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# Poverty dynamics amidst intersecting crises in rural Bangladesh

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## Executive summary

Bangladesh has achieved strong poverty reduction since the turn of the century, with the share of people living in extreme poverty falling from 33.3% in 2000 to 13.5% in 2016, based on the international poverty line of US\$ 2.15 a day. However, an estimated 1.6 million people fell into poverty during the COVID-19 pandemic (Tateno and Zoundi, 2021). Reasons for impoverishment more broadly over the last two decades in Bangladesh have included ill health and death of earning household members, food price increases, high indebtedness, land disputes, limited education or job opportunities, climate-related disasters, and, more recently, the economic disruptions emerging during the COVID-19 pandemic (Hossain and Nargis, 2010; Davis, 2011; Scott and Diwakar, 2016; Quisumbing, 2011; Diwakar *et al.*, 2023; Roelen *et al.*, 2024).

This paper examines three crises – namely climate-related disasters (droughts and floods), COVID-19 and related economic shocks and stressors, and conflict and political violence – to assess their relationship with household poverty dynamics in rural Bangladesh. This work is part of a broader working paper series on intersecting crises and poverty dynamics in different country contexts (e.g. see Diwakar and Brzezinska, 2023). Like the other working papers on this topic, this paper brings together secondary literature on the pandemic and four datasets, in this case comprising the following:

- three waves of the Bangladesh Integrated Household Survey (BIHS), from 2011/12 to 2019;
- the Armed Conflict Location & Event Data Project (ACLED) yearly data, from 2010 to 2022;
- the Global Flood Observatory yearly data, from 2010 to 2018; and
- the Climate Research Unit Gridded Time Series (CRU TS) yearly data on drought, from 2010 to 2020.

Contextualising movements into and out of poverty against a backdrop of shocks, stressors, and crises requires bringing together poverty correlates relating to ‘people’, focused especially on demographics and livelihoods, and ‘place’, including the broader contexts that might inhibit escape from poverty, like crises. This approach is critical to ensure that pro-poor initiatives are sufficiently risk-informed to help prevent impoverishment and propel escape from poverty that can be sustained over time.

### Key findings

#### ***Poverty dynamics and intersecting crises in rural Bangladesh***

Rates of chronic poverty (2.4%) and impoverishment (4.6%) were relatively low in rural Bangladesh between 2011 and 2019. However, these shares drastically increase (to 44.3% and 9.0%, respectively) when the earlier US\$ 1.90 international poverty line is doubled. These results suggest that even if a large share of Bangladeshis may not be in chronic poverty at extremely low thresholds, they remain highly vulnerable to ‘moderate’ poverty. Regional disaggregation of poverty suggests that areas with a strong prevalence of flooding may account for much of this precarity.

More broadly, various crises beyond flooding, such as drought, political violence, economic crisis, and ill health, contribute to this context of vulnerability. Regression analysis suggests that political violence (even low-intensity violence during protests and riots) is linked to negative poverty trajectories, especially among chronically poor households, while conditions of drought and flooding are instead associated with downward mobility or churning into and out of poverty in ways that may prevent households from remaining out of poverty over time. The results of this analysis also reinforce the idea that intersecting crises, such as political violence and economic and health shocks in contexts of flooding, combine to prolong poverty or lower household resilience.

### ***Livelihood strategies and coping responses amidst floods and intersecting crises***

Household strategies to navigate these contexts of precarity vary in response to different types of crises and their intersections in flood-affected areas. Livelihood- and asset-based strategies amidst flooding point to the importance of land and consumption assets that may offer liquidity to be sold in times of crises and so can act as a protective factor against impoverishment. Moreover, in regard to surveyed households that were faced with violence in areas that had also experienced flooding over the survey period, the results point to the importance especially of diversification of livelihoods – in particular the cultivation of land and the development of off-farm enterprises – which is associated with a lower probability of chronic poverty. This reinforces the role of diversification amongst the poorest households at the conflict–climate nexus.

Economic shocks in flood-affected areas have been particularly salient in Bangladesh. When examining the interface of flooding with economic (price/ revenue) shocks, cultivable land ownership is found to be an important cushion for richer households, increasing the probability of resilience and reducing the likelihood of transient poverty. On the other hand, diversification seems to have mixed results for these households. For instance, engaging in a non-farm enterprise is positively associated with transient poverty in the presence of an economic shock in flooded areas. Indeed, diversification may be inadequate to prevent downward mobility when livelihoods into which people have diversified are hard-hit by economic shocks (e.g. bankruptcy of a business as a revenue shock to non-farm enterprises, or an increase in food prices as a price shock for households relying more on non-agricultural livelihoods). These results suggest that diversification's effectiveness as a risk management strategy might have challenges that vary depending on the scale of the activity. For example, there is a range of trading activities, from small-scale petty trading to larger enterprises that have saved up capital and assets to endure shocks. Trading occupations may be much more vulnerable to economic shocks.

In these contexts of floods and intersecting crises, taking out credit (e.g. a loan from an NGO/ institution or Mahajan/ non-institutional source) was found to be the most common active coping response across shock types, though this was also a strategy that was less frequently available for people in chronic poverty. There was reduced means of coping across the population in the face of intersecting crises, especially the combination of

flooding and economic shocks. The ability to cope with intersecting crises was further reduced by the COVID-19 and Cyclone Amphan crises in 2020, plausibly leading to a deterioration in well-being. Indeed, COVID-19 phone surveys in rural Bangladesh pointed to drastic reductions in rural incomes (by 41% between February and June 2020) (PPRC-BIGD 2021). By March 2021, agriculture was the only sector that experienced modest positive income growth. Despite this, the coping capacity of rural households was significantly reduced, as evidenced by a 24% drop in savings. Consistent with this, debt as a proportion of income almost doubled among moderately poor, vulnerable non-poor, and non-poor households – for urban and rural areas alike. Extremely poor households already had high levels of debt as a proportion of income at the onset of the pandemic (22%), which further increased to 29%. A significant portion of rural households deemed “vulnerable non-poor” before the pandemic subsequently became poor<sup>1</sup> and struggled to regain their pre-COVID income (PPRC-BRAC, 2021).

### Policy implications

So what can be done to respond to poverty that is aggravated in contexts of flooding and intersecting crises? Key implications of the study for anti-poverty policy and programming are outlined in Table 1 below, for consideration by the Government of Bangladesh and other actors working on poverty eradication in rural Bangladesh.

**Table 1: Challenges and policy and programming interventions**

Challenge	Examples of interventions
Downward mobility or prolonged poverty in areas affected by flooding	<ul style="list-style-type: none"> <li>• Develop new or scaled up means of dealing with floods, e.g. through anticipatory cash transfers that are triggered automatically by flood projections and scaling up flood-indexed social insurance.</li> <li>• Expand disaster risk management responses to focus on livestock in episodes of flooding, e.g. through livestock insurance.</li> </ul>
Impoverishing effects of climate and economic crises	<ul style="list-style-type: none"> <li>• Promote adaptive dual cash transfer programmes, e.g. in the event of disasters and inflation, with quick roll-out, especially when the frequency or intensity of disasters increases.</li> <li>• Better balance microeconomic and macroeconomic management, recognising that the former is often highly relevant for people in and near poverty.</li> </ul>
Low-intensity violence combined with climate-related disasters	<ul style="list-style-type: none"> <li>• Better integrate conditions of insecurity or violence into disaster risk reduction (DRR) strategies, including by developing a cadre of DRR and conflict specialists.</li> <li>• Support peacebuilding especially in the leadup to elections and other periods of heightened violence.</li> </ul>

<sup>1</sup> The study identifies four income categories – non-poor, vulnerable non-poor, moderate poor, and extreme poor – based on their income in February 2020. Households with per capita monthly income above the median income (i.e. Bangladeshi Taka (BDT) 3,872 for 2020) are considered non-poor. Vulnerable non-poor in this survey are those whose reported income was between the upper poverty line income and the median income. Households with per capita monthly income above the lower and below or equal to the upper poverty lines have been categorised as poor. Households with per capita monthly income below or equal to the lower poverty line have been categorised as extreme poor. Upper and lower poverty lines are based on the inflation-adjusted divisional urban–rural upper poverty lines presented in the Household Income and Expenditure Survey 2016 report (PPRC-BRAC, 2021).

Limited resilience to crises amidst uncertainty

- Support graduation programmes that promote asset development and that have adequate breadth, e.g. to help reduce climate risks.
- Focus on risk reduction ‘including preventing hazards, reducing exposure and vulnerability and building adaptive capacity’ (UNDRR, 2021). This could include establishing early warning systems, climate-smart agricultural practices, and anticipatory cash transfers.



# 1. Introduction

Bangladesh has achieved strong poverty reduction since the turn of the century, with the share of people living in extreme poverty falling from 33.3% in 2000 to 13.5% in 2016, based on the international poverty line of US\$ 2.15 a day (WDI, 2024). The value of the Multidimensional Poverty Index (MDI), which captures the share of the population which is multidimensionally poor, along the dimensions of health, education, and standard of living, fell from 17.5% in 2014 to 10.1% in 2019 (UNDP, 2023). However, the rate of inequality and poverty reduction, especially poverty intensity and severity, was already stalling prior to the COVID-19 pandemic (analysis of WDI (2023)). Moreover, an estimated 1.6 million people fell into poverty during the pandemic (Tateno and Zoundi, 2021).

Although poverty has generally declined since the beginning of the new century, 4.6% of households fell into poverty between 2011 and 2019 at the US\$ 1.90 international poverty line, with the figure nearly doubling to 9.0% when the poverty line is doubled (see Figure 1). Reasons for impoverishment over the last two decades in Bangladesh have included climate-related disasters, ill health and death of earning household members, food price increases, high indebtedness, land disputes, limited education or job opportunities, and, more recently, the economic disruptions emerging during the COVID-19 pandemic (Hossain and Nargis, 2010; Davis, 2011; Scott and Diwakar, 2016; Diwakar, 2017; Quisumbing, 2011; Diwakar *et al.*, 2023).

The impact of the COVID-19 pandemic on impoverishment was also significant. Almost three quarter (73%) of rural dwellers categorised as vulnerable non-poor before the pandemic became impoverished in April 2020 according to a pandemic phone survey in Bangladesh, while in the urban survey sample, 87% of previously vulnerable non-poor respondents slipped into poverty (PRPC-BIGD 2020). This trend underscores the importance of adopting a poverty dynamics methodology, which is well suited to studying impoverishment during crises. In addition, as the intensity, frequency, and duration of disasters continues to increase due to climate change – there is a pressing need to develop new or scaled-up means of dealing with intersecting crises more generally.

Populations in Bangladesh face simultaneous exposure to climatic, conflict-related, economic, and health shocks. Bangladesh is the seventh most vulnerable country in the world to climate change (Eckstein, 2021). Floods are the most economically damaging disaster (World Bank, 2022) and 57.5% of the population is classified as being exposed to high flood risk (Rentschler, Salhab, and Jafino, 2022). From a conflict perspective, riots of a political nature are the most commonly reported event and typically spike around electoral cycles (Pollmann, 2018). Finally, the COVID-19 pandemic came as both a health and an economic shock, undoing significant progress in poverty reduction. Given the intersecting nature of these crises, there is a need to analyse their combined effect on poverty dynamics, and to identify different policy responses for different combinations of crises.

This paper examines climate-induced shocks and stressors, political violence, and economic crises (including during COVID-19), and their relationship with household poverty dynamics in rural Bangladesh. To do so, it brings together secondary literature on the pandemic (based on analysis of multiple rounds of the PPRC-BIGD COVID-19 from 2020-22) and four large datasets, comprising:

- three waves of the BIHS panel, from 2011/12 to 2019;
- the Global Flood Observatory yearly data, from 2010 to 2018;
- the CRU TS yearly data on drought, from 2010 to 2020; and
- the ACLED yearly data from 2010 to 2022.

The results of this analysis show that disasters, political violence, and economic shocks are associated with negative poverty dynamics – and that exposure to multiple crises can magnify the negative effects on poverty. Climate-related shocks affect a large share of the population, with four in five households living in a union (local government area) affected by flooding at some point over the BIHS survey period. According to our regression analysis, floods are associated with a higher likelihood of transient poverty, while political violence is related to a higher probability of chronic poverty (see Table 2 for definitions of poverty trajectories), which could be the case where flood responses are effective and help alleviate the negative effects of flooding on livelihoods. The rate of chronic and transient poverty is highest in areas experiencing multiple crises and shocks overlapping with floods, whether in terms of violence, economic shocks or ill health. Livelihoods can play an important role in mitigating the negative effects of shocks on poverty. In particular, our results suggest that consumption assets and land ownership can cushion the impact of flooding. Diversification of livelihoods (land cultivation alongside off-farm enterprise development) is a potentially effective coping mechanism amongst the poorest households at the conflict-climate nexus. In addition, the most commonly reported coping strategy to deal with a combined flood and conflict shock is taking out credit (reported by 39% of households), followed by distress asset sales (18%), and support from others, including remittances (15%).

The next section summarises the literature on complex crises and their relationship with poverty in Bangladesh. Section 3 then presents the datasets and methods used for the analysis. Section 4 presents descriptive statistics on poverty dynamics and complex crises, and correlates of regression-based analysis of poverty dynamics, including the role of disasters and political violence in moderating correlates of poverty dynamics. It also presents an analysis of how COVID-19 and subsequent layered crises have affected people's income and wellbeing across the welfare distribution, before assessing household coping strategies for these crises before and during the pandemic. Section 5 concludes with consideration of the policy implications of the study.

## 2. Poverty amidst climate change, insecurity and COVID-19 in Bangladesh

### 2.1 Disasters and poverty

Bangladesh was ranked the seventh country in the world most affected by climate change, according to the Climate Risk Index (CRI) report, with 185 extreme events recorded and 0.38 fatalities per 100,000 inhabitants over the past two decades (David Eckstein, 2021).<sup>2</sup>

Bangladesh is vulnerable to a number of climate-induced natural hazards, including tropical cyclones, tornadoes, floods, coastal and riverbank erosion, droughts, and landslides (LoGIC, 2023). Floods are a key climatic shock, with 57.5% of the population being exposed to high flood risk<sup>3</sup> (Rentschler, Salhab, and Jafino, 2022). Poverty reduction is substantially lower in areas where communities are exposed to multiple natural hazards, based on overlaying maps of natural hazards and poverty incidence (World Bank, 2022). Estimates show that one-third of agricultural GDP may be lost and 13.3 million people may become internal migrants<sup>4</sup> due to slow-onset climate events<sup>5</sup> in Bangladesh by 2050, further exacerbating the impact of disasters on poor and vulnerable populations, who are most reliant on agriculture and often face prohibitive migration costs (World Bank, 2022).

Given Bangladesh's climate vulnerability, there is a growing literature on the relationship between disasters and poverty in Bangladesh. Households affected by cyclones Sidr and/or Aila exhibited about 9 to 14 percentage point increase in vulnerability in terms of meal consumption frequencies (Hasan, 2014). A qualitative investigation revealed that communities in the Sundarbans often suffer loss of life, agricultural land, houses, and farms as a result of cyclones and flooding (Islam and Chuenpagdee, 2013). There is moreover a poverty trap cycle amongst low-income urban populations in Dhaka after flooding, due to a lack of recognition of informal settlements and thus lack of proper organisational access to them (Haque, 2020). Such studies typically either rely on self-reported measures of climatic shocks, are qualitative in nature, or do not consider poverty dynamics. Analysis of satellite observations show that rainfall and self-reported exposure are weak proxies for true flood exposure in Bangladesh (Guiteras, Jina, and Mobarak, 2015). We use remotely sensed data on

<sup>2</sup> In comparison, Puerto Rico, which has been classified as the country most affected by climate change between 2000–2019, had 24 extreme events and recorded 4.12 fatalities per 100,000 inhabitants. In terms of other climate-vulnerable countries in the same region as Bangladesh, Pakistan ranks eighth on the CRI index, with 173 extreme events and 0.30 fatalities per 100,000 inhabitants, while Nepal ranks 10th, with 191 extreme events and 0.82 fatalities per 100,000 inhabitants.

<sup>3</sup> High flood risk is defined as inundation depths of up to 1.5 metres. Within this category, a significant share of the affected population is expected to face risk to life, especially if flood waters have a current, and major disruptions to livelihoods. Flood data are based on the 2019 version of the global Fathom flood hazard dataset, which provides gridded information on flood extents and flood depths at a 3 arcsecond resolution, simulating flood events with return periods of five, 20, 50, 100, 250, and 500 years for all countries. Population density data are taken from the Global High Resolution Population dataset (WPGP) developed by WorldPop.

<sup>4</sup> Internal migration is defined as longer-term change of habitual place of residence. Slow-onset climate change affects the drivers of movement, on a continuum between more voluntary and more forced movement.

<sup>5</sup> Slow-onset events refers to water stress, crop failure, and sea-level rise.

flooding and droughts to generate evidence on the relationship between climate and poverty dynamics, whilst considering the context of conflict and economic crises (see Section 4).

## 2.2 COVID-19, economic crises and poverty

The COVID-19 pandemic came both as a health and an economic shock globally, curbing economic activity under government-imposed lockdowns and restrictions. Bangladesh was no exception. Following the discovery of the first COVID -19 case on 8 March 2020, the Government of Bangladesh announced a general holiday from 26 March to 31 May 2020, imposing restrictions on businesses and domestic economic activities nationwide. An early rapid assessment shows that 73% of rural respondents categorised as vulnerable non-poor before the pandemic became impoverished in April 2020 (PRPC-BIGD 2020). In the urban sample, 87% of the population that were previously vulnerable non-poor slipped into poverty. In line with this, a survey conducted in May–June 2020 found an average drop in monthly income from a pre- COVID level of around 66%, which was largest among temporary workers (68%), ethnic minority groups (69%), and people with disabilities (64.5%) (UNDP, 2021).

A survey of garment factory workers in Bangladesh at the time of the COVID-19 disruptions and factory closures in April 2020 found that incomes fell by half in April but recovered to 90% of pre-COVID levels in May, while food expenditures fell by 8% in April but recovered fully in May (Rabbani, Uckat, and Woodruff, 2021). According to rapid assessment phone surveys carried out by PPRC-BRAC (2021), 76% of the respondents that were employed in February 2020 reported being unemployed in April 2020 in the urban sample, with that figure being 54% in the rural sample. The impact of COVID-19 on livelihoods can also be seen through loss of earnings. Incomes of the non-poor households took the largest hit, declining by 40% in August 2021 from pre-pandemic levels. In terms of vulnerable non-poor and moderate poor households, incomes dropped by 21% and 20%, respectively. Interestingly, the incomes of extreme poor households not only recovered fully, but actually rose by 16% relative to pre-COVID levels (Rahman *et al.*, 2022). It should be noted that phone surveys typically do not capture the poorest households, who may have limited access to phones and network coverage.

## 2.3 Violence and poverty

Violence in Bangladesh principally involves riots and protests of a political nature, which accounted for the biggest share (around 60%) of total reported violent events in Bangladesh between 2010 and 2018, according to the ACLED database (Pollmann, 2018). To a lesser extent, Bangladesh experiences violence against civilians (20% of all reported events), followed by battles (around 18%), and remote violence<sup>6</sup> (around 2%). Instances of violence

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<sup>6</sup> Remote violence refers to events in which the tool used to engage in conflict does not require the physical presence of the perpetrator. Battles are violent clashes between at least two armed groups. Violence against civilians involves violent attacks on unarmed civilians. Riots are a violent demonstration, often involving a spontaneous action by unorganised, unaffiliated members of society.

tend to spike around electoral cycles and occur between supporters of the two main political parties in Bangladesh. Violence was reported to rise for several months in the run up to the January 2024 election in Bangladesh (Pandya, 2024), characterised by clashes between protesters from both parties and the police.

Conflict and violence are also a driver of forced displacement. In 2022, the number of people displaced by war, persecution, violence, and human rights abuses stood at a record 108.4 million globally (UNHCR, 2022). The displaced Rohingya population fleeing conflict in Myanmar began crossing into Bangladesh in 2017, causing a refugee crisis and putting pressure on the resources of the host community (Pavlik, 2018). Displaced Rohingya settled in the Cox's Bazar Camp in Bangladesh have inadequate access to food, health facilities, and safe housing camps (Islam *et al.*, 2022). Beyond evidence around the deteriorating humanitarian conditions of the Rohingya population, literature on the link between violence and poverty in Bangladesh is largely missing. We aim to fill this research gap by investigating the relationship between intersecting crises and poverty dynamics in Bangladesh, including violence.

### 3. Data and methods

This section includes information on data, variables and methods consistent across the set of emerging working papers on poverty dynamics and complex crises, copied from (with minor adaptations) and as first presented in Diwakar and Brzezinska (2023). In terms of data, it brings together four datasets on poverty and crises, and secondary literature from a fifth dataset on poverty during the pandemic. The datasets and key independent and outcome variables are presented in Table 2, while the study’s methods are outlined in Box 1.

**Table 2: Datasets and variables analysed**

Dataset	Variables
<p><b>Poverty:</b> BIHS includes data on demographics, labour and welfare. The panel survey was conducted in 2011/12, 2015, and 2019 by the International Food Policy Research Institute. It is nationally representative of rural Bangladesh, and rural areas in the seven administrative divisions present at the baseline. We rely on a balanced panel of 5,019 households available across survey rounds. In addition, to understand poverty dynamics during the pandemic, we rely on secondary literature analysing five rounds of the PPRC-BIGD 2020-21 livelihoods survey in rural areas and urban low-income neighbourhoods.</p>	<ul style="list-style-type: none"> <li>• Chronic poverty in our analysis refers to households under the poverty line across waves.</li> <li>• Transience (which we further disaggregate descriptively) refers to the process whereby a household that is non-poor subsequently slips into poverty – hence experiencing impoverishment, a transitory escape from poverty, or churning around the poverty line.</li> <li>• Resilience refers to households that escape and remain out of poverty over the long term (a sustained poverty escape), or remain never poor across survey waves.</li> </ul> <p>Source: Adapted from Shepherd <i>et al.</i> (2014).</p>
<p><b>Armed conflict:</b> Data from ACLED, containing geolocated conflict events and fatalities. We rely on data on political violence in Bangladesh from 2010 to 2019 for analysis, in order to match the time period of the poverty data.</p>	<ul style="list-style-type: none"> <li>• Number of fatalities due to riots, armed clashes, violence against civilians, protests, and other political violence between 2011 and 2019.</li> <li>• Number of fatalities in the year preceding and during the panel survey (for fixed effects model).</li> </ul>
<p><b>Floods:</b> Data from the Global Flood Observatory. Estimates of flood are developed using nearly two decades of daily satellite imagery at 250 metre resolution. Estimates analyse over 913 large flood events from 2000 to 2018 (latest available data), estimating 2.23 million km<sup>2</sup> of flooded area and 290 million people directly affected (Tellman <i>et al.</i>, 2021).</p>	<ul style="list-style-type: none"> <li>• Household living in a union classified as flooded in the Global Flood Observatory between 2011 and 2018. Each grid cell has a binary variable indicating whether the area was flooded, the flood duration, and the population affected.</li> <li>• Flood experience in the year preceding, or during, the panel survey (for fixed effects model).</li> </ul>
<p><b>Droughts:</b> Data on global precipitation and potential evapotranspiration from the Version 4 CRU TS for 2010–2020. Monthly values of precipitation are derived from weather station observations globally. Potential evapotranspiration (PET) considers mean temperature, vapour pressure, cloud cover, and average wind field values (Harris <i>et al.</i>, 2020). The difference between monthly precipitation and PET gives the water balance that is the basis for</p>	<ul style="list-style-type: none"> <li>• Drought intensity is measured using SPEI (Vicente-Serrano, Beguería, and López-Moreno, 2010).<sup>7</sup> We consider the presence of drought (SPEI &lt;-1.5) over 2010–2019, covering a period just prior to and during the panel.</li> <li>• Drought experience using SPEI&lt;-1.5 in the year preceding, or during, the panel survey (for fixed effects model).</li> </ul>

<sup>7</sup> We define the SPEI from 2000 to 2018, relative to the reference from 1981 to the year for which SPEI is defined. We calculate SPEI for each 0.5 x 0.5 degrees grid cell (about 55 km at the equator) and assign that value to every household that falls within that grid cell.

<b>Standardised Precipitation Evapotranspiration Index (SPEI) calculations.</b>	
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As summarised in Diwakar and Brzezinska (2023), where a similar combination of data were used, these datasets have advantages and limitations. A clear advantage is the geolocal data on crises, which is merged at the union level with the household survey data, which offers a granular analysis of relationships. Another key advantage is the panel construction of the dataset, which allows for dynamics to be assessed. Even so, there are limitations, including different levels of spatial resolution across datasets. While the flood data are available at 250 metre resolution and drought data at 0.5 degrees resolution (approximately 50 km x 50 km), BIHS data only contain union-level identifiers. This means that both climatic shocks (drought and flood) are defined at the level of the union, with the assumption that all households falling within the union experiencing the shock will be affected. In addition, underreporting is also common in conflict data (Eck, 2012). We use different measures of crises and other sensitivity analysis to address or otherwise mitigate some of these concerns.<sup>8</sup>

### Box 1: Methods of analysis

We first examine key correlates of poverty dynamics in rural Bangladesh, relying on the BIHS, merged with conflict and disaster data. We rely on a multinomial logistic regression, given that the different poverty trajectories are our outcome. In the model:

$$Pr(\text{Trajectory}_{i,t} = 1 \mid \beta, v_{i,t}) = F(\beta_0 + \beta_1 \text{Crises} + \beta_2 \text{Activity}_{i,t} + \beta_3 \text{Assets} + \beta_4 \text{Head}_{i,t} + \beta_5 \text{Area}_{i,t})$$

where

*Trajectory<sub>i</sub>* as the probability of household *i* being chronically poor, experiencing poverty transience, or exhibiting resilience;

*Crises* is a vector capturing the presence of actual flooding, drought, fatalities related to political violence, as well as self-reported price, revenue and health shocks over the survey waves, thus capturing a range of crises as well as other shocks and stressors;

*Activities* includes the economic activities of the household head (whether they work in agriculture, a non-farm enterprise, or in wage or salaried employment);

*Assets* are defined as the log of consumer durables and the ownership of cultivable land;

*Area* is a vector covering whether the household resides in an urban or rural area, and the state-level unemployment rate; and

*H* is a vector of household and demographic controls (religion, gender, age and age-squared, education, and household size).

In addition to our main model, we also examine the interaction of crises with household livelihoods. This is to understand the extent to which disasters, violence, and economic and health shocks might mediate the relationship between livelihood profiles and poverty dynamics. In our multinomial logistic models, we cluster standard errors at the level of the enumeration area. To further assess sensitivity alongside our multiple measures of crises we also use a linear panel model with fixed effects estimators to examine correlates of changing poverty status, where we rely on the same set of household and area regressors but take into consideration its time variance to further exploit the panel structure of the data. This is also partly an attempt to mitigate limitations stemming from potential endogeneity, given the complex relationships between crises and poverty, as noted in Section 2, and as

<sup>8</sup> We also rely on the wider literature on poverty dynamics using BIHS, which has found limited evidence that attrition is non-random, and thus we proceed without adjusting for attrition (Ahmed and Tauseef, 2022).

we discuss in more detail in the Annex. In all cases, we calculate marginal effects of our variables.

Alongside the regression analysis of pre-pandemic welfare, we also examine changes over time during the pandemic, drawing on insights from existing literature based on the PPRC-BIGD livelihoods survey undertaken between 2020 and 2022. The purpose of this is to understand how COVID-19 may have affected some of the key activities that correlate with poverty, and thus acted as an additional crisis that is hypothesised to affect wellbeing and poverty, in turn.

Finally, we explore how households coped prior to and during the pandemic, and amidst different shocks, including conflict and disasters, to assess implications for their future wellbeing. Across models and methods, it is worth stressing that our analysis is not causal but descriptive and/or indicative of correlations between key variables. Even so, they remain important in providing insights into the presence of poverty dynamics and wellbeing amidst complex crises.

**Source: Adapted from Diwakar and Brzezinska (2023)**



## 4. Crises and poverty dynamics

### 4.1 Presence of poverty dynamics amidst crises

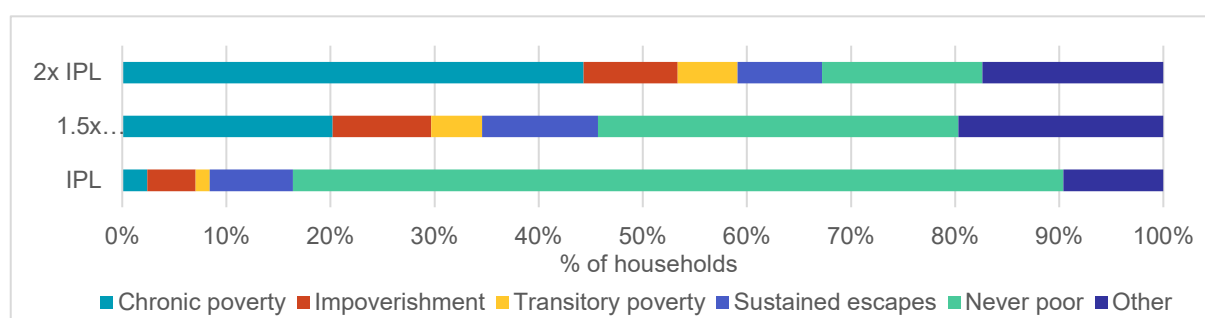
#### Key messages

- Rates of chronic poverty (2.4%) and impoverishment (4.6%) were relatively low in rural Bangladesh between 2011 and 2019. However, these shares drastically increase (to 44.3% and 9.0%, respectively) when the poverty line is doubled. These results suggest that many Bangladeshis remain highly vulnerable to long-term poverty.
- Regional disaggregation of poverty suggests that areas with a strong prevalence of flooding may account for much of this precarity.
- Crises beyond flooding, such as drought, political violence, and economic crisis, have contributed to this context of vulnerability. Intersecting crises can combine to prolong poverty or lower household resilience.

#### High vulnerability, with wide geographical differences

A small share of households (2.4%) was in chronic extreme poverty across the survey period from 2011 to 2019. However, this number increases over eightfold when we employ a slightly higher line equivalent to 1.5 times the US\$ 1.90 poverty line. The share of impoverishment also doubles when we rely on this slightly higher poverty line. More broadly, a large share of households are in transient poverty – they have become impoverished, experienced transitory poverty, or have churned around the poverty line. Together, these results suggest that a large share of Bangladeshis may not be in chronic extreme poverty but are highly vulnerable to it.

**Figure 1: Poverty dynamics using US\$ 1.90 international poverty line (IPL – 2011 purchasing power parity) between 2011-19**



Source: Analysis of BIHS 2011–19.

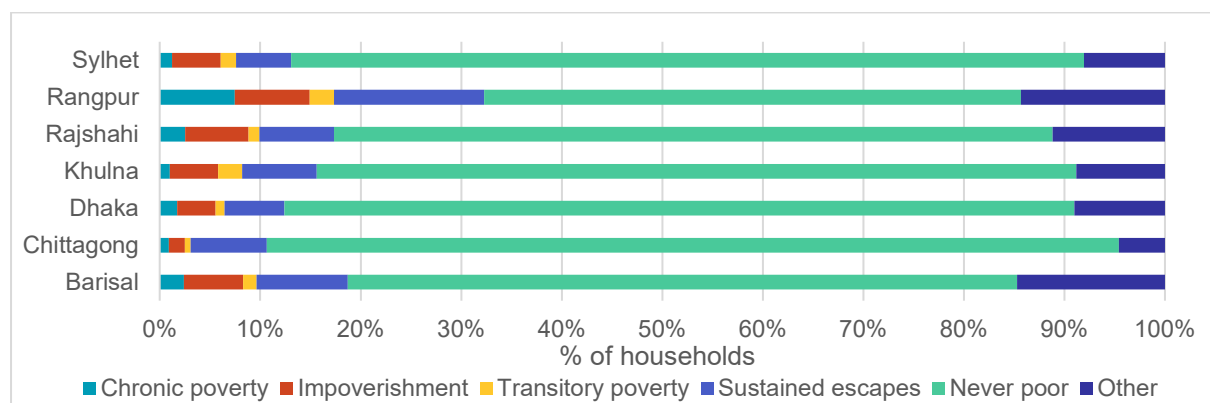
There are various household-level correlates of these poverty trajectories, as shown in column (2) of Table A2 in the Annex, which presents results from the main multinomial logit model. For example, a larger household size is associated with a higher probability of chronic and transitory poverty, as well as with a lower probability of resilience. A household head who has completed primary education is associated with a lower probability of chronic and transitory poverty, and a higher probability of resilience, pointing to the importance of human capital.

Engagement of the household head in agriculture (as a day labourer or on the household's own land) is positively related with chronic poverty, possibly due to vulnerability of agriculture to climatic shocks but also reflecting the reality whereby the poorest people are

frequently engaged in agriculture. Additionally, labour contracts in agriculture tend to be informal, largely insecure, and highly seasonal – contributing to the precarious nature of employment in this sector. A lack of access to agricultural markets, due to distance, lack of transport infrastructure, or informational barriers, combined with the perishable nature of agricultural goods – could constitute further factors that keep agricultural households in chronic poverty. A higher value of assets is associated with a lower probability of chronic and transient poverty, and a higher probability of resilience. Similarly, livestock holdings are negatively related with chronic poverty. This potentially highlights the importance of asset accumulation, diversification away from agriculture, reducing household size, and investment in education as possible pathways out of poverty.

There are also stark regional differences across poverty profiles. Chronic poverty and transient poverty are highest in Rangpur, though rates of sustained escapes from poverty is also especially high in the division. Rangpur more broadly has been a division with historically high poverty rates and a largely agrarian context. The presence of drought-like conditions is also particularly high in Rangpur, but also in Chittagong. In spite of this, Chittagong has one of the highest rates of households who have never been in poverty, which could reflect the high rates of international out-migration in the area (e.g. to the Middle East and South East Asia). On the other hand, floods in Bangladesh have been particularly pronounced in Chittagong’s east and southeast divisions, including Khulna, Barisal, and Rajshahi, where rates of impoverishment are also high or close to the country-wide average.

**Figure 2: Poverty dynamics by division, 2011–19**



Note: Mymensingh is contained within Dhaka in this figure, as the division was only formed in 2015.  
 Source: analysis of BIHS 2011–19.

### Frequent crises over space and time

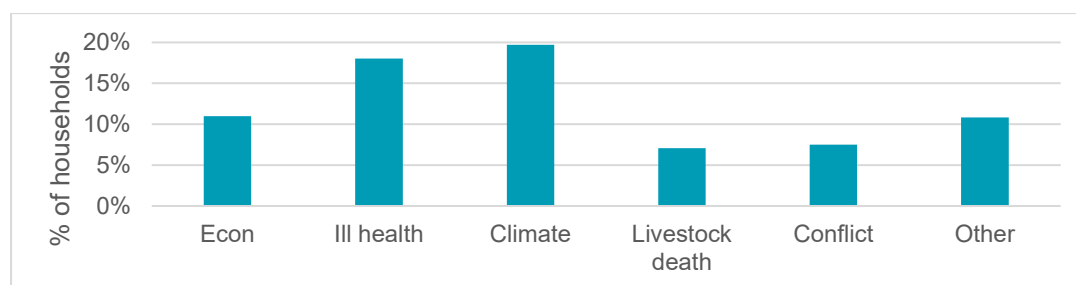
Over the panel survey period, four in five households were living in a union affected by flooding at some point over the survey period. There is also a clear temporal dimension to climate-related disasters. During the period of BIHS data for which flood data are available (2010-2018), the number of floods experienced in the country peaked in 2010, though it remained pronounced especially in 2014 and 2017. Droughts also affected a large number of districts between 2010 and 2020. The presence of disaster-affectedness reported based

on actual flood data in Figure 4 is higher than the share reported in Figure 3. This is because the latter is based on households who perceive and self-report having experienced negative shocks affecting their income or wellbeing, which is a subset of households living in disaster-affected areas more broadly.

**Box 2: Self-reported data on negative shocks across the survey period (2011–19)**

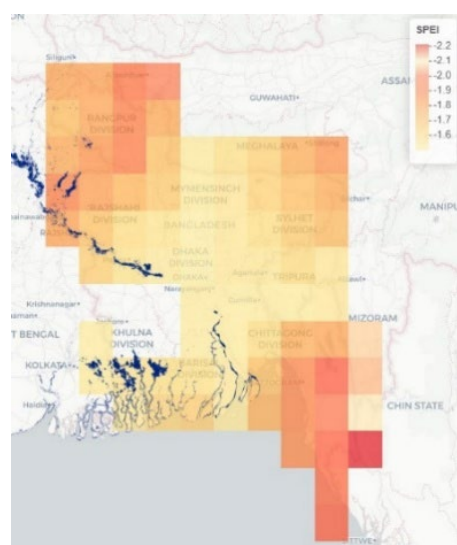
Figure 3 presents self-reported negative shocks and crises across the survey waves, based on data from the 12 months preceding the survey. The most prevalent shocks during the survey period were climate-related disasters (e.g. floods, too much or too little rain, cyclone, fire, river erosion that caused difficult times or the loss of assets), which were reported by 20% of households in any survey period. Flooding constituted a large share (42%) of all climate-related disasters reported. Ill health (e.g. death of the main family earner or other member, illness or injury of household member) was also common, affecting 18% of households.<sup>9</sup> The presence of price and revenue shocks was somewhat common (e.g. loss of a regular job, food price inflation, cut off or decrease of regular remittances), affecting 11% of households. Finally, different types of insecurity (e.g. theft of farm assets, court case, or hartals/ strikes/ political unrest) and livestock death (those not attributed to climate-related disasters) each affected between 7% and 8% of households.

**Figure 3: Prevalence of self-reported shocks between 2011 and 2019**



Source: Analysis of BIHS 2011–19.

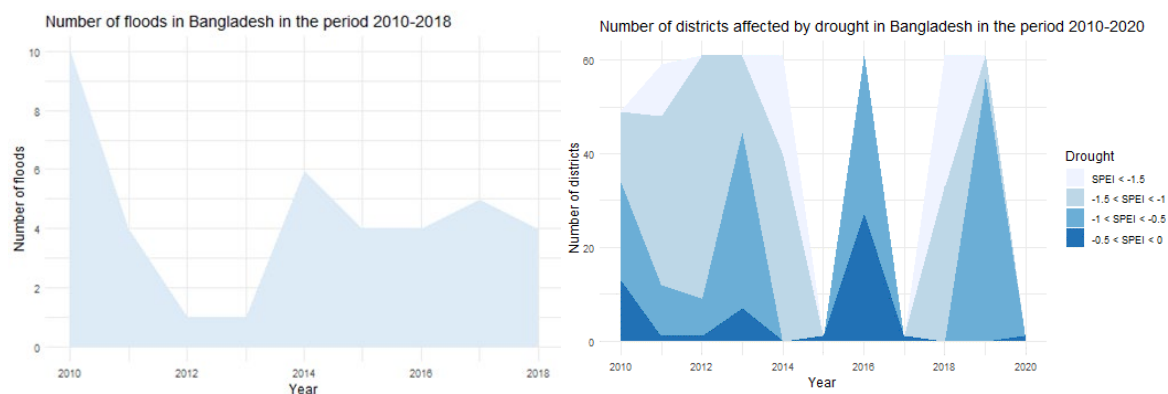
**Figure 4: Spatial variation in the worst drought between 2010 and 2020 (measured by SPEI) and all flooded areas in Bangladesh between 2010 and 2018 (shown in blue)**



<sup>9</sup> We exclude a shock response which refers to households paying medical expenses as a result of illness/ injury, to avoid double counting with the actual illness/injury response.

Notes: We focus on the worst drought, given that drought was prevalent across much of the country at some point over the survey period. Even though flooding appears minimal and localised, floods occur in densely populated areas and thus affect a large share of households. Source: Analysis of Global Flood Observatory (2010–18) and CRU TS (2010–20).

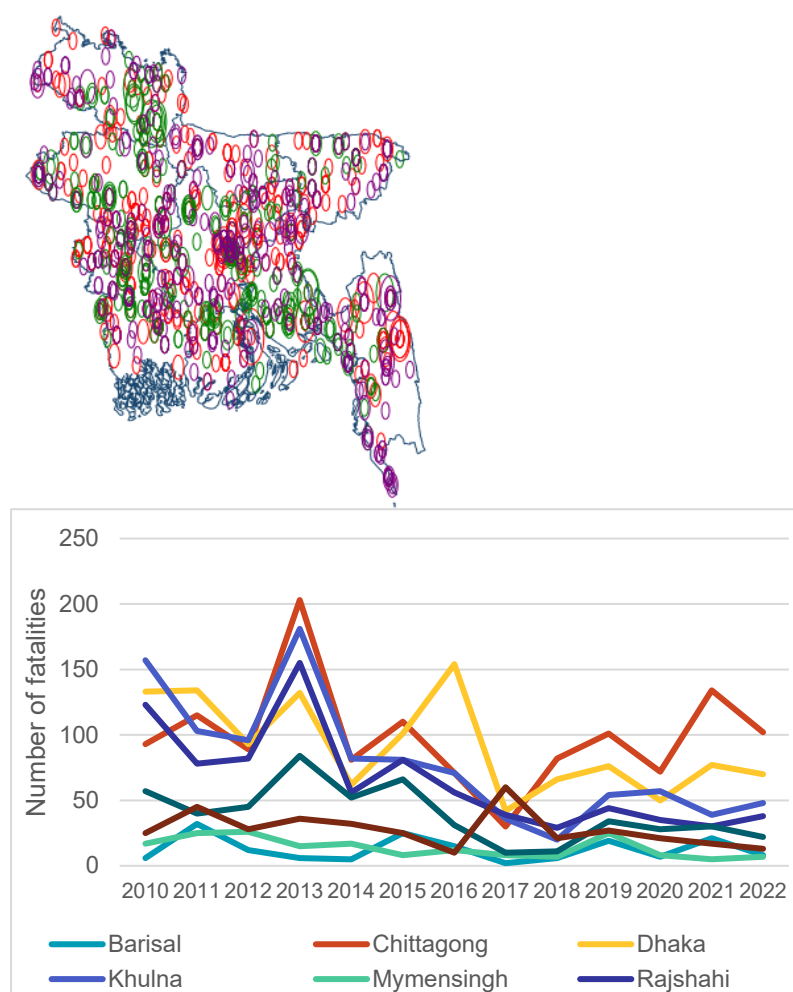
**Figure 5: Temporal changes in floods and drought over survey period**



Source: Analysis of Global Flood Observatory (2010–18) and CRU TS (2010–20).

Fatalities related to conflict and political violence also took place across the country during the panel waves: 5,574 people died in the country on account of violence between 2011 and 2019. Sub-nationally, these deaths were often located within the more populated divisions of Chittagong and Dhaka (where between 21% and 23% of the country’s fatalities were located in each division), but also in Khulna with a relatively lower population size (home to 18% of the country’s fatalities) (analysis of ACLED data) (Figure 6, left). By survey year, across the country, this included 573 (in 2011), 502 (in 2015) and 382 (in 2019) deaths, mainly as a result of violence against civilians, riots, and armed clashes (analysis of ACLED data). In recent years, violence against civilians (especially attacks) and riots (especially mob violence) continue to be the main type of event contributing to fatalities, with hotspots in Chittagong and Dhaka (Figure 6, right).

**Figure 6: Fatalities related to violence in survey years, spatially (left) and temporally by division (right)**



Source: Analysis of ACLED (2023). Note: red= 2011, green= 2015, purple= 2019.

We also extend the descriptive analysis above to a regression framework, where these crises are associated with negative poverty trajectories where significant (Annex Table A2). In particular, fatalities from political violence and drought are both associated with a higher probability of chronic poverty, while drought and floods over the survey period are also associated with a higher probability of poverty transience and lower probability of resilience. These relationships remain when including other controls that might affect poverty trajectories, though results are only significant in the case of violence (in relation to chronic poverty) and floods (in relation to transient poverty). This result suggests that existing flood relief efforts might be insufficient to guard against poverty transience and mitigate losses. This could be due to political factors excluding the most vulnerable households from social protection. The relationship between violence and chronic poverty could be explained by the inability to accumulate assets, income loss, and the exclusion of members of households from labour markets and education due to insecurity.

At higher poverty lines, both floods and drought in the full model are associated with a higher probability of transient poverty, while drought is also associated with a lower probability of resilience. These findings suggest that **political violence is linked to negative**

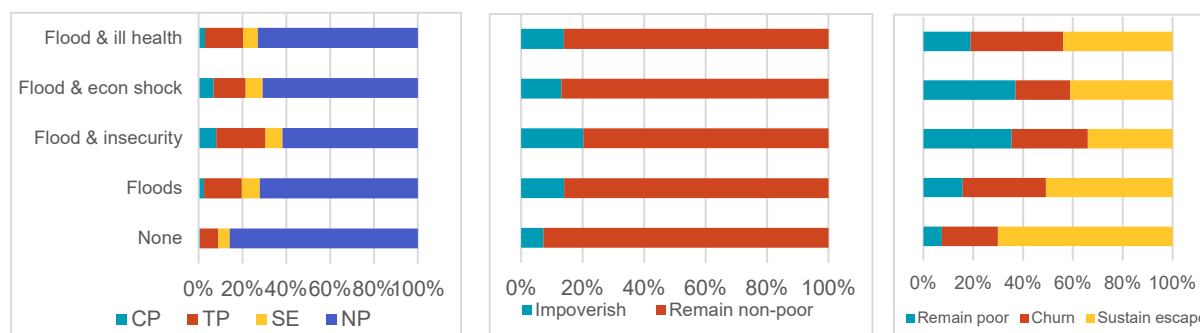
**poverty trajectories amongst the poorest households, while conditions of drought and flooding instead are associated with downward mobility or churning into and out of poverty in ways that may prevent households from remaining out of poverty over time.**

**Impoverishing effects of crises accentuated at their intersections**

There was a higher rate of transient poverty amongst households living in an area that experienced floods relative to living in an area where these disasters did not occur over the survey period (Figure 7). These trajectories were similar whether focusing on households that reported droughts. There is likely to be a degree of bidirectionality, where floods, for example, might drive impoverishment, but equally more marginalised populations may be residing in more flood-prone areas. At the same time, as much as 62% of households reported that flooding severely or extremely severely affected their food consumption, while **73% of households reported flooding also severely or extremely severely affected their economic conditions**, with rates highest in Rangpur (95%) and lowest in Rajshahi (54%) (analysis of BIHS 2019). This suggests that people believe floods contribute to their downward income mobility and food insecurity.

We also consider the presence of intersecting crises, and observe three key results. First, the rate of chronic and transient poverty is highest in areas experiencing multiple crises and shocks overlapping with floods, whether in terms of violence, economic shocks or ill health (Figure 7, left). Second, these **negative poverty trajectories amidst intersecting crises are amplified amongst households who begin the period in poverty**, which might reflect underlying vulnerabilities that make these households less able to cope with crises. Indeed, amongst these households, the share that remain poor over the survey period (i.e. in chronic poverty) is higher at the intersection of floods with other crises, rather than for households only experiencing flooding (Figure 7, centre). Instead, amongst households beginning the period non-poor, a similar share of households experience impoverishment through flooding alone, as compared to flooding intersecting with health or economic shocks. Finally, regardless of starting poverty status, the largest share of negative trajectories is observed at the climate–conflict nexus, suggesting that violence may be playing a particularly strong role in eroding household resilience in the context of flooding.

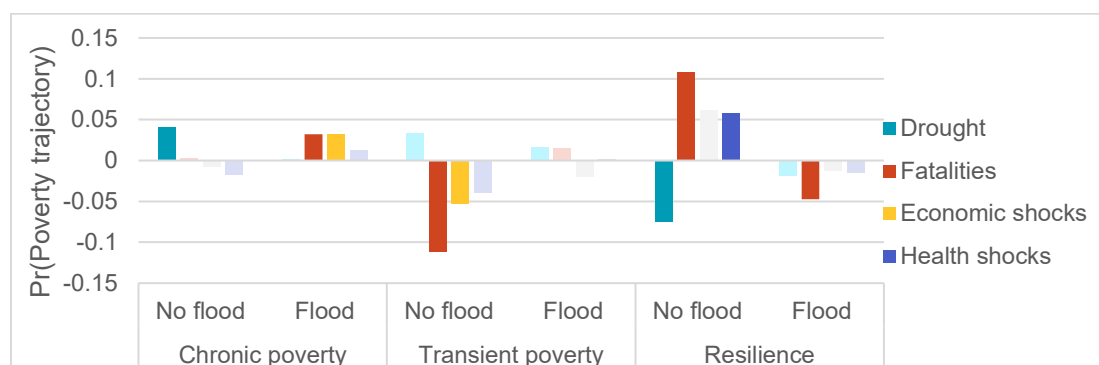
**Figure 7: Poverty dynamics amidst intersecting floods and other crises/ shocks between 2011 and 2019**



Notes: Left= overall, centre= households beginning the survey period in 2011 in poverty, right= households beginning non-poor. Ill health and economic shocks are based on self-reported data from the BIHS, while flooding and insecurity draws on actual data from Global Flood Observatory and ACLED, respectively. Source: Analysis of BIHS (2011–19), ACLED (2011–19), Global Flood Observatory (2010–18) and CRU TS (2010–20).

Regression analysis further supports these results. Households that experience both floods and violence experience a higher probability of chronic poverty and lower probability of resilience than those who experience just floods. The presence of economic shocks (related to price and revenue) and health shocks are also each associated with a higher probability of chronic poverty amongst households experiencing floods, again compared to households only experiencing floods but not the other shocks. These **results reinforce the idea that intersecting crises, such as floods and political violence, as well as economic and health shocks that households may face, can combine to prolong poverty or lower household resilience**. Sensitivity analysis further exploiting the panel structure of the data and adopting fixed effects modelling further reinforces these findings (Annex Tables A3-A5).

**Figure 8: Average marginal effects of crises/ shocks (2011–19) on poverty trajectory, by floods**



Note: Figure refers to four models, examining the intersection of flooding with 1) drought, 2) fatalities, 3) economic shocks, and 4) health shocks. All controls are the same as in the main equation. Source: Analysis of BIHS (2011–19), ACLED (2011–19), Global Flood Observatory (2010–18) and CRU TS (2010–20).

## 4.2 Poverty of people and places: spotlight on livelihoods and coping strategies amidst floods and intersecting crises

### Key messages

- **Livelihood and asset-based strategies amidst flooding point to the importance of land and consumption assets, which may be sufficiently liquid to allow for them to be sold in times of crises and so can act as a protective factor against impoverishment.**
- **When faced with violence and flooding, results point to the importance of diversification of livelihoods – in particular, the cultivation of land and development of off-farm enterprises – which is associated with a lower probability of chronic poverty.**
- **The interface of flooding with economic (price/ revenue) shocks is more precarious. Cultivable land ownership is an important protective factor for richer households, whereas diversification is no longer an adequate cushion given the multi-pronged economic pressures.**
- **There was reduced means of coping amidst intersecting crises in response to flooding and economic shocks, including during the onset of the COVID-19 pandemic. Indeed,**

**many rural households had become impoverished in 2020 and struggled to regain their pre-COVID income by 2021.**

We next consider how livelihoods might moderate the relationships between crises and negative poverty trajectories. We focus first on floods, given that floods are a crisis to which a large share of households are exposed. We then examine the role of livelihoods in moderating the relationship between other crises and negative poverty trajectories for households living in flood-affected areas, which helps draw attention to intersecting crises more centrally.

### **Livelihood and asset-based strategies amidst flooding**

Different types of assets can help mitigate negative poverty trajectories amidst disasters. For example, assets could be used as a cushion that may be sold during times of distress, as a coping response. Regression results indicate that a higher value of assets<sup>10</sup> is associated with a lower probability of chronic poverty and impoverishment, and a higher probability of resilience amongst households experiencing floods. Figure 9 shows the average marginal effects of types of assets (consumable durables and agricultural implements) on poverty trajectories, moderated by the presence of flooding, where solid bars indicate effects that are statistically significant. This indicates the impact of a one unit change in the value of assets on the likelihood of a poverty trajectory, averaged across all values of assets. When disaggregating by type of asset, the effect size is much larger for consumer durables than for agricultural implements (Figure 10), suggesting that **it is especially the presence of consumption assets that can be sold in times of crises that may offer an important source of liquidity enabling households to smooth consumption amidst flooding**. This could be due to the fact that the market for agricultural implements tends to be less dynamic than that for consumables – given that implements are significantly heavier, more difficult to transport, and in lower demand.

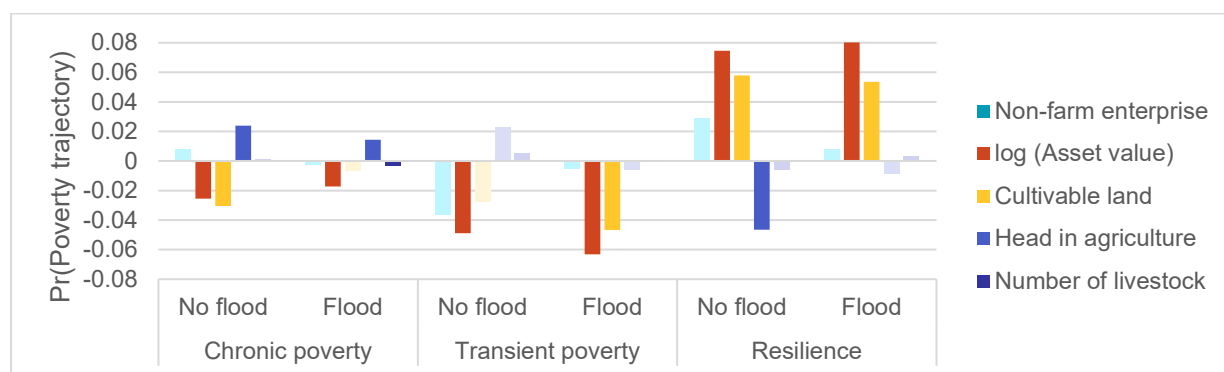
Results in Figure 9 also show that ownership of cultivable land is one type of agricultural asset that is strongly associated with a lower probability of transient poverty and higher probability of resilience amidst shocks. Interestingly, the role of cultivable land in guarding against transient poverty is not significant amongst households not experiencing floods. These **results point to the important role of land in acting as an important buffer amidst flooding**, despite the challenges that households may experience due to flooded farmland. On the other hand, the role of livestock (mainly bulls, cows and goats) is more subdued, with minimal effect sizes. The weak relationship between livestock and resilience, earlier found to be an important store of value and pathway out of poverty in rural Bangladesh (Scott et al., 2016), may reflect a context where livestock deaths have been common over the survey years including as a result of floods.

<sup>10</sup> This includes consumer durables like jewellery, pots, and radios; those self-reported as both consumer and productive assets, which includes jewellery but also boats, motorcycles, and fishing nets for example; and agricultural implements, like tube wells, power tillers, and motor pumps.



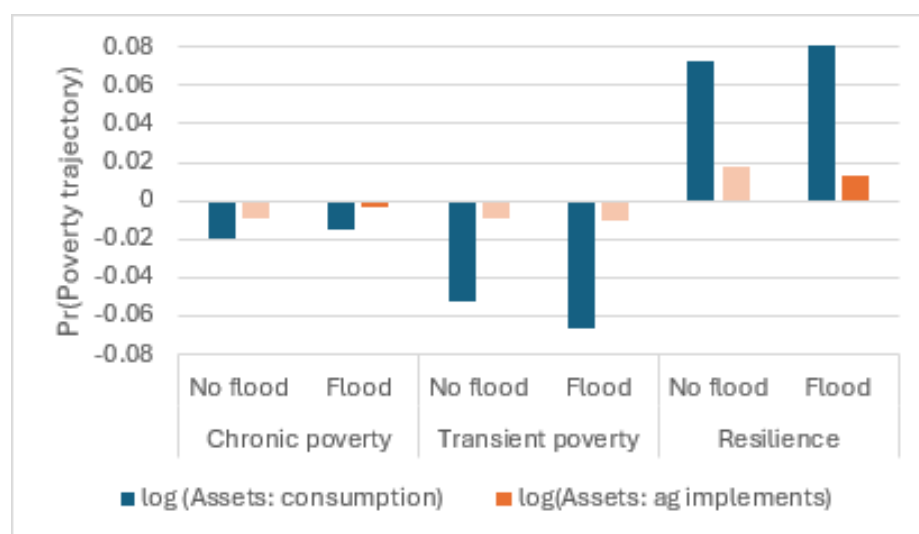
While asset development broadly appears to be an important strategy in guarding against flooding, the role of specific livelihoods instead appears to be limited. Indeed, on average, **agricultural work (wage piecework labour or on households’ own farms) and non-farm enterprise development is not a significant correlate of resilience or transient poverty amidst flooding** (Figure 9). However, the household head’s engagement in agriculture is associated with a higher probability of chronic poverty regardless of the presence of floods (Figure 10). This likely reflects the fact that most people living in poverty are employed in agriculture. On the other hand, the lack of significance of non-farm enterprises (dominated especially by retail-related businesses) more broadly may reflect risks inherent in these enterprises. This suggests that unmitigated risk in agriculture and non-farm enterprises may compromise the ability of these livelihood strategies to prevent downward poverty trajectories, or promote upward mobility.

**Figure 9: Average marginal effects of livelihoods and assets on poverty trajectory, by floods**



Note: Figure refers to five models, examining the intersection of flooding with 1) non-farm enterprises, 2) head’s engagement in agriculture, 3) consumer durable asset value, 4) cultivable land, and 5) number of livestock. Highlighted bars refer to results that are statistically significant at conventional levels ( $p < 0.1$ ). All controls are the same as in the equation in Box 1. Source: Analysis of BIHS (2011–19), ACLED (2011–19), Global Flood Observatory (2010–18) and CRU TS (2010–20).

**Figure 10: Average marginal effects of agricultural assets on poverty trajectory, by flooding**



Note: Figure refers to two models, examining the intersection of flooding with 1) consumer durable asset value, and 2) agricultural implements’ asset value. All controls are the same as in the equation in Box 1. :

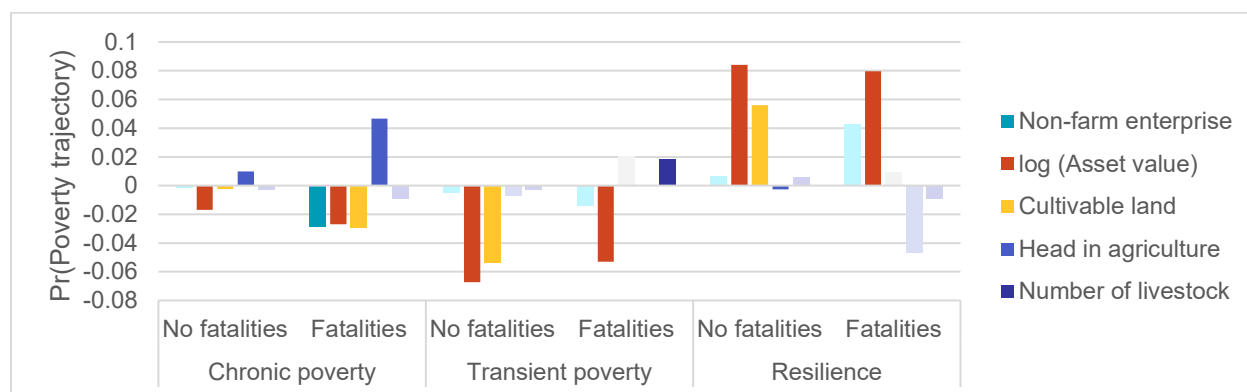
Analysis of BIHS (2011–19), ACLED (2011–19), Global Flood Observatory (2010–18) and CRU TS (2010–20).

### Livelihood strategies amidst floods and intersecting crises

We next consider how livelihood strategies may help mitigate negative poverty trajectories for populations living in areas that are affected by flooding and other crises. We first consider results at the conflict–climate nexus. Figure 11 shows the average marginal effects of livelihoods and assets (non-farm enterprises, asset value, cultivable land, engagement of household head in agriculture, and number of livestock) on poverty trajectories among households residing in flood-affected areas, moderated by the presence of violence, where solid bars indicate effects that are statistically significant. This indicates the impact of a one unit change in the value of indicators related to livelihoods and assets on the likelihood of a poverty trajectory of households in flood-affected areas, averaged across all observations.

Households living in flood-affected areas that own a non-farm enterprise experience a lower probability of chronic poverty amidst violence. By contrast, the results related to agricultural activities and assets are mixed. On the one hand, the role of cultivable land ownership has a similar relationship to NFEs in possibly mitigating the adverse effects of violence amidst flooding. On the other hand, a household’s engagement in agriculture is associated with a higher probability of chronic poverty amidst violence and flooding, again likely reflecting again its role as a mainstay amongst people in poverty. Moreover, a higher number of livestock is now associated with a higher probability of impoverishment amidst violence and flooding, which may reflect households’ reliance on livestock in times of distress, or a context in which livestock deaths are highly common and may even result from flooding and violence. Collectively, **these results suggest that there is a strong role for diversification of livelihoods (land cultivation alongside off-farm enterprise development) amongst the poorest households at the conflict-climate nexus.** Our findings also show that insurance for consumable assets and agricultural implements is needed to mitigate risks of asset loss in the context of climate-related disasters and conflicts.

**Figure 11: Average marginal effects of livelihoods and assets on poverty trajectory, by violence, amongst households residing in flood-affected areas**



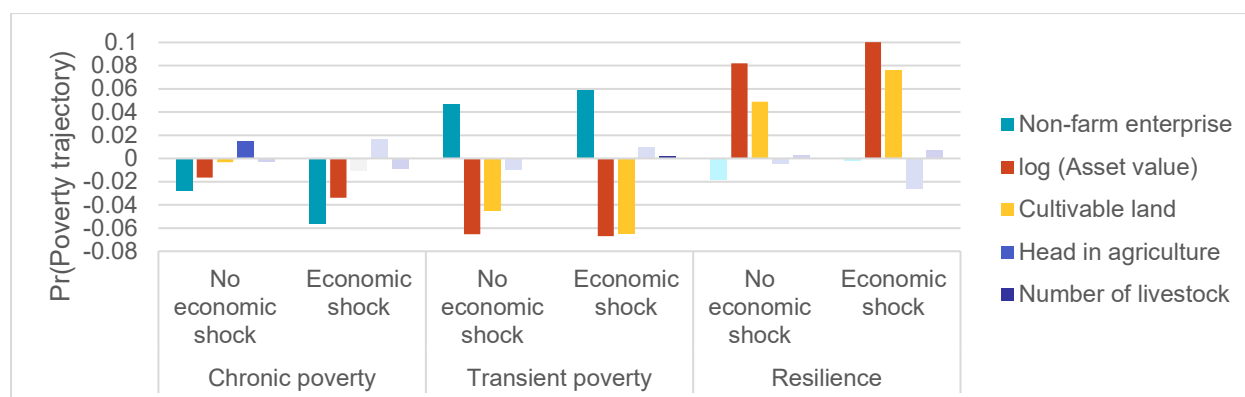
Note: Figure refers to five models, examining the intersection of flooding with 1) non-farm enterprises, 2) head’s engagement in agriculture, 3) consumer durable asset value, 4) cultivable land, and 5) number of

*livestock. Highlighted bars refer to results that are statistically significant at conventional levels ( $p < 0.1$ ). All controls are the same as in the equation in Box 1. Source: Analysis of BIHS (2011–19), ACLED (2011–2019), Global Flood Observatory (2010–18) and CRU TS (2010–20).*

**When examining the interface of flooding with economic (price/ revenue) shocks (Figure 12), cultivable land ownership is now found to be an important cushion for richer households:** it is associated with a lower probability of impoverishment and a higher probability of resilience for households experiencing economic shocks and living in areas affected by flooding. Moreover, effect sizes are larger in the presence of economic shocks compared to households not experiencing economic shocks in areas of flooding. This might reflect the role of farmland cultivation acting as a fallback for households when faced with price or revenue shocks. For example, when faced with loss of a non-farm job or food price inflation – both examples of common economic shocks experienced by households over the survey waves – households that own cultivable land would be able to rely more on farming to provide day-to-day needs. During the COVID-19 pandemic, urban to rural reverse migration in Bangladesh was also common, reflecting this trend (Shepherd et al., 2023). Moreover, this strategy still seems to be important in contexts of flooding, which could otherwise act to dampen agricultural production. However, amongst the poorest households often with smaller land sizes (0.4 acres on average in the baseline year for chronically poor households, compared to an average of 1.1 acres for other households), land ownership is an inadequate buffer when faced with the intersection of economic and climate-related crises, as reflected by its non-significant relationship with chronic poverty.

In the presence of flooding and economic shocks, diversification seems to have mixed results. Ownership of a non-farm enterprise is associated with a lower probability of chronic poverty but higher probability of transient poverty amongst households facing economic shocks and living in flood-affected areas. Moreover, for households experiencing economic shocks, livestock ownership and agricultural activities by the household head are not significant correlates of poverty trajectories in flood-affected areas. These results together may tentatively point to the limited role of diversification on and off the farm amongst richer households in the presence of economic shocks and flooding – possibly because richer households are more likely to be highly specialised in agriculture due to ownership of more land. Intuitively, it is understandable that **diversification may be inadequate when it is especially these livelihoods that may be hard-hit by economic shocks (e.g. bankruptcy of a business as a revenue shock to non-farm enterprises, or an increase in food prices as a price shock for households relying more on non-agricultural livelihoods)**. Indeed, Box 3 summarises related insights from the COVID-19 pandemic, which was a broader economic and health crisis that direly affected household livelihoods. These results suggest that diversification's effectiveness as a risk management strategy might have challenges that vary depending on the scale of the activity. For example, there is a range of trading activities, from small-scale petty trading to larger enterprises that have saved up capital and assets to endure shocks. Trading occupations may be much more vulnerable to economic shocks.

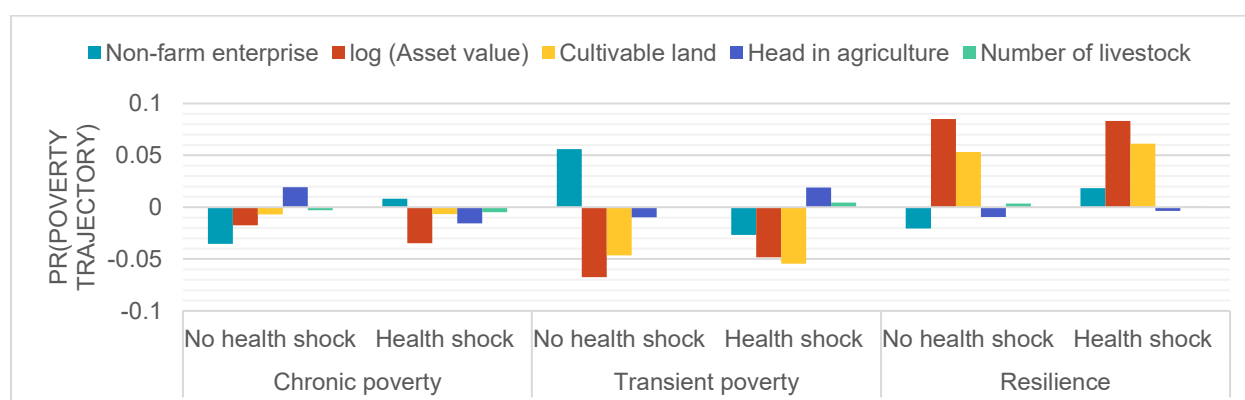
**Figure 12: Average marginal effects of livelihoods and assets on poverty trajectory, by economic shock, amongst households residing in flood-affected areas**



Note: Figure refers to five models, examining the intersection of flooding with 1) non-farm enterprises, 2) head's engagement in agriculture, 3) consumer durable asset value, 4) cultivable land and 5) number of livestock. Highlighted bars refer to results that are statistically significant at conventional levels ( $p < 0.1$ ). All controls are the same as in the equation in Box 1. Source: Analysis of BIHS (2011–19), ACLED (2011–19), Global Flood Observatory (2010–18) and CRU TS (2010–20)

For households experiencing ill health amidst flooding, there is an even smaller array of assets or livelihoods that are significant correlates of poverty dynamics (Figure 13). Cultivable land and NFE ownership are only significant correlates amongst households not experiencing ill health. However, the role of consumer durables is significant, here and across the other shocks and crises noted above. In particular, **a higher value of consumer durables is associated with a lower probability of chronic poverty, but also a lower probability of impoverishment and a higher probability of resilience amongst households experiencing intersecting crises** (i.e. those who live in areas affected by flooding and that additionally experience either health shocks, economic shocks, or violence). Again, it may be the ability to sell of small consumer durables to pay for medical expenses or food needs that makes them an important means of maintaining resilience amidst intersecting crises.

**Figure 13: Average marginal effects of livelihoods and assets on poverty trajectory, by health shock, amongst households residing in flood-affected areas**

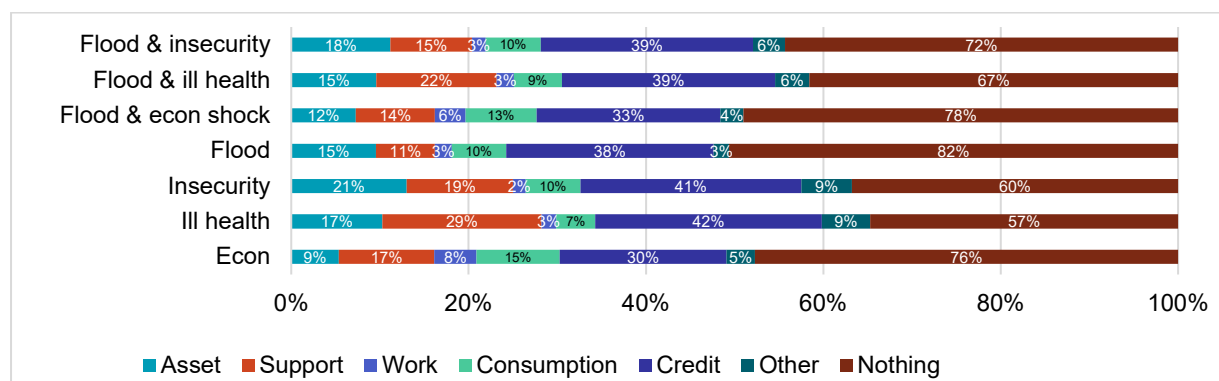


Note: Figure refers to five models, examining the intersection of flooding with 1) non-farm enterprises, 2) head's engagement in agriculture, 3) consumer durable asset value, 4) cultivable land and 5) number of livestock. Highlighted bars refer to results that are statistically significant at conventional levels ( $p < 0.1$ ). All controls are the same as in the equation in Box 1. Source: Analysis of BIHS (2011–19), ACLED (2011–19), Global Flood Observatory (2010–18) and CRU TS (2010–20).

## Other means of coping with intersecting crises

Households adopted various strategies to cope with self-reported shocks during the survey period (Figure 14). Interestingly, households' means of coping appears to be most limited in relation to flooding followed by economic shocks. Instead, a relatively large share of households were able to adopt some coping response to insecurity and ill health. For example, between 41% and 42% of households took out credit in response to ill health or insecurity. **Taking out credit (e.g. a loan from an NGO/ institution or Mahajan/ non-institutional source) was the most common active coping response across shock types**, suggesting that debt is a key consequence of post-crises recovery mechanisms, putting pressure on longer-term recovery itself. At the same time, taking out credit was also a strategy that was less frequently available for people in chronic poverty. Interestingly, social assistance was not included as an explicit coping response in the survey data. However, 29% of households experiencing ill health were able to rely on support (where the household 'took help from others' which could possibly include from NGOs or social assistance providers) to cope, compared to just 11% of households experiencing flooding. This might reflect the covariate nature of the latter shock, where entire areas could be simultaneously affected thus limiting people's ability to rely on nearby friends and family. Instead, a relatively larger share of households affected by insecurity (21%) engaged in distress sale of assets, which might have been less of an option for households experiencing flooding, which often destroys assets. Finally, reducing consumption was also a common erosive coping mechanism, especially amongst households experiencing economic shocks.

**Figure 14: Coping responses to negative shocks and crises, 2011–19**



*Note: Percentages refer to actual shares of responses to negative shocks, while the full bar represents specific responses as a share of all coping responses. Source: Analysis of BIHS (2011–19) dataset.*

We also examine coping responses to households that reported experiencing flooding with other intersecting shocks over the survey period. The results are largely similar to the individual shock responses, but across their intersections with flooding there is a subdued ability to cope. For example, while 29% of households experiencing ill health relied on support to cope with their shock, this figure reduced to 22% amongst households experiencing both ill health and flooding. In addition, in response to flooding and/or economic shocks, households were more likely to respond that they did nothing, relative to other shocks (Figure 14). In other words, **there is reduced means of coping amidst**

**intersecting crises, especially flooding and economic shocks, which themselves could contribute to deteriorating wellbeing** over time in ways that prompt impoverishment or maintain chronic poverty.

### Box 3: Coping with the COVID-19 pandemic in rural Bangladesh

Analysis of three rounds of rapid nationally representative COVID-19 surveys in Bangladesh (conducted in April 2020, June 2020, and March 2021) point to drastic income declines. Rural incomes dropped by 41% on average between February and June 2020. This is consistent with a 39% reduction in earnings from agriculture in the same period. Relying on savings was among the most common coping strategies (reported by 50% of rural households). In addition, 35% of rural households took out a loan and 22% decreased food consumption, which fell by 29 percentage points between February and June 2020. Only 5% of rural households engaged in asset sales.

A year into the pandemic, in March 2021, agriculture was the only sector that experienced positive income growth, showing the strongest signs of recovery. Despite this, the coping capacity of rural households was significantly reduced, as evidenced by a 24% drop in savings and an almost doubling of debt as a proportion of income (now at 30%). A significant portion of rural households deemed “vulnerable non-poor” before the pandemic became impoverished and struggled to regain their pre-COVID income, with 44% still in poverty a year into the pandemic.

Source: PPRC-BRAC (2021).

## 5. Conclusion and policy implications

Based on the research findings, this section outlines the policy implications of the study. The large share of chronic and transient poor that emerge when just slightly shifting the poverty line up points to the precarity of poverty escape in the country. These slightly higher poverty lines can be further motivated as those prevalent in upper middle-income countries, which is Bangladesh's next threshold to cross. Regional disaggregation of poverty moreover suggests that areas with a strong prevalence of climate-related disasters, including flooding, may also account for much of this precarity.

The main implication of this is the need to continue to develop responses to flooding in Bangladesh. Research from the early 2000s indicated that flooding was not often associated with downward mobility in the country at that time, typically attributed to Bangladesh's strong flood responses (Davis, 2011). However, **with increasing frequency and intensity of climate-related disasters, and their intersection with other crises, there is a pressing need to develop new or scaled-up means of dealing with flooding and crises more generally.** Some examples of responding to this rapid-onset disaster might involve forms of social protection, which can offer a foundational response. However, the government did not expand social assistance much during the pandemic because of perceived corruption in the schemes (Shepherd et al., 2023).

Even so, **existing programmes like anticipatory cash transfers triggered automatically by flood projections in Bangladesh have been shown to improve households' access to food,** reduce high-interest debt accrual of vulnerable households, and reduce psychosocial stress during and after the flood period (Gros et al., 2019; Pople et al., 2021). Similarly, the World Food Programme has been introducing flood-indexed social insurance in Bangladesh (Eram, 2021). Recent technological innovations at the community level include the WATERAPP project, which co-develops a participatory climate information system that uses local knowledge of small-scale farmers from the Ganges delta in Bangladesh to strengthen their adaptation capacity in agriculture (Paparrizos, 2022). Support for this adaptation could also come through the wider loss and damage agenda, though this requires concerted international political will.

**A guaranteed employment scheme that takes place year-round could also offer support during periods of unexpected crises.** This might include sudden floods, drought, personal healthcare shocks, and divorce in between lean and flooding seasons—thus capturing both covariate and idiosyncratic shocks. The regularity of a year-round could provide a more stable safety net for people facing multiple crises. In addition, such a scheme could focus on public works projects to directly improve the local infrastructure for example to mitigate flooding or drought impacts. This would thus extend programs like the Employment Generate Programme for the Poorest, which aims to generate jobs in rural areas during certain periods of the year. Ensuring that such a scheme is year-round and considers equity

and geography in its selection criteria can improve its effectiveness (Uddin and Kaiser, 2021).

### Responding to intersecting crises

At the same time, in an era of intersecting crises, it is no longer sufficient to respond only to individual crises, as this risks being ineffective at best – or even creating harm (Diwakar, 2023).<sup>11</sup> Our results point to the important intersection of flooding and economic shocks and its relationship with negative poverty trajectories. **Overlaying or sequencing programmatic responses to populations affected by floods and economic shocks is one way of maintaining household wellbeing in times of crises.** Box 4 provides an example of this type of response to multiple crises in Cambodia. Alongside this, balancing microeconomic with macroeconomic management remains important in responding to shocks. Indeed, not only did Cambodia develop its dual cash transfer programme during the COVID-19 pandemic, but it also made furlough payments and public expenditures, supported through its prudent fiscal management (Shepherd et al., 2023). In Bangladesh, however, the government focused its response more on macroeconomic management and large enterprises (Shepherd et al., 2023), which overlooked the informal sector and the types of non-farm enterprises that are common amongst people in and near poverty.

#### Box 4: Flood and inflation management through a cash transfer programme in Cambodia

In December 2022 the Government of Cambodia expanded coverage of its cash transfer programme, in recognition of inflation and flooding. The programme targeted ‘at-risk’ groups, as follows: households near the poverty line that were home to a disabled person, one child under two years old, or elders older than 60 years old, or if a woman was the only breadwinner and was living without a husband, or if there were no members between 19 and 59 years old (Seavmey, 2022).

As part of the initiative, the Ministry of Planning identified around 350,000 families (1.3 million people) who were near-poor but did not pass IDPoor identification. The first phase included monthly cash transfers for populations experiencing flooding, while two subsequent phases were scheduled for April and July 2023, during which identification of at-risk households would also continue through inflationary relief aid. Specific support provided by the programme is outlined below.

Flooding	Inflation
<ul style="list-style-type: none"> <li>The government is targeting at-risk groups in 16 provinces, with each poor household receiving around US\$20, and an additional US\$4 for at-risk members identified above. People will be eligible to receive subsidies three times from 2022 to 2023.</li> </ul>	<ul style="list-style-type: none"> <li>At-risk groups will be given cash subsidies covering three main areas: Phnom Penh, urban and rural areas, with subsidies of US\$20–25 per household, depending on location, and an additional US\$5–7 per household member.</li> </ul>

Source: Shepherd et al. (2023), drawing on insights from key informant interviews in Seavmey (2022)

<sup>11</sup> For example, DRM strategies during COVID-19 that aimed to move populations to evacuation shelters—a common flood response—could increase COVID-19 transmission rates if not sensitive to the high transmission rates resulting from the pandemic.



The study findings point to high rates of impoverishment and chronic poverty at the climate (floods) and conflict (violence) nexus. Indeed, though Bangladesh is not a 'fragile' country according to the majority of international indices, political violence and other forms of insecurity (e.g. asset theft) still permeate within its borders. Even forms of low-intensity violence during protests or riots can have impoverishing effects. In this context, early intervention or preventive initiatives in relation to protests and riots can be considered, including promoting inclusive electoral systems, supporting broad discussion of the rules of the electoral process, and supporting dialogue, including at the grassroots level (UN, 2016). In flood-affected areas, moreover, **better integrating conflict considerations into DRR strategies, including by developing a cadre of DRR and conflict specialists (Peters, 2019), is an important step in ensuring that the two policy responses can be delivered more coherently amidst intersecting violence and floods.**

### **Building resilience to shocks, stressors, and crises**

Alongside the examples of crises responses above, there is also a strong need to build individual-, household-, and system-level resilience to a range of idiosyncratic shocks, alongside the wider covariate crises noted above. As part of this, our results highlight the need to find ways to respond to or guard against ill health, including during periods of flooding. The Bangladesh Health National Adaptation Plan (HNAP) aims to support the integration of climate-induced health risks into the national health planning processes (WHO and IEDCR, 2016). It promotes a number of health adaptation interventions, including an early warning system for climate-related disease outbreaks, preparedness of health supplies ahead of a disaster, public education and awareness, climate-resilient housing, and disease control programmes.

Across these intersections of shocks and crises, moreover, the importance of asset development comes out strongly. This is particularly through consumer durables offering a means of liquidity. It will be important to consider differentiated responses to promote asset development, based on income ranges and sources of income, including consideration of land holdings. **Graduation programmes that promote asset development have long recognised the potential of asset development in pathways out of poverty, though our analysis suggests scope to focus this on areas experiencing intersecting crises, and through expanding the breadth** of these programmes, as well as introducing asset insurance to mitigate risk in the face of compound crises. The Nobo Jatra programme in coastal Bangladesh is an example of this horizontal expansion that can help respond to flooding, ill health, and economic shocks (see Box 5).

**Box 5: Nobo Jatra's multi-sectoral graduation programme**

Nobo Jatra a United States Agency for International Development-funded activity implemented by World Vision in southwest Bangladesh – combined ultra-poor graduation programming with inclusive market systems development, climate-related DRR, and water, sanitation, and hygiene (WASH) interventions. The layering of these interventions was found to improve participants' absorptive and adaptive resilience capacities in ways that helped tackle chronic poverty. DRR training and mobilising and WASH infrastructure also helped improve participants' absorptive and anticipatory resilience capacities and made them less susceptible to income loss and poverty.

Source: Diwakar *et al.* (2022).

At the same time, a mixed-methods evaluation of the programme identified the challenges of DRR interventions 'in the context of flood-related livestock deaths and widely prevalent livestock disease, despite improved veterinary support services', suggesting that **there is a need to expand DRM responses to focus on livestock amidst flooding through 'livestock insurance and access to shelters for livestock during disasters'** (Diwakar *et al.*, 2022). This also aligns with our study results around the limited relationship between livestock and resilience, pointing to a key area for strengthening to improve its ability to respond to intersecting crises.

Ultimately, **building resilience to shocks, stressors, and crises requires a multi-sectoral approach that recognises the root causes that render people in and near poverty more vulnerable to different types of crises**. This might involve asset development and different forms of insurance (e.g. agriculture and livestock insurance, credit and asset insurance, health insurance), which can help households escape poverty but also prevent others from falling into poverty. Alongside this multi-scalar and multi-sectoral focus on resilience, our analysis makes a case for responding explicitly to the intersections of crises when they do occur. In an era of increased uncertainty and precarity, there is a critical need for pro-poor responses to these crises.

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## Annexes

**Table A1: Summary statistics, by poverty trajectory of household**

Variable	Chronic poor	Transient poor	Sustained escaper	Never poor	
<b>Crises and shocks</b>	Any floods, 2010–19	85.76%	89.11%	83.43%	78.66%
	Any drought, 2010–19	86.35%	74.08%	77.16%	65.76%
	Any violence-related fatality, 2010-19	27.86%	11.85%	10.37%	9.93%
	Any economic shock, 2010–19	25.22%	8.52%	10.30%	10.93%
	Any health shock, 2010–19	16.49%	15.54%	14.56%	16.15%
<b>Household head</b>	Age	36.91	43.10	41.68	44.72
	Primary education completion	11.12%	14.04%	10.55%	19.85%
	Secondary education completion	6.70%	6.48%	8.47%	25.33%
	Head is a woman	9.53%	13.35%	18.58%	16.58%
	Marital status				
	Never married	0.00%	0.87%	0.92%	2.02%
	Widow/divorced/separated	4.24%	7.07%	8.54%	5.81%
	Married	95.76%	92.07%	90.54%	92.16%
	Log(asset value) – agri/cons. goods	8.47	8.90	8.82	10.08
	<b>Household activities</b>	Head in agriculture	82.56%	70.45%	73.81%
NFE		31.18%	35.36%	31.72%	40.96%
Ownership of livestock		52.18%	53.65%	48.11%	53.69%
Dependency share		49.62%	43.56%	48.50%	36.94%
<b>Household demographics</b>	Household size	4.65	4.20	4.58	4.12
	Urban	0.00%	0.00%	0.00%	0.00%

Baseline values presented unless stated otherwise. Source: Authors' analysis of BIHS (2011–19) dataset.

**Table A2: Multinomial logistic model regression results, outcome= poverty trajectory**

Variables	Outcome traj.	Main model without controls (1)	Main model with controls (2)	1.5x poverty line (3)
Any fatalities from violence	Chronic poor	0.0410* (0.0220)	0.0211** (0.0105)	0.0322 (0.0251)
	Transient poor	0.0238 (0.0245)	-0.0069 (0.0200)	-0.0276 (0.0246)
	Resilient	-0.0648 (0.0395)	-0.0142 (0.0253)	-0.0046 (0.0263)
Any drought	Chronic poor	0.0183*** (0.0060)	0.0070 (0.0080)	0.0277 (0.0205)
	Transient poor	0.0330** (0.0147)	0.0176 (0.0140)	0.0439** (0.0200)
	Resilient	-0.0513*** (0.0173)	-0.0246 (0.0175)	-0.0716*** (0.0232)
Any flooding	Chronic poor	0.0079 (0.0093)	-0.0158 (0.0122)	-0.0068 (0.0200)
	Transient poor	0.0814*** (0.0158)	0.0367** (0.0180)	0.0342* (0.0186)
	Resilient	-0.0892*** (0.0220)	-0.0209 (0.0240)	-0.0274 (0.0207)
Any price/ revenue shock	Chronic poor		0.0167** (0.0069)	0.0302 (0.0206)
	Transient poor		-0.0182 (0.0190)	-0.0364* (0.0213)
	Resilient		0.0015 (0.0221)	0.0062 (0.0198)
Any health shock	Chronic poor		0.0066 (0.0059)	-0.0011 (0.0151)
	Transient poor		-0.0022 (0.0130)	-0.0081 (0.0197)
	Resilient		-0.0043 (0.0133)	0.0092 (0.0154)
Household size	Chronic poor		0.0114*** (0.0017)	0.0456*** (0.0041)
	Transient poor		0.0227*** (0.0032)	0.0059 (0.0045)
	Resilient		-0.0341*** (0.0037)	-0.0515*** (0.0043)
Woman-headed household	Chronic poor		-0.0091 (0.0087)	-0.0451** (0.0223)
	Transient poor		-0.0080 (0.0186)	-0.0055 (0.0258)
	Resilient		0.0172 (0.0198)	0.0506** (0.0212)
Head completed primary	Chronic poor		-0.0107* (0.0064)	-0.0688*** (0.0131)
	Transient poor		-0.0787*** (0.0130)	-0.0541*** (0.0161)



Variables	Outcome traj.	Main model without controls (1)	Main model with controls (2)	1.5x poverty line (3)
Head engaged in agri.	Resilient		0.0894*** (0.0135)	0.1229*** (0.0144)
	Chronic poor		0.0148** (0.0061)	0.0434*** (0.0132)
	Transient poor		-0.0105 (0.0118)	-0.0027 (0.0166)
Non-farm enterprise ownership	Resilient		-0.0044 (0.0135)	-0.0408** (0.0162)
	Chronic poor		-0.0036 (0.0050)	-0.0238** (0.0117)
	Transient poor		-0.0071 (0.0115)	0.0356** (0.0161)
Ioa (asset value)	Resilient		0.0106 (0.0124)	-0.0118 (0.0143)
	Chronic poor		-0.0177*** (0.0029)	-0.0983*** (0.0055)
	Transient poor		-0.0644*** (0.0043)	-0.0398*** (0.0059)
Livestock number	Resilient		0.0821*** (0.0050)	0.1380*** (0.0055)
	Chronic poor		-0.0033** (0.0016)	-0.0049* (0.0027)
	Transient poor		-0.0012 (0.0032)	0.0022 (0.0039)
Received remittances	Resilient		0.0045 (0.0032)	0.0028 (0.0038)
	Chronic poor		0.0041 (0.0089)	-0.0258 (0.0174)
	Transient poor		-0.0201 (0.0161)	-0.0293 (0.0210)
	Resilient		0.0160 (0.0167)	0.0551*** (0.0182)
Region controls		No	Yes	Yes
Head controls		No	Yes	Yes

Notes: head controls include religion, age and age-squared; standard errors in parentheses; \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

**Table A3: Fixed effects linear model regression results, outcome= poverty status**

VARIABLES	Poverty status
Drought	-0.0510 (0.0916)
Flooding	-0.136 (0.106)
Fatalities	0.482** (0.245)
Economic/price shock	0.393* (0.237)
Health shock	-0.243 (0.194)
Household size	0.780*** (0.0524)
Female head	0.782*** (0.202)
Head completed pri. educ.	-0.292 (0.231)
Head engaged in agri	0.127 (0.119)
Land ownership	-0.649*** (0.178)
Non-farm enterprise ownership	-0.191* (0.109)
log (asset value)	-0.374*** (0.0569)
Number of livestock	-0.0668** (0.0335)
Remittance receipt	0.0532 (0.134)
Year=2015	0.184* (0.0975)
Year=2019	-0.406*** (0.142)
Other FE	Yes
Observations	3,405
Number of HHID	1,135

*Other FE includes age/ age-squared and region of residence. Standard errors in parentheses; \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$*

As a robustness check, we implemented a fixed effects regression, with year and household-level fixed effects, on data that were spatially differenced within a 100km and 50 km radius in each year. Taking first differences between observational units close in physical space can control for unobserved heterogeneity in contexts where data have sufficient spatial variation (Druckenmiller and Hsiang 2018). In the case of Bangladesh, since household data are indexed at the union level, an administrative unit with a small area size, we expect that there

is sufficient spatial variation for the application of this method. Results for a 100km spatial differencing are shown in Table A4 below, while results for differencing done within a 50km radius are shown in Table A5 below. In all cases, we include region and year controls, as well as independent variables related to demographic characteristics of the household. Across both specifications, we find that the presence of all crises, namely droughts, floods, and violence is positively related with poverty. This effect is largest for drought and smallest for floods.

**Table A4: Crises and poverty status, spatial and temporal differencing (100km)**

VARIABLES	(1)	(2)	(3)
Drought presence (100 km)	1.775*** (0.027)		
Flood presence (100 km)		0.019*** (0.002)	
Violence presence (100 km)			0.320*** (0.011)
Region and year controls	Yes	Yes	Yes
Demographic controls	Yes	Yes	Yes
Observations	14,086	14,086	14,086
R-squared	0.998	0.998	0.998

Outcome is poverty status. \* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ . Standard errors clustered at the household level in all specifications.

**Table A5: Crises and poverty status, spatial and temporal differencing (50km)**

VARIABLES	(1)	(2)	(3)
Drought presence (50 km)	1.523*** (0.031)		
Flood presence (50 km)		0.026*** (0.002)	
Violence presence (50 km)			0.150*** (0.012)
Region and year controls	Yes	Yes	Yes
Demographic controls	Yes	Yes	Yes
Observations	14,756	14,756	14,756
R-squared	0.992	0.992	0.992

Outcome is poverty status. \* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ . Standard errors clustered at the household level in all specifications.