brief discusses how natural disasters can create poverty traps for millions of people in coastal Bangladesh. It also highlights the importance of systems-level thinking to capture the complex but dynamic relationships between climate change, natural disasters and poverty in resource-constraint conditions. Even though this Poverty Brief focuses on coastal Bangladesh, the implications have broader relevance for efforts to reduce disaster impacts at large.

This brief argues that

- People whose livelihoods are dependent on various climate-sensitive sectors, such as farming and fishing, are the major victims of climate change and any weather- and climate-related anomaly.
- Weather and climate anomalies are likely to increase the poverty level among smallholder farmers, because of their limited capacity to cope with the stress factors involved.
- Enabling the institutional environment is critical to reducing adverse climate impacts at a significant level.
- Systems-level thinking can help to understand the dynamic relationships between climate change, disasters and poverty, and it can contribute to our ability to create resilient societies.

Introduction

With 180 million people and limited capacity to minimize the impacts, Bangladesh is heavily exposed to weather and climate anomalies as well as extreme hydro-meteorological events (Stepherd et al., 2013). People are at risk of losing their crops, property and overall livelihoods (Ahmed et al., 2009). Low-income, resource-constrained societies are particularly vulnerable, because of their limited capacity to cope with the stress factors involved and their high levels of reliance on climate-sensitive sectors such as farming and fishing.

In coastal Bangladesh, which comprises 17 of the country's 64 districts, people are primarily smallholder farmers or fishermen from various social and cultural backgrounds. In most cases, these farmers have limited financial and social resources, and cannot afford modern agricultural machinery (Ahmed and Cokinos, 2017). Any change in expected weather or climate patterns can result in serious implications for their food security, poverty status and overall livelihoods. It is very likely that some marginal farmers become trapped into a longer-term poverty cycle because of their perennial losses of crops and other livelihood assets caused by slow-onset and extreme natural events, such as sea level rise, tropical cyclones, salinity intrusion, coastal erosion, and unpredictable patterns of precipitation.

These environmental changes are causing an array of disasters and are undermining people's capacity and

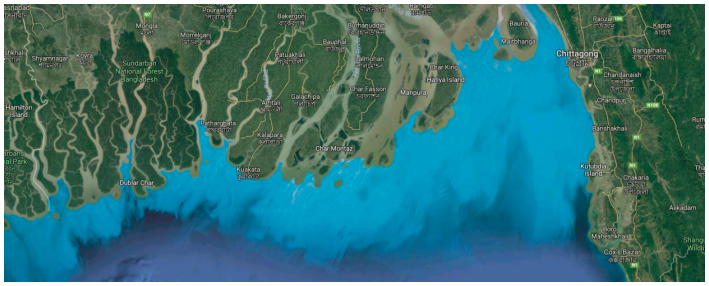
efforts to improve their livelihoods. Therefore, to reduce the losses and impacts caused by disasters, it is critical for the key development actors and partners to design creative development interventions that can address climate-induced poverty from a broader perspective with the aim of achieving lasting impacts for the society, economy and environment.

With a focus on coastal Bangladesh, this Poverty Brief stresses the importance of an holistic understanding and associated approaches to support resilient livelihoods, rather than addressing separate components (e.g. social, economic) of local livelihoods on an individual basis. Systems-thinking is relatively new in international development practice. It is vital to look beyond "quick fix" short-term benefits and work with local people and development actors to capture the entire picture of local development opportunities and challenges. Systems-thinking (and the systems approach) provides some promise on this aspect and suggests possible strategies to maximize development interventions.

Coastal Bangladesh: The Region

Coastal Bangladesh covers approximately 47,201 km^2, which is 32% of the country's total landmass (see Figure 1) (Hossain and Hossain, 2008). The region is densely populated like all other parts of the country. In 2000, approximately 63 million people lived in coastal Bangladesh, and that number is likely to reach 84 million by 2030 (Neumann et al., 2015). However, there are also some sparsely populated, remote islands in the region.

Figure 1: Coastal Bangladesh



Source: Google Map (2018).

Coastal Bangladesh is the home of the world's largest mangrove forest, the "Sundarbans", which not only provides various ecological and economic services to the region, but also acts as the natural defense system against tropical cyclones, storm surge or sea level rise (Hossain et al., 2016).

Climate-Induced Poverty in Coastal Bangladesh

Since climate volatility is increasingly deepening poverty vulnerability in many developing countries (Ahmed et al., 2009), climate-induced poverty can be characterized as the condition which occurs when people are trapped into poverty due to the impending nature of natural/climatic hazards. Enhanced vulnerability can push an individual to his/her maximum threshold limit of coping when facing particular stress factors, and once the threshold is crossed, it is likely that they will be trapped in deepening poverty and impoverishment.

Even though people in coastal Bangladesh lose their farm productivity on a regular basis, as the intensity and frequency of climate extremes increases or any other form of climate anomalies become more common, farm productivity is adversely affected (Naylor et al., 2007; IPCC, 2014). Decrease in farm production has serious implications on prices and poverty (Ahmed et al., 2009). The majority are smallholder farmers who produce crops mainly for their own household consumption. If they produce some surplus, they sell this to the markets and in exchange provide financial resources for other household demands, such as education and health.

In reality, however, the situation is even more complex. For example, particularly people in southwest coastal Bangladesh experience salinity intrusion in land and water, which adversely affects their farm productivity. In the central coastal region, people frequently lose their land and crops due to natural hazards such as tropical cyclones and coastal erosion (see Figure 2).

Figure 2: Rising Sea Level and Coastal Erosion

Source: Author.

At the same time, farmers often use chemical fertilizers and high yielding varieties (HYVs) of crops on their farmlands, so that they can produce more and maximize their financial gains. However, without careful use of chemical fertilizers and HYV of crops, farmers can face detrimental impacts on their land and in terms of crop productivity (Ahmed, 2017). Excessive use of chemical fertilizers and HYVs can diminish crop biodiversity (ecosystem services) and organic nutrients in the soil, which are vital for plants' growth and long-term soil productivity.

A recent household-level survey of farmers' adaptation to climate change[1] in the region suggests that farmers can lose up to 50% of their farm productivity because of a range of causal factors. In this situation, not only do they lose their crops, but they also suffer from household-level food insecurity, hunger, and malnutrition. Some evidence suggests that food insecurity and poverty can also force children not to go to school and rather to engage in farm or household related activities with their parents.

Furthermore, in post-disaster situations farmers take loans from local non-governmental organizations

(NGOs) or moneylenders to rebuild their livelihoods. These loans often come with high interest rates and are mostly used for consumption purposes, such as repairing homes, feeding family members or purchasing basic household materials, including health support. Since the money is used for household consumption, there are no direct financial gains, which means new loans are agreed with other people or NGOs to pay back the previous loans. This is why many of the local farmers or fishermen are trapped in a long-term debt cycle and poverty.

In post-disaster situations there is an acute need for roads, bridges and other infrastructure reconstruction. Due to poor and devastated infrastructure networks, the transport time and cost of moving farm products gets higher. This brings two adverse outcomes for local farmers. Firstly, since most of the farmers do not have storage facilities, the resulting increase in transport time means that some of their farm products perish (e.g. potatoes). When this happens, farmers cannot attain their expected financial gains. Secondly, in post-disaster situations transport costs also increase because of a poor infrastructure network. In both of these situations, smallholder farmers face adverse financial circumstances and many of them face food insecurity and poverty (Ahmed et al., 2009).

Policy Implications

Previously, climate-induced disasters substantially impacted a country's efforts to achieve the UN Millennium Development Goals (Ahmed, 2017), and this is likely to be the same for the UN's Sustainable Development Goals (UNSDGs). One of the core goals of UNSDGs is to leave no one behind in the development process. However, climate-induced poverty can jeopardize a country's overall efforts to achieve the UNSDGs by 2030.

Even though people in Bangladesh face heightened exposures and risks from climate stress factors, climate-induced poverty is not unique for Bangladesh. People in different geographical regions also face similar developmental crises (Hallegatte et al., 2018). Addressing the complex nature and interdependencies among climate change, disasters, and poverty under the larger contexts of climate-society interactions, three aspects should be considered in a country's efforts to achieve resilience and the targets associated to UNSDGs:

(1) Firstly, it is important to understand that human poverty and disaster impacts do not happen in a vacuum. Various climate (e.g. increased frequency and intensity of floods) and non-climate factors (e.g. fragile democracy) influence or shape the outcomes of climate-induced poverty. As much as we can understand this dynamic linkage, we can comprehend the nature, impacts and strategies to tackle climate-induced poverty.

(2) Secondly, in addition to understanding the situated impacts of climate change on poverty in any specific context, it is also important to quantify the climate impacts on human poverty. This will provide clear understanding of the situation and help to assess resource needs to confront the challenges which arise.

(3) Enabling an institutional environment is critical to reduce significantly adverse climate impacts. Even though governments work for their citizens, sometimes their functions face limitations due to lack of transparency, accountability, and citizens' engagement in the process of development and service delivery. An enabling institutional environment should not only provide services to its citizens, but also engage citizens into the process of development with the aim of improving livelihood resiliency.

Traditional ways of thinking or development interventions, such as government-driven service provisions, might not be useful to break the cycle of climate-induced poverty. Climate change itself is a complex 'wicked' problem, and when human behaviour and interaction add to that complexity, the overall situation can be complicated further (Inqwersen et al., 2014; National Research Council, 2015) and requires nuanced understanding of various factors that influence the overall outcome (Inqwersen et al., 2014). Traditional top-down, non-coordinated or sector specific interventions might have limited implications (Innes and Booher, 2018).

In this situation, a comprehensive outlook and approach is necessary. Systems-level thinking (vis-à-vis systems approach) could be useful, because systems-level thinking helps to capture local and non-local contexts (e.g. social, environmental, political and economic), including their interactions, processes, synergies, and trade-offs between various sub-components at multiple levels (National Research Council of the National Academies, 2015). In simple terms, systems- level thinking indicates the process of interactions among various components of a "system". However, the system could be a social system, economic system, political system, or a mechanical system. In any case, there are several components and functions that run the system. A failure of a sub-component can collapse the entire system. When one component of the system is compromised, it can release that pressure or stress by triggering cascading effects on overall systems (Meffe, 2002). If we can translate the systems approach understanding the climate-society interactions, we can clearly identify the climate stress factors that can potentially create cascading impacts on human society, and poverty is just another outcome (Hallegatte et al., 2018), as was the case in Honduras as a consequence of Hurricane Mitch in 1998 (Carter et al., 2007). The importance of a systems approach and systems-level thinking was also visible in the post-Hurricane Katrina situation. Thousands of people experienced health consequences and long-term

poverty implications (Joseph et al., 2014). However, in order to recover from this situation, it is vital not to just focus on health or disasters, but more on maintaining a comprehensive systems-level perspective. For example, a poor person who has lost his property and assets during a crisis cannot improve his/her dietary and health condition without having access to employment, skill development training, infrastructure reconstruction and favourable aid and policies etc. This example shows how systems-level thinking can help policy makers and others to make appropriate interventions to break long-term impacts due to natural hazards.

Summary

In order to break climate-induced poverty, scholars and practitioners need to understand how people interact in their social spaces, what they need under what circumstances, and what the existing capacities are and how to improve them for the larger and long-term good. For example, cyclone shelters are needed in coastal areas that are exposed to tropical cyclones. However, if there is no road, then people will not be able to go to the cyclone shelters because of muddy rural roads. Furthermore, many remote areas in these resource-constrained societies might have limited access to electricity. Lack of electricity can cause limited access to early warning systems or other forms of climate information. Therefore, in order to make a meaningful and lasting impact, policy makers need to understand the entire "systems", not just focus on one sectoral aspect, such as making more cyclone shelters.

Systems-level thinking can help policy makers and disaster management professionals to capture the complexity of how climate-induced poverty occurs and how it can be prevented. It is important to realize that systems-level thinking is not a management or evaluation tool, but it provides insights for long-term benefits in the form of addressing resiliency and achieving the UNSDGs. Nevertheless, systems-level thinking can improve the management and evaluation process by going beyond narrow, disciplinary, and short-term policy design or interventions, and it can help to avoid mal-adaptation and the deepening of existing vulnerability and poverty. Since there are relatively few research results and empirical insights on the implications of systems-level thinking and a systems approach on climate-induced poverty, it is increasingly important for scholars, scientists, and decision-makers to investigate this issue more systematically so that we can avoid unintended climate consequences in the future.

About the Author

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Note

1 In Sept., 2017- Jan., 2018, the author conducted a household-level survey of 250 farmers from various backgrounds including income, ethnicity, gender and religion to understand local adaptation to climate change in coastal Bangladesh.

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