Impacts of displacement

The human cost of disaster displacement in Bangladesh: A life-year approach to understanding impacts

iDMC internal displacement monitoring centre

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Cover photo: Two boys cycle along a cracked road through salinity-affected land in Satkhira, Bangladesh, in 2022, two years after Cyclone Amphan made landfall. Flooding, storm surges and saltwater intrusion can have lasting impacts on agricultural productivity and livelihoods in coastal areas. The effects of disasters and associated displacement often persist long after an event, affecting livelihoods, food security and well-being and generating significant costs. ©Kazi Salahuddin Razu/NurPhoto via Getty Images

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People travel by boat during monsoon rains in Dhaka, Bangldesh. Between 2008 and 2025, disasters triggered more than 21 million internal displacements across the country, resulting in estimated human costs of 89,000 life-years lost, valued at approximately $1.7 billion.
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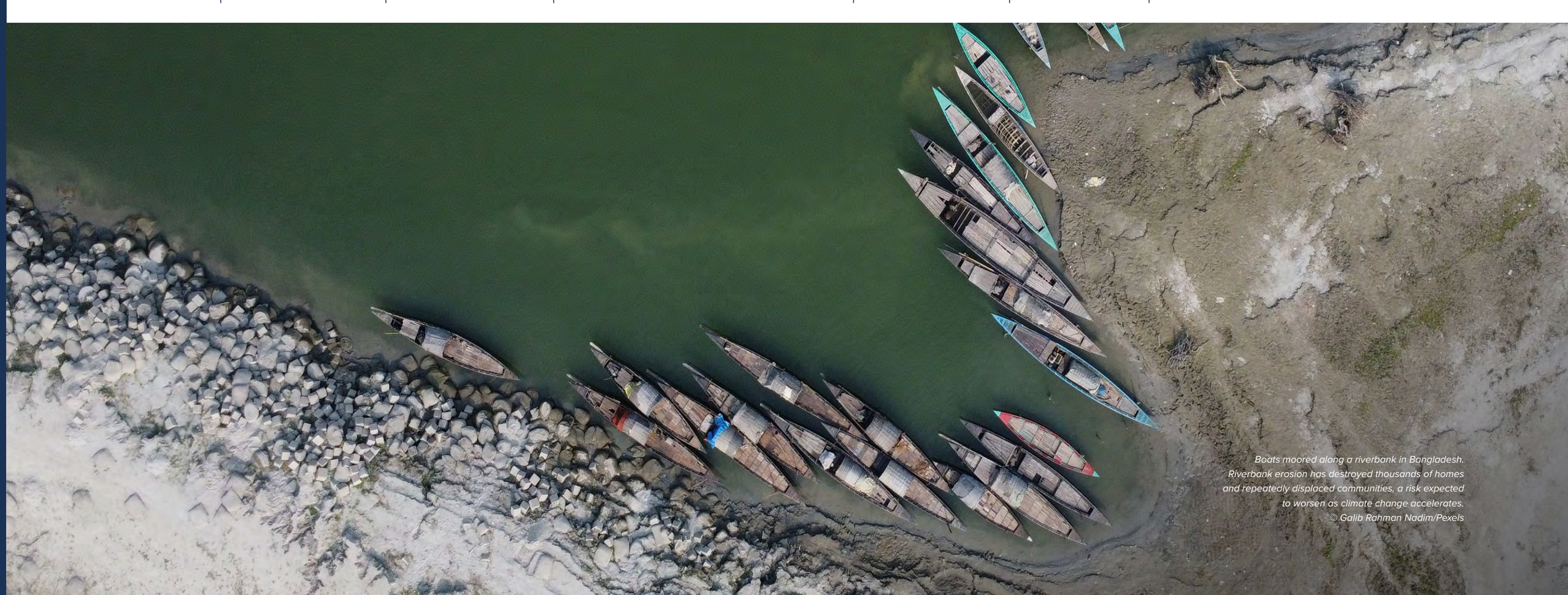

Boats moored along a riverbank in Bangladesh. Riverbank erosion has destroyed thousands of homes and repeatedly displaced communities, a risk expected to worsen as climate change accelerates.
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Executive summary

Disaster displacement is widespread and recurrent in Bangladesh

Bangladesh is among the countries most affected by disaster displacement worldwide. Disasters, primarily the result of cyclones, floods and storm surges, triggered more than 21 million movements between 2008 and 2025. Investments in early warning systems and preparedness have reduced mortality significantly, but internal displacement remains widespread and recurrent. Nor is it a one-off shock for many households, but part of a cycle of repeated disruption that affects their housing, livelihoods, access to services and overall wellbeing.

Displacement figures alone do not capture these impacts. Many movements are short-lived, but others result in prolonged disruption and slow recovery. Understanding how the phenomenon affects people's lives beyond the moment of movement is essential to assessing the cumulative human costs associated with recurrent disasters.

Disaster displacement generates substantial human costs over time

Disaster displacement is estimated to have resulted in around 89,000 life-years lost in Bangladesh between 2008 and 2025, which corresponds to about $1.7 billion in cumulative human costs or an average of $102 million a year. These estimates reflect the welfare impacts associated with temporary reductions in quality of life during displacement and recovery, rather than direct economic damage or income losses.

The most impactful event in these terms was Cyclone Amphan in 2020, which resulted in around 9,500 life-years lost and $184 million in estimated human costs. The monsoon floods of the same year led to similarly high costs as a result of prolonged disruption and slower recovery.

Severity of disruption and speed of recovery shape human costs

Human costs are shaped not only by the number of people displaced, but also by the severity of disruption and the speed of recovery. Events involving prolonged disruption, extensive housing damage and slower recovery generate significantly higher human costs, even when displacement numbers are similar.

Cyclones, storm surges and floods account for more than 90 per cent of estimated human costs, reflecting their scale and recurrence in Bangladesh. Major disasters generate the largest single-event costs, but recurrent small and medium-scale displacement events also contribute substantially to cumulative impacts over time.

Displacement impacts are uneven and shaped by pre-existing vulnerability

Household-level findings in four disaster-affected districts – Chattogram, Cox's Bazar, Jashore and Satkhira – show that displacement impacts vary significantly and are shaped by pre-existing vulnerability. Households below the poverty line before displacement generally remained below it post-displacement despite larger than proportional income gains.

Among households above the poverty line before displacement, around 20 per cent reported income losses as a result of displacement, including 11 per cent who experienced declines of more than 30 per cent. In many cases, higher post-displacement incomes reflected adjustment to more precarious and costly living conditions rather than sustained improvements in wellbeing.

Climate change is likely to increase future human costs

Analysis indicates that climate change is likely to increase the risk of future displacement associated with certain hazards, particularly riverine floods and storm surges. These are projected to account for a growing share of future displacement in Bangladesh under all climate scenarios considered.

Annual human costs associated with riverine floods are estimated to rise from $22 million under current climate conditions to around $176 million under a pessimistic scenario of a 5°C temperature rise by 2100. The estimated annual costs for storm surges increase from $19 million to $186 million.

Estimating the human cost of displacement helps inform policy and investment priorities

Estimating the human cost of displacement complements head counts and loss and damage assessments by capturing impacts on people's lives that are not reflected in physical or economic loss metrics.

This report's findings highlight the importance of maintaining investments in preparedness and risk reduction, while placing greater emphasis on reducing the severity and duration of displacement-related disruption. Interventions that reduce housing damage, support livelihood recovery and address recurrent exposure to floods and storm surges are likely to yield significant benefits.

The analysis also underscores the importance of addressing uneven recovery and persistent vulnerability, particularly among households with limited capacity to absorb shocks.

Introduction

Disaster displacement is a recurrent reality in Bangladesh

Bangladesh is one of the most densely populated countries in the world. More than 170 million people live across a vast delta crisscrossed by almost 1,300 rivers.[1] Rapid economic growth has contributed to significant development gains, including a sharp reduction in poverty from 43 per cent in 1991 to under six per cent in 2022.

The country's location on the Bay of Bengal and its low-lying topography make it highly exposed to tropical cyclones, monsoon floods and riverbank erosion. Climate change and sea-level rise are expected to intensify these hazards, with far-reaching implications for livelihoods, infrastructure and human settlements.[2]

Breakdown of the total number of internal displacements by hazard in Bangladesh for 2008-2025

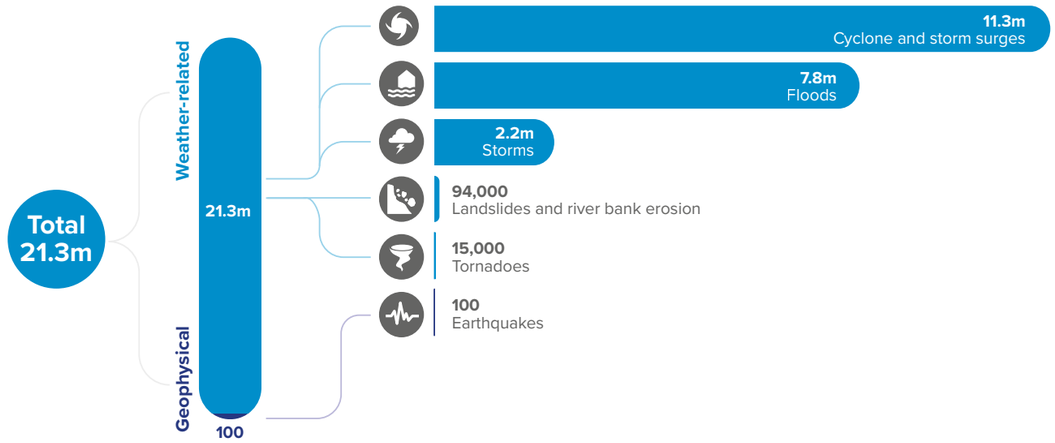

Figure 1
Source: IDMC (2026)

Disasters triggered more than 21 million displacements in Bangladesh between 2008 and 2025, placing the country among the six most affected globally.[3] Weather-related hazards accounted for more than 99 per cent of the movements, with cyclones and storm surges responsible for the largest share, followed by floods. Annual displacement figures fluctuate considerably depending on the occurrence of major storms and severe monsoon seasons, with pronounced peaks in years affected by large cyclones and widespread flooding.

Large-scale displacement events were triggered by major cyclones including Aila in 2009, Mahasen in 2013, Bulbul and Fani in 2019, Amphan in 2020 and Mocha in 2023; and severe monsoon flood seasons, notably in 2017, 2019, 2020 and 2024. These events represent the largest and most consistently documented displacement episodes in the country.

Internal displacements by disasters by year in Bangladesh for 2008-2025

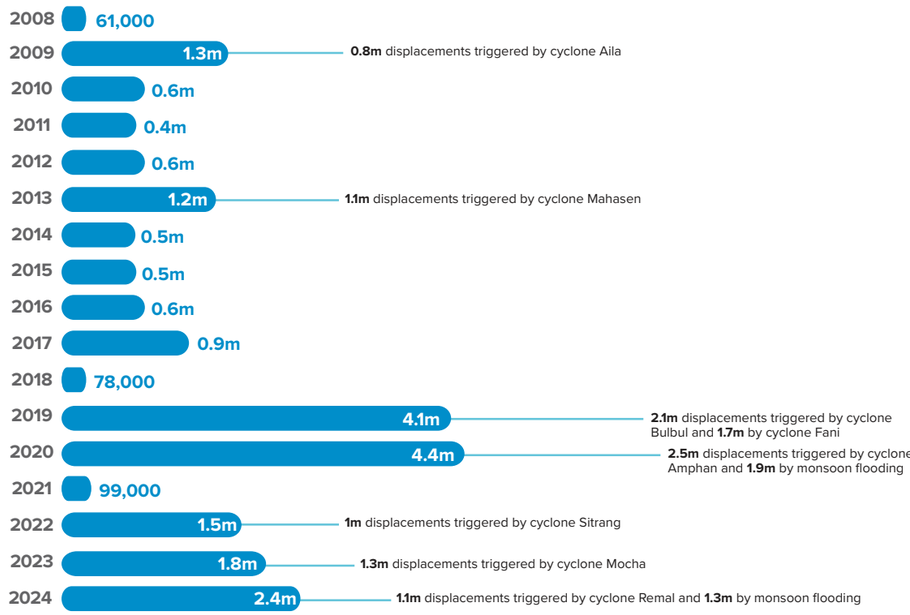

Figure 2
Source: IDMC (2026)

A defining feature of displacement in Bangladesh is the widespread use of pre-emptive evacuations, enabled by improved early warning systems and disaster preparedness. Such movements linked to cyclones accounted for at least 50 per cent of all disaster displacement between 2008 and 2025.[4]

These measures have significantly reduced mortality but they have not eliminated longer-term displacement. When homes are severely damaged or destroyed, or livelihoods severely disrupted, the disruption becomes prolonged. As a result, disaster displacement in Bangladesh ranges from short-term mass evacuations to smaller but persistent situations of prolonged disruption.

These patterns highlight an important distinction between the scale of displacement and its impacts. Displacement figures capture the number of movements triggered, but do not reflect the severity of displacement, including impacts on housing, livelihoods, access to services and recovery. When shocks recur, these impacts accumulate over time even when each displacement is relatively brief.

As such, disaster displacement is not only a humanitarian concern linked to immediate evacuation and shelter needs, but also a broader development challenge with implications for poverty, urbanisation, vulnerability and long-term resilience. Understanding how displacement affects people's lives beyond the moment of movement is increasingly important for informing disaster risk reduction, recovery planning and climate adaptation policy.

Existing approaches do not fully capture the impacts of displacement

Disaster reporting in Bangladesh typically focuses on immediate and observable impacts, including the number of people displaced, damage to homes and infrastructure and economic losses. These metrics capture the scale of disasters and their immediate physical and financial effects, but they provide only a partial picture of displacement impacts.

Evidence from academic and policy literature shows that these impacts often extend well beyond the initial shock. Studies document longer-term impacts on livelihoods, food security and wellbeing.[5] Flooding and storm surges in coastal areas of Bangladesh can increase soil and water salinity, reducing long-term agricultural productivity. This, in turn, affects income, food availability and employment opportunities.

Research also highlights less visible impacts, including prolonged displacement, increased debt and psychosocial stress.[6] These effects often unfold over months and years, and can slow or prevent displaced households' recovery.

Despite this evidence, longer-term and less visible impacts are rarely captured in standard disaster reporting. Existing approaches do not systematically measure how displacement affects people's lives over time, including disruption to livelihoods, reduced access to services, changes in living conditions or the erosion of social support systems. The broader human costs of disaster displacement are underestimated as a result, limiting understanding of recovery needs and longer-term vulnerability.

These challenges are likely to become increasingly important as climate change intensifies displacement risks.

Estimating the human cost of future displacement risk

IDMC's global disaster displacement risk model projects that riverine floods and storm surges are likely to remain the main drivers of future displacement, with between 740,000 and 780,000 people at risk in any given year under current climate conditions (see figures 3 and 4).[7]

Climate change is expected to intensify these risks under both optimistic and pessimistic scenarios. This makes understanding not only how many people may be displaced in the future, but also how displacement affects people's lives over time, increasingly important for informing disaster risk reduction, recovery planning and climate adaptation policy.

Average annual displacement (AAD) risk by riverine floods under different climate scenarios

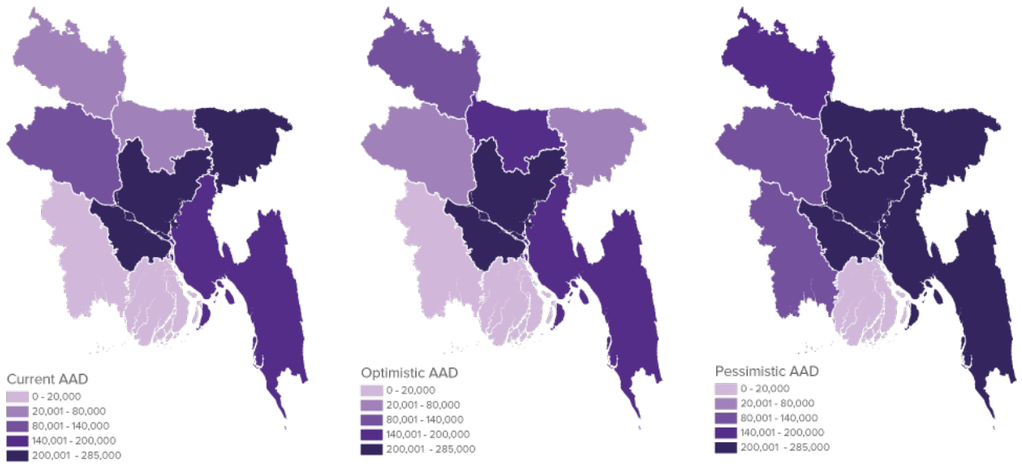

Figure 3
Source: IDMC (2026)

Average annual displacement (AAD) risk by storm surges under different climate scenarios

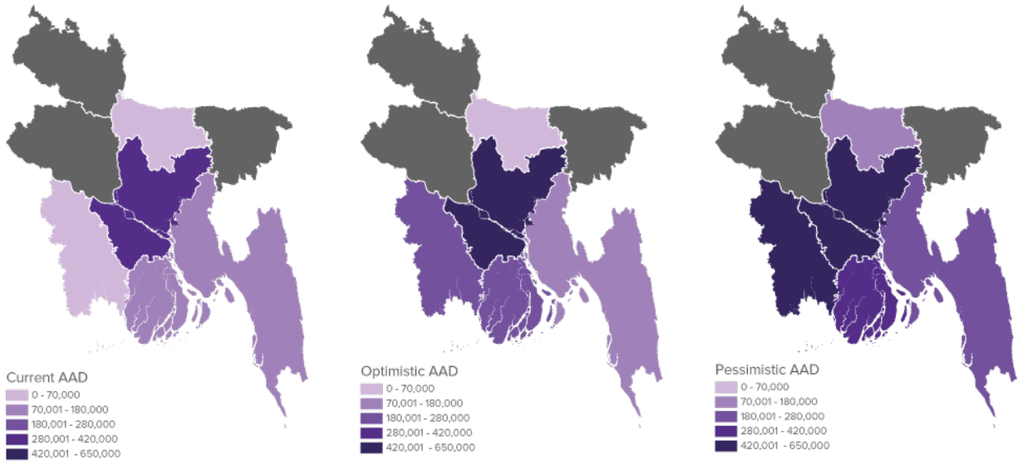

Figure 4
Source: IDMC (2026)

Assessing the human cost of disaster displacement through welfare losses

To better capture how disaster displacement affects people's lives over time, this report focuses on its human cost, understood in terms of welfare losses associated with a temporary reduction in people's ability to live healthy, secure and productive lives after displacement.

These impacts are quantified using a life year-based approach that captures the severity and duration of displacement-related disruption. By expressing these impacts in monetary terms, the framework enables comparison across hazards and over time, while complementing existing displacement and loss and damage assessments.

The analysis combines historical disaster displacement data from 2008 to 2025 with forward-looking risk projections to assess how past and future displacement-related disruption may affect wellbeing over time. It also draws on household-level survey data from four administrative districts – Chattogram, Cox's Bazar, Jashore and Satkhira – which provides insights into how displacement affects income, poverty and recovery outcomes across different groups.

Integrating national and household-level evidence

This report was produced as part of a joint analytical initiative by IDMC in collaboration with the Refugee and Migratory Movements Research Unit (RMMRU) in Dhaka. RMMRU led the collection of household survey data, providing locally grounded evidence on displacement, income, poverty and post-displacement outcomes after rural-to-urban displacement. The findings complement IDMC's national-level analysis by illustrating how displacement-related disruption affects households and how recovery experiences vary across groups.

By combining national displacement data with household-level evidence, this report contributes to a more comprehensive and policy-relevant understanding of disaster displacement in Bangladesh.

Methodological approach

From immediate damage estimates to the human cost of displacement

In this report, welfare losses associated with disaster displacement are estimated to capture the broader impacts of the disruption to people's wellbeing. These are measured in life-years lost and translated into monetary terms to estimate the human cost of displacement.

The term "wellbeing" refers to impacts experienced at the individual level, while "welfare" refers to the aggregation of these impacts across affected populations.

"Life-years lost" capture the temporary reduction in quality of life experienced during displacement and recovery. One life-year lost can be understood as one person experiencing a full year of severely reduced wellbeing, or several people experiencing more moderate reductions in wellbeing over shorter periods.

Severity reflects the extent and duration of disruption

The severity of displacement refers to the intensity and persistence of the disruption experienced. It is informed by estimates of duration derived from evacuation-stay data compiled by IDMC, which provides a proxy for the period of acute disruption. These estimates are extended using a conservative multiplier to reflect the assumption that displacement-related impacts often continue beyond the evacuation phase.

The human cost of displacement is not determined by the scale of movement alone. Small-scale displacement may result in substantial costs when disruption is severe or prolonged, while large-scale displacement may lead to lower impacts when recovery is rapid and support mechanisms are effective.

Estimating monetary impacts through the value of a statistical life year

Life-years lost are converted into monetary equivalents using the value of a statistical life year (VSLY). This represents the monetary value associated with one year of healthy life and is commonly used in welfare and risk analyses to express non-fatal impacts in comparable economic terms. In this report, it is used as a valuation tool to support comparison and prioritisation, rather than a measure of income loss or compensation.

The estimates presented should be interpreted as conservative. Assumptions about the duration of displacement-related disruption are intentionally cautious and longer-term impacts linked to protracted recovery, repeated shocks or chronic vulnerability are likely to be underestimated.[8]

Linking macro analysis and household data

The data from the four district-level household surveys is not directly incorporated into the estimation of human costs, but provides complementary insights into rural-to-urban displacement patterns, income dynamics, vulnerability and post-displacement outcomes across households.

A detailed description of the analytical framework, assumptions and parameters underpinning these estimates is provided in Methodology.

Findings

The human cost of displacement has accumulated over time

Disaster displacement in Bangladesh is estimated to have resulted in about 89,000 life-years lost between 2008 and 2025, which corresponds to a human cost of around $1.7 billion or an average of $102 million a year.

Annual costs fluctuate considerably depending on the occurrence of major cyclones and severe flooding events (see figure 5). There are pronounced peaks in years affected by large-scale disasters, particularly 2019 and 2020. Human costs are recorded every year, including those without nationally significant disasters.

Small and medium-scale displacement events generate lower impacts individually, but their recurrent nature contributes substantially to cumulative human costs over time. These less visible but repeated disruptions form an important part of Bangladesh's overall displacement burden.

Estimated human cost of disaster displacement in Bangladesh by year for 2008-2025

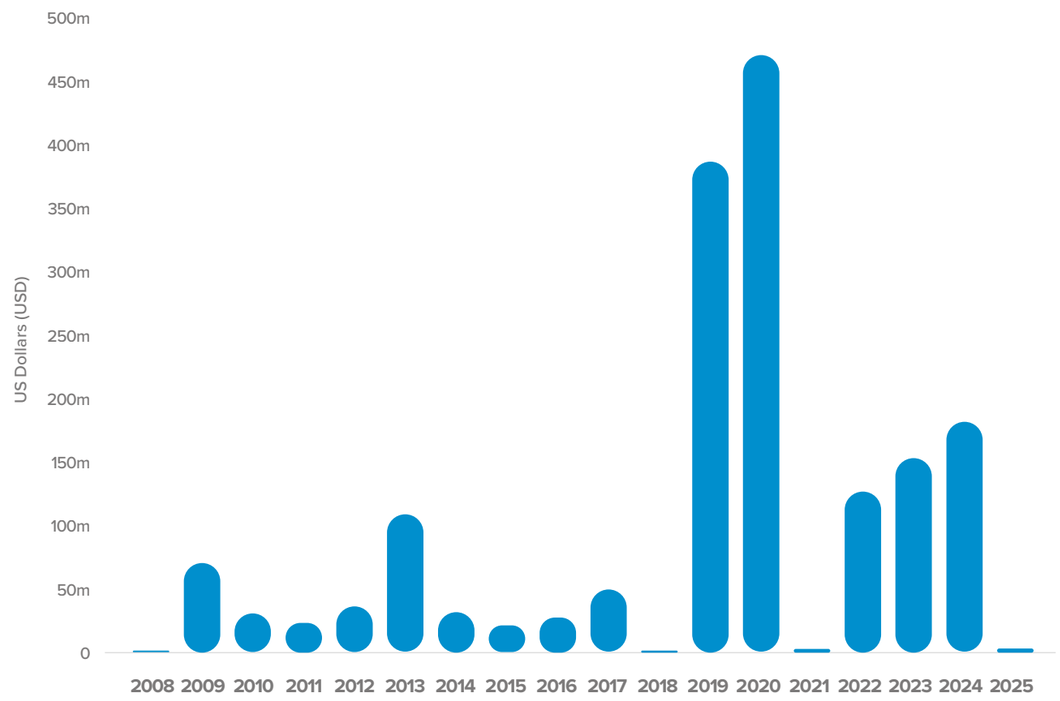

Figure 5
Source: IDMC (2026)

Cyclones, storm surges and floods account for the majority of costs

Cyclones and storm surges accounted for nearly 59 per cent of total human costs, equivalent to around $1 billion (see figure 6). Floods contributed a further 32 per cent, or around $550 million. Such figures underscore the dominant role these hazards play in shaping displacement impacts in Bangladesh.

Human costs by hazard type in Bangladesh for 2008-2025

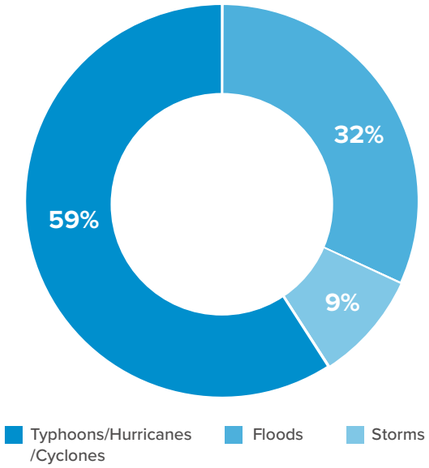

Figure 6
Other hazards account for a negligible share of the total (<1.0%).
Source: IDMC (2026)

The concentration reflects both displacement scale and severity. Cyclones and storm surges are often associated with extensive housing damage and livelihood disruption, particularly in coastal areas, while floods contribute steadily through recurrent displacement and prolonged disruption over time.

A few major events account for a large share of total human costs

The five largest displacement events between 2008 and 2025 accounted for around 31 per cent of total estimated human costs (see table 1). These event-level estimates illustrate how the scale of displacement and severity of disruption shape overall impacts.

Cyclone Amphan in 2020 generated the highest estimated human costs at 9,500 life-years lost, which corresponds to around $184 million. The monsoon floods of the same year led to similarly high costs of around $169 million, reflecting widespread and prolonged disruption. Other major cyclones, including Bulbul and Fani in 2019 and Mocha in 2023 generated human costs ranging from around $48 million to $77 million.

Small and medium-scale displacement events collectively accounted for nearly 70 per cent of total human costs between 2008 and 2025, reflecting their frequency and cumulative effects over time.

Estimate human costs for the five largest displacement events in Bangladesh between 2008-2025

Displacement event	Year	Displacements (million)	% of total displacements for the period	Duration of disruption (days)	Life-years lost	Cost of displacement ($ million)
Cyclone Amphan	2020	2.5	12	30	9,500	184
Cyclone Bulbul	2019	2.1	10	15	4,000	77
Monsoon floods	2020	1.9	9	36	8,800	169
Cyclone Fani	2019	1.7	8	15	3,200	61
Cyclone Mocha	2023	1.3	6	15	2,500	48

Table 1
Source: IDMC (2026)

Putting annual human costs into perspective

The analysis estimates that disaster displacement in Bangladesh results in average annual human costs of around $102 million. While modest relative to the country's overall economy – equivalent to around 0.02 per cent of GDP or $0.60 per person per year – the figure reflects substantial impacts associated with prolonged disruption to housing, livelihoods and wellbeing.

It is broadly equivalent to rebuilding around 60,000 disaster-resilient homes, providing emergency cash assistance to more than a million households or financing a month of food support for around eight million people. Such a sum could also fund significant investment in resilience and recovery infrastructure, including flood protection systems and community facilities.

These comparisons are illustrative rather than prescriptive, but they demonstrate that the human costs of displacement are economically significant and should be considered more systematically in disaster risk reduction, preparedness and recovery planning.

Impacts are shaped by severity of disruption and recovery dynamics

The analysis shows that similar levels of displacement can be associated with different levels of impact depending on the severity of disruption and the speed of recovery. Events involving extensive housing damage, loss of livelihoods and reduced access to services tend to generate higher human costs, particularly when recovery is prolonged.

Household-level analysis provides further insights into how these dynamics translate into outcomes across affected populations. The survey data that RMMRU collected shows that post-displacement income varies significantly depending on poverty status and initial conditions (see figure 7).

For this analysis, household monthly income data before and after displacement was disaggregated by poverty status using per capita household income, calculated by dividing total household income by household size. Poverty is defined using the national upper poverty line for 2025, estimated at around 4,300 Bangladeshi takas ($35) per person per month. The sample included 1,749 internally displaced households, of whom 1,467 were below the poverty line.

Average monthly household income before and after displacement

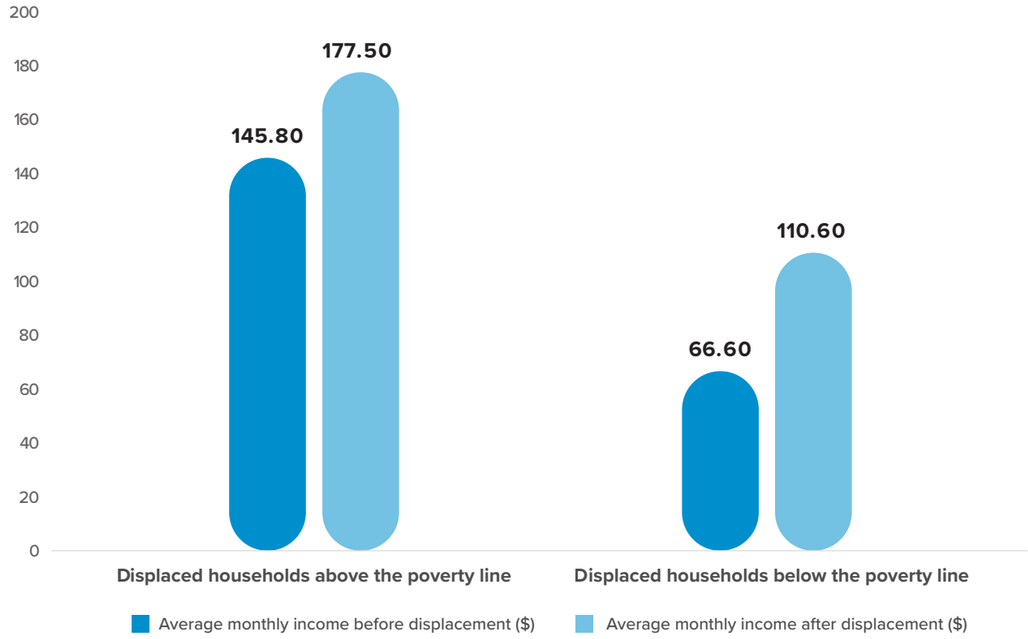

Figure 7
Source: Author calculations (2026)

Households below the poverty line before displacement generally remained below it afterwards despite experiencing larger proportional income gains. Average monthly incomes among poorer households increased from 8,114 takas ($67) to 13,477 takas ($111), while the incomes of households above the poverty line rose from 17,765 takas ($146) to 21,628 takas ($178).

Households below the poverty line recorded an average proportional income gain of 79.8 per cent compared with 30 per cent their counterparts above the poverty line, but the increase largely reflects recovery from a lower base rather than a convergence in living standards.

Using per capita income measures, individuals in poorer households reported average pre-displacement incomes of 2,131 takas ($18) and remained below the poverty line after displacement, with post-displacement incomes reaching 3,548 takas ($29). Of the 1,467 households classified as poor before displacement, only 381 moved above the poverty line after displacement.

The distribution of outcomes further highlights uneven recovery patterns across households (see figure 8). Some experienced substantial income gains, but others reported significant losses. Among households above the poverty line before displacement, around 20 per cent reported income losses after displacement, including 11 per cent who experienced declines of more than 30 per cent.

Taken together, the findings show that displacement outcomes remain highly uneven across households. Poorer households largely remained below the poverty threshold despite observed income increases, while some better-off households experienced severe income declines following displacement.

Higher post-displacement incomes should not necessarily be interpreted as sustained improvements in living conditions or wellbeing. In Bangladesh and similar settings, displacement to urban areas may provide access to more diverse income opportunities than in rural areas, where livelihoods tend to be based on subsistence farming.[10] Temporary support measures such as cash assistance may also contribute to higher reported incomes after displacement.[11]

People displaced to urban areas may also face insecure employment, higher living costs, unstable housing conditions and weaker social support networks.[12] As such, increases in reported income should be understood primarily as evidence of adaptation and adjustment.[13]

Distribution of income change by poverty status.[9]

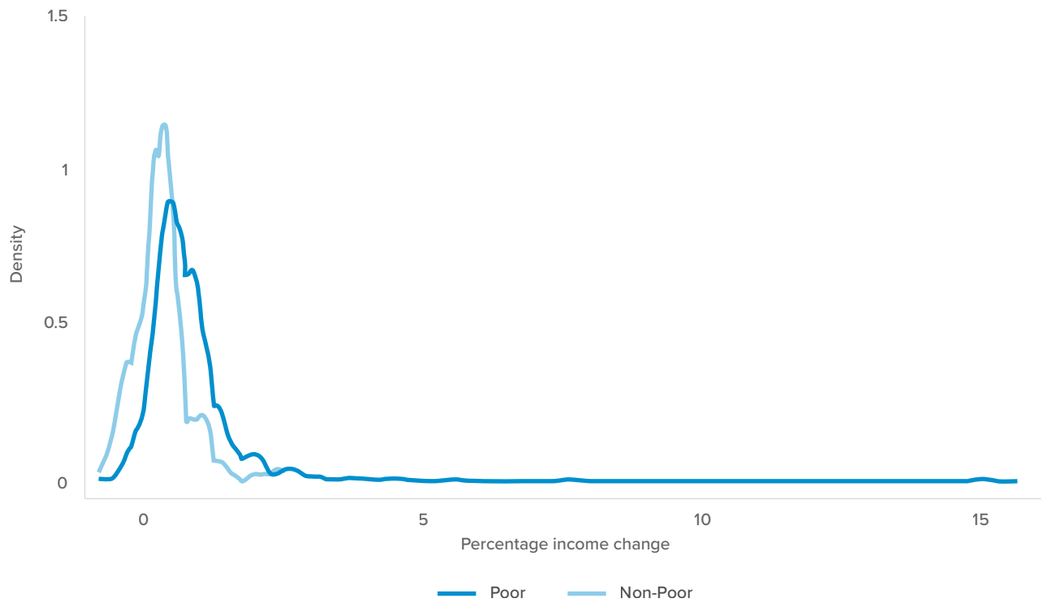

Figure 8
Source: Author calculations (2026)

Future human costs of disaster displacement

Climate change is likely to increase future displacement associated with certain hazards, particularly riverine floods and storm surges. Risk analysis suggests these hazards will account for a growing share of displacement in Bangladesh, reflecting continued exposure in areas prone to them.[14]

When displacement risk projections are combined with the human cost framework, floods and storm surges consistently emerge as the main drivers of future human costs. Under current climate conditions, annual human costs associated with displacement triggered by riverine floods are estimated at around $22 million. Under an optimistic scenario of a 1°C temperature rise by 2100, they increase to around $45 million, and under a pessimistic scenario of a 5°C rise to around $176 million.

A similar pattern emerges for storm surges. Under current conditions, annual human costs are estimated at around $19 million, increasing to around $64 million under an optimistic scenario and $186 million under a pessimistic scenario.

Other hazards, including drought and cyclonic winds, are projected to contribute smaller shares of total human costs under all climate scenarios considered (see table 2). These findings indicate that future human costs are highly sensitive to climate pathways.

Estimated human costs associated with disaster displacement under different climate scenarios

Hazard	Climate scenario	Average annual human cost ($)
Riverine floods	Current	22 million
	Optimistic	45 million
	Pessimistic	176 million
Storm surges	Current	19 million
	Optimistic	64 million
	Pessimistic	186 million
Drought	Current	167,000
	Optimistic	250,000
	Pessimistic	600,000
Cyclonic winds	Current	7,000
	Optimistic	78,000
	Pessimistic	650,000

Table 2
Source: IDMC (2026)

Potential solutions and way forward

The findings show that the human costs of disaster displacement in Bangladesh are shaped not only by the scale of displacement, but also by the severity of disruption and the speed of recovery. Displacement cannot always be avoided, but there are a number of entry points for reducing its impacts by reducing the number of people displaced, tempering the severity of disruption and supporting faster recovery.

Reducing displacement risk is a first line of action

Displacement risk analysis indicates that floods, storm surges and cyclones are likely to drive a growing share of future displacement in Bangladesh. Greater and continued investment in risk reduction measures such as resilient housing, flood protection, improved land-use planning and protection of critical infrastructure will help to reduce future displacement and limit associated human costs.

Targeting these measures at displacement hotspots, particularly in coastal and flood-prone areas, would support more effective prioritisation of resources and strengthen resilience in high-risk locations.

Reducing the severity and duration of disruption

Events that involve prolonged disruption and slower recovery generate substantially higher human costs, even when displacement numbers are similar. That means that measures to reduce damage to housing and livelihoods, ensure the continuity of essential services and accelerate recovery have the potential to significantly reduce displacement-related impacts.

The findings also highlight the importance of reducing the length of displacement, particularly in recurrent displacement hotspots. Faster restoration of housing, basic services and livelihoods would significantly reduce cumulative human costs over time. Expanding shock-responsive social protection mechanisms, targeted cash assistance and livelihood recovery support could play an important role in reducing prolonged disruption among vulnerable households.

Addressing recurrent displacement and uneven recovery

Major disasters account for a large share of total human costs, but recurrent small and medium-scale displacement events also generate significant cumulative impacts over time. Strengthening communities' adaptive capacities, integrating displacement considerations into local development planning and supporting household resilience would help to reduce repeated disruption in flood-prone and coastal areas where there is often little recovery time between shocks.

The analysis also highlights uneven recovery outcomes across households. Poorer households and those exposed to repeated displacement often have less capacity to absorb shocks and recover from disruption. Targeted support for vulnerable households could play an important role in reducing persistent vulnerability and improving long-term recovery.

Household-level findings suggest displacement should be considered not only as a humanitarian and disaster risk management issue, but also in urban planning and development policy. Rural-to-urban displacement tends to increase pressure on informal housing, services and labour markets, particularly when displaced households rely on insecure and low-paid work. Integrating displacement considerations into urban planning and local development strategies could help to reduce longer-term vulnerability and improve recovery outcomes.

Estimating human costs to improve planning and investment

Estimating the human cost of displacement complements head counts and damage assessments by capturing impacts that are not reflected in physical or economic loss metrics. It supports comparison across hazards and over time and helps identify where interventions may most effectively reduce long-term impacts.

Embedding these insights into disaster risk reduction, recovery planning and climate adaptation strategies would support more forward-looking and people-centred approaches to managing disaster displacement in Bangladesh.

Conclusion

Disaster displacement in Bangladesh is widespread and recurrent. Cyclones, floods, storm surges and other hazards affect millions of people each year. Major progress in disaster preparedness and early warning systems has reduced mortality significantly, but displacement continues to cause substantial disruption to housing, livelihoods, services and overall wellbeing.

This report shows that the impacts of disaster displacement extend beyond people's immediate movement. The phenomenon is estimated to have led to around 89,000 life-years lost between 2008 and 2025, which corresponds to about $1.7 billion in cumulative human costs. These impacts are shaped not only by the scale of displacement, but also by the severity of disruption and the speed of recovery.

The findings demonstrate that cyclones, storm surges and floods account for the majority of human costs in Bangladesh, reflecting their scale and recurrence. Major disasters generate the largest single-event impacts, but recurrent small and medium-scale displacement events also contribute substantially to cumulative human costs over time.

Household-level analysis further highlights that displacement impacts are uneven and shaped by pre-existing vulnerability. Some households reported higher income after displacement, but poorer households generally remained below the poverty line, while others experienced substantial income losses and prolonged disruption. These findings underscore the fact that recovery outcomes vary considerably across households and that higher post-displacement incomes do not necessarily imply improved wellbeing.

Climate change is likely to intensify future displacement risks, particularly those associated with riverine floods and storm surges. Under a pessimistic climate scenario, the human costs associated with these hazards are projected to increase significantly, reinforcing the importance of strengthening resilience, reducing prolonged disruption and supporting faster recovery.

Estimating the human cost of displacement complements head counts and loss and damage assessments by casting light on impacts that are not visible in physical or economic loss metrics. By capturing how displacement affects people's lives over time, the analysis provides a more comprehensive understanding of disaster impacts and supports more people-centred approaches to disaster risk reduction, recovery planning and climate adaptation in Bangladesh.

Methodology

Conceptual framework

This analysis estimates the human costs of disaster displacement, defined as the welfare loss associated with a temporary reduction in people's ability to live healthy, secure and productive lives.

Human impacts are expressed in life-years lost, a metric commonly used in public health and disaster impact assessments to represent reductions in quality of life over time. These are then translated into monetary terms to estimate the human costs of displacement.

Life-years lost capture the cumulative reduction in quality of life experienced by displaced people during periods of disruption.

Welfare loss formulation

Welfare losses are calculated as:

$$\textit{Life-years lost} = eTN$$

Where:

- e is the welfare reduction parameter associated with a temporary decline in functioning
- T is the duration of displacement-related disruption, expressed in years
- N is the number of internally displaced people per event

Duration of disruption

The duration of disruption captures the period during which displaced people experience reduced functioning. Observed evacuation stays capture only the acute phase and underestimate the full duration of disruption.

To account for continued impacts beyond evacuation, the duration parameter is adjusted using a recovery extension factor:

$$T = \left(\frac{D}{365}\right) \times F$$

Where:

- D is the observed number of days in evacuation centres
- F is the recovery extension factor used to approximate continued disruption beyond the evacuation phase

F scales observed evacuation duration to reflect the assumption that displacement-related impacts may persist after physical return, including continued disruption to housing, livelihoods and access to services.

The recovery extension factor

Because recovery duration is not directly observed in displacement datasets, *F* is derived using a transparent event-level severity assessment rather than relying on hazard type alone. Each displacement event is characterised along four observable dimensions known to influence recovery:

- Geographic scope – localised/district-level/ nationwide
- Damage assessment – minor/moderate/major
- Scale of displacement – small/medium/large
- Type of displacement – pre-emptive/short-term/ long-term

Each dimension is assigned an ordinal score from 1 (lowest) to 3 (highest). The total event severity score is computed as:

$$S = s_{geo} + s_{damage} + s_{scale} + s_{type}$$

The resulting severity score is then mapped to discrete *F* ranges to ensure consistency across events:

Severity score (S)	Categories	Assigned F
4–5	Very limited recovery disruption	2
6–7	Moderate recovery disruption	4
8–9	High recovery disruption	7
10–12	Very high recovery disruption	8

Table 3: Mapping severity score to recovery factor

This approach allows the analysis to distinguish between short-lived evacuations and displacement events associated with more severe and prolonged disruption.

Welfare reduction parameter

The welfare reduction parameter e reflects the severity of the temporary decline in functioning associated with displacement. It is informed by disability weight frameworks commonly used in public health.

In this analysis, ***e*** is calibrated using the upper bound of the WHO mild anxiety disability-weight range as a conservative and comparable proxy for temporary displacement-related disruption.

Monetisation

To support policy analysis, life-years lost are translated into monetary equivalents using the value of a statistical life year (VSLY).

VSLY represents the monetary value associated with a year of healthy life and is widely used in welfare and risk analysis to express non-fatal impacts in comparable economic terms. In this analysis, VSLY is applied as a valuation tool to support comparison and prioritisation rather than as a measure of income loss or compensation.

Interpretation and limitation

The estimates presented should be interpreted as conservative. Disruption duration is anchored in observed evacuation stays and extended using discrete recovery extension factors designed to approximate continued disruption beyond the acute displacement phase.

The framework does not directly capture all dimensions of displacement-related disruption, including psychological impacts, loss of social networks or long-term vulnerability. Nor are the household-level recovery dynamics directly incorporated into the estimation model. These are analysed separately using household survey data to inform the interpretation of results rather than the estimation itself.

Endnotes

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