Climate resilience through social protection

The economic case for early action

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Issue Paper
October 2025

Climate change; Policy and planning

Keywords:
Loss and damage, climate finance, early warning systems, social protection, climate resilience

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About the reviewers

This publication has been reviewed according to IIED's peer review policy, which sets out a rigorous, documented and accountable process. The reviewers were Abdihakim Ainte, director of food security and climate change, Office of the Prime Minister of Somalia, Dr Somnath Hazra, partner, CLA Global Indus Value Consulting and Tom Mitchell, executive director, IIED. For further information, see www.iied.org/research-excellence-impact

About ALL ACT

ALL ACT is an initiative working to optimise existing finance, expertise and delivery mechanisms to support agile responses to loss and damage, led by communities made vulnerable by climate change.

Acknowledgements

We thank the governments of Bangladesh, Ethiopia, Ghana, India, Malawi, Pakistan, Senegal and Uganda for their support in carrying out the analysis presented in this paper. We are also grateful to our local partners and the alliance members of ALL ACT, as well as the Risk-informed Early Action Partnership (REAP), for their valuable collaboration. We especially thank David Ackers, editorial manager in IIED's communications team, for providing guidance and support with this publication. Thanks to Annette McGill for her support in copyediting the document and Hannah Caddick for her work on the design and layout. We would also like to thank Chandrakanth Vivekanandan, programme manager at IIED, and Martin Cummins, project manager at IIED, for supporting the publication's production.

Published by IIED, October 2025

Bharadwaj, R, Karthikeyan, N and Chaliha, S (2025) Climate resilience through social protection: the economic case for early action. IIED, London.

iied.org/22668iied

ISBN: 978-1-83759-167-1

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Cover photo: Villagers in Bisanjpur Tandi in Madhya Pradesh, India, planning suitable structures for water conservation under the social protection programme, Mahatma Gandhi National Rural Employment Guarantee Scheme. Credit: H&K Communications/IIED

Climate change is no longer a distant risk but a systemic development crisis. The impacts are particularly devastating for the least developed countries and Small Island Developing States, where repeated shocks are eroding hard-won development gains and driving households deeper into poverty. This paper demonstrates how taking early action through social protection programmes is more cost-effective than reactive, post-disaster responses and can be socially transformative. It highlights two complementary pathways for building resilience: anticipatory direct benefit transfers and longer-term resilience-building investments, and presents the business case for these approaches — including benefit–cost ratios and return on investment — compared with existing social protection and humanitarian responses. The findings are based on analysis from eight countries: Bangladesh, Ethiopia, Ghana, India, Malawi, Pakistan, Senegal and Uganda.

Contents

Abbreviations

ASPIRE	Anticipatory Social Protection Index for Resilience
BCR	Benefit–cost ratio
CCTF	Climate Change Trust Fund
CRISP-M	Climate Resilience Information System and Planning
DBTs	Direct benefit transfers
DRR	Disaster risk reduction
FRLD	Fund for Responding to Loss and Damage
HSNP	Hunger Safety Net Programme
LDCs	Least developed countries
LEP	Loss exceedance probabilities
MGNREGS	Mahatma Gandhi National Rural Employment Guarantee Scheme
NAP	National adaptation plan
NDCs	Nationally determined contributions
PSNP	Productive Safety Net Programme
SIDS	Small Island Developing States
UNDRR	United Nations Office for Disaster Risk Reduction

Summary

Climate change is no longer a distant risk but a systemic development crisis. In 2024, the world witnessed 58 'billion-dollar disasters' that collectively resulted in more than US$400 billion of damage.[1] These impacts are particularly devastating for the least developed countries (LDCs) and Small Island Developing States (SIDS), where repeated shocks are eroding hard-won development gains and driving households deeper into poverty. In this context, social protection programmes, which are primarily designed to reduce poverty and vulnerability, have emerged as critical tools for building climate resilience. When well-designed and timely, they can help people prepare for, cope with and recover from shocks.

In this paper, we analyse the importance, examples and relative cost of two key early action methods for strengthening resilience through social protection: **anticipatory direct benefit transfers** (DBTs), which take the form of cash, food aid or in-kind support delivered before a shock occurs; and **early investment in resilience**, such as public works, asset transfers and employment schemes.

Triggered by early warning systems or climate forecasts, DBTs can help households take preventive action before damage occurs. This includes buying food, protecting assets or evacuating safely, thereby reducing the harm people are exposed to and avoiding costly recovery later. Investment in resilience, on the other hand, can reduce long-term vulnerability by building infrastructure, conserving ecosystems and enhancing livelihoods.

Together, these approaches build absorptive capacity to buffer shocks, adaptive capacity to adjust to changing risks, and transformative capacity to shift systems and reduce structural vulnerability. But most LDCs and SIDS lack the financing, coordination and delivery systems to scale early action, leaving millions exposed to preventable losses.

Diagnosing readiness

To support countries in delivering early action, the Anticipatory Social Protection Index for Resilience (ASPIRE) diagnostic tool provides a structured framework to assess the 'system readiness' of countries and communities to potential climate shocks. It evaluates 69 indicators across four domains — policy, systems, programme design and programme delivery — at both national and programme levels. By pinpointing strengths and gaps, ASPIRE helps governments, donors and implementing partners identify where reforms, financing or technical support are most needed. It therefore serves as both a roadmap for national action and a framework for learning between countries.

Solutions for early action through social protection

To understand how early action can be operationalised through social protection, we undertook country-level and meta-level analyses across eight countries: Bangladesh, Ethiopia, Ghana, India, Malawi, Pakistan, Senegal and Uganda, covering a total of 24 social protection programmes. These included a range of public works, cash transfers and in-kind support schemes. We used the ASPIRE diagnostic tool to assess each programme's potential to deliver two core pathways for early action: anticipatory DBTs triggered before a shock; and early investment in resilience through public works and livelihood support.

Across both pathways, the analysis revealed progress but also persistent gaps:

- For anticipatory DBTs, some programmes like Ethiopia's Productive Safety Net Programme (PSNP) and India's Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) have begun to integrate climate risk thresholds to trigger additional benefits when drought conditions are forecast. Bangladesh's mobile cash delivery platforms and Malawi's pilot forecast-based cash transfers offer further learning. However, most programmes lack pre-agreed triggers, early warning systems remain disconnected from delivery pipelines and disaster risk financing is rarely linked to social protection.
- System readiness is uneven. Although digital social registries exist in many countries, they are often

static, lack climate vulnerability data and are not integrated with early warning systems. The portability of benefits, essential for climate-induced migration, is also limited, with India's One Nation One Ration Card initiative being a notable exception.

- For early resilience investments, programmes like MGNREGS and PSNP are delivering significant adaptation and mitigation co-benefits, from soil and water conservation to income stability. But national policies often still treat social protection as reactive and do not align with climate adaptation strategies. Inclusion gaps for women, migrants, older people and people with disabilities remain largely unaddressed.
- Delivery capacity at the local level is weak. While tools like fee waivers and public works exist, they are underutilised. Community-based approaches and decentralised implementation models show potential but require greater investment, clearer mandates and better cross-sector coordination.

Our analysis highlights that, while some building blocks are in place, scaling early action requires coordinated reforms across the four core domains of policy, systems, programme design and programme delivery. The ASPIRE tool provides countries with the roadmap to address these gaps, providing the evidence, structure and momentum needed to build resilient systems that work before crises hit.

Understanding the business case for early action

At the core of this paper is the financial assessment of whether early action through social protection offers better value than reactive humanitarian responses or existing safety nets. To answer this, we conducted a comprehensive economic analysis across the eight countries, combining 62 years of EM-DAT disaster data, household-level data, and modelling data from over 10,000 simulations per country.

We estimated the potential household losses under different climate risk scenarios,[i] comparing four types of interventions: existing social protection programmes; later humanitarian responses; anticipatory DBTs; and early resilience investments.

The results showed that in a severe (1 in 20 years) climate shock, the financial losses across the eight countries could reach US$21.4 billion. India alone could face over US$11 billion in losses, followed by Pakistan (US$6.5 billion), Bangladesh (US$2.3 billion) and Ethiopia (US$811 million). Even smaller countries like Ghana, Malawi, Senegal and Uganda would face significant risks.

Existing social protection programmes mitigates just 2% of these losses. Later humanitarian responses reduce losses to 59%, while anticipatory DBTs cut them to 42% and early resilience investments bring them down to just 27%. A benefit–cost ratio (BCR) assessment confirms the case for early action: for every US$1 invested, early resilience investments yield US$5.17 in avoided losses and development gains. Anticipatory DBTs return US$2.06, while later humanitarian responses and existing social protection programmes fall below the breakeven point, with returns of just US$0.83 and US$0.23 respectively.

To test how reliably these BCRs would perform under a wide range of future conditions, we conducted over 10,000 probabilistic modelling simulations (in other words, confirming that the observed patterns are not coincidental or context-specific, but statistically robust). This shows that early resilience investments have a 73% chance of the BCR being greater than one, indicating the benefits are worth more than the costs, and a 62% chance of the BCR being greater than three, meaning the benefits are worth more than three times the costs. Anticipatory DBTs also perform reliably, exceeding a BCR of one in 66% of simulations.

We also calculated how much it would cost to offset the losses that a 1-in-20-year disaster event would cause. Our assessment showed that to cover US$21.4 billion in expected losses, existing social protection would require US$93 billion, over four times the actual loss. Later humanitarian responses would require US$25.8 billion. In contrast, anticipatory DBTs could cover the losses for just US$10.4 billion, and early resilience investments for only US$4.1 billion.

At the country level, the cost-saving potential is stark. India could cut costs from US$48.5 billion to US$2.2 billion with resilience investments. In Pakistan, switching to early resilience investments could cut costs from US$28.4 billion to US$1.3 billion. And Ethiopia could achieve the same protective coverage with US$157 million instead of US$3.5 billion.

Beyond cost savings, these investments generate lasting development gains from protecting livelihoods, preventing irreversible human capital losses and strengthening local delivery systems. Early action also promotes more inclusive, equitable and sustainable development. In a world of rising climate risks and constrained budgets, investing ahead of shocks becomes a development imperative.

i We assessed this using loss exceedance probabilities (LEP), which estimate the probability that financial losses will exceed a given threshold in a year.

From evidence to action

The ASPIRE diagnostic tool offers both a roadmap and a call to action, but it requires collective ambition and shared resolve to make early action through social protection the norm, not the exception.

To deliver on this potential, countries must co-create — with a range of relevant stakeholders —national roadmaps tailored to their risk profiles and institutional contexts. These roadmaps should define roles across government, civil society and local actors, set clear timelines and be backed by strong monitoring systems.

Delivery institutions must also be strengthened, with climate-linked social registries, interoperable systems and empowered local governments capable of acting early. Financing must evolve from fragmented projects to anticipatory DBTs. The Fund for Responding to Loss and Damage (FRLD), created in 2022, can serve as a critical anchor for this shift, especially if paired with philanthropic capital that can move quickly, test innovation and bring in other sources of finance.

Social protection and climate resilience

Climate change is becoming a systemic development crisis. Social protection programmes can play a vital role in protecting people before climate shocks and helping communities build long-term resilience. This section outlines how social protection programmes can deliver climate action through two linked approaches: anticipatory DBTs and early resilience investments. We also examine the barriers to implementing early action.

1

1.1 Climate change is becoming a growing development challenge

The imperative to build resilience has never been more urgent. Communities on the frontlines of climate change in LDCs and SIDS are facing more frequent and severe shocks, undermining progress on poverty reduction, health, food security and economic development. In 2024, the world recorded 58 billion-dollar weather disasters, resulting in over US$400 billion in damage, the second-highest number on record.[2] Global temperatures exceeded 1.3°C above pre-industrial levels, with record-breaking ocean heat and rising sea levels intensifying impacts for coastal regions and SIDS.[3]

These climate extremes are displacing millions, disrupting livelihoods and pushing people into deeper poverty. According to a report from the World Weather Attribution group, of the 29 extreme weather events they analysed in 2024, climate change made 26 more likely or more intense, resulting in at least 3,700 deaths.[4] Without urgent action, up to 100 million more people could fall into extreme poverty by 2030.[5] Displacement trends are also accelerating: 30 million people were forced from their homes in 2020 due to climate-related disasters, and the World Bank projects this number could reach 250 million by 2050.[6]

The health and economic impacts of these disasters are also mounting. Globally, climate change is adding, on average, six extra weeks of dangerously hot days each year.[7] The World Health Organization estimates there will be 250,000 additional deaths annually from heat stress, disease and malnutrition between 2030 and 2050.[8] Climate-driven air pollution now causes 4.2 million premature deaths per year,[9] while job losses from climate-related disasters are expected to reach 72 million by 2030, according to the International Labour Organization.[10]

These cascading and compounding risks reveal that climate change is fast becoming a systemic development crisis. It reinforces existing inequalities, erodes coping capacities and increases the likelihood of long-term, irreversible setbacks for vulnerable communities, particularly in LDCs and SIDS.

To address these risks, countries will need to invest in early action and long-term resilience, starting with the systems already in place. Here, social protection programmes can serve as a critical foundation for protecting people before crisis strikes and helping them recover and thrive afterwards.

1.2 Social protection for climate resilience

Social protection programmes have long played a central role in national development strategies aimed at reducing poverty, addressing inequality and promoting inclusive growth. In 2017 alone, more than US$500 billion[11] was invested in social protection across low- and middle-income countries, with support from both governments and international donors. Nearly 45% of the global population is now covered by at least one form of social protection, with such programmes reaching approximately 25% of vulnerable people worldwide.[12] These systems are widespread, widely trusted and increasingly recognised as viable platforms for building climate resilience.

Well-designed social protection systems do more than protect people from income shocks. They help individuals and households prepare for, absorb and recover from climate impacts. In Bangladesh, Ethiopia and Kenya, social protection has helped households protect assets, stabilise consumption and avoid distress strategies during periods of climate stress. For instance, participants in Bangladesh's Challenging the Frontiers of Poverty Reduction programme saw a 42% increase in per capita income and doubled their household assets.[13] In Ethiopia, the PSNP enabled households to sustain livestock and food security during drought years.[14] And in Kenya, recipients of the Hunger Safety Net Programme (HSNP) maintained consumption during the 2008–2011 drought, while households without support reduced their spending by 10%.[15]

In the absence of such support, households facing climate shocks often fall into irreversible poverty traps. Families resort to negative coping strategies such as selling assets, pulling children out of school or skipping meals. The impacts are long-lasting: children born during droughts are more likely to be malnourished, have lower educational attainment and earn less income as adults.[16] These effects are compounded across generations, deepening cycles of vulnerability and fragility.

As climate risks become more frequent and severe, the need for timely and adequate support through social protection becomes increasingly urgent. Relying on reactive, post-crisis responses is no longer sustainable. Instead, countries must invest in systems that provide early and layered support to help people prepare for, cope with and recover from shocks. In this paper, we have presented early action through social protection as two linked approaches (see Figure 1 on page 10).

- **Anticipatory DBTs:** these are cash transfers, food aid or other forms of support provided in advance of a shock, triggered by early warning systems or forecast data. They allow households to take protective action, such as buying food, securing medicine or

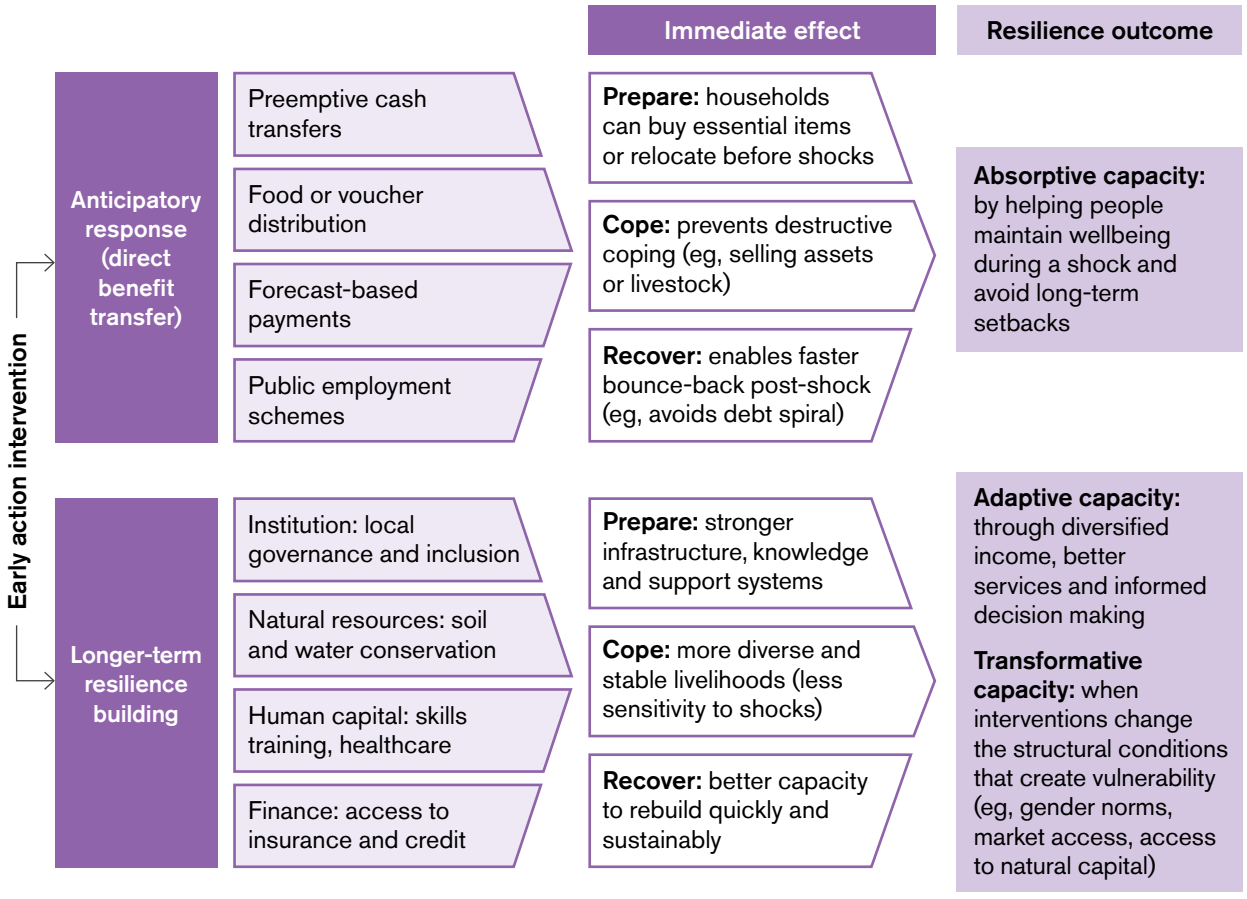
evacuating if needed, and avoid irreversible harm. In Bangladesh, anticipatory cash transfers have reduced food insecurity and helped families keep children in school. Trigger-based insurance models like the African Risk Capacity and the Caribbean Catastrophe Risk Insurance Facility have shown how pre-arranged financing can enable fast, reliable support when disaster thresholds are breached.

- **Early investment in resilience:** social protection can also reduce vulnerability by building productive assets, improving livelihoods and strengthening community resilience. In India, the MGNREGS has contributed to climate resilience by supporting water conservation, drought-proofing and land restoration. Over 75% of MGNREGS assets are directly relevant to climate adaptation.[17] MGNREGS participants were found to be less likely to migrate, more likely to invest in agricultural inputs, and better able to maintain income and food security during climate shocks.[18] Ethiopia's PSNP has led to similar outcomes, including more diversified incomes, higher livestock holdings and greater household stability during droughts.[19]

Early support through social protection has also been shown to be cost-effective. Research on the economics of early response and resilience found that for every US$1 invested in disaster resilience, development gains and savings from avoided losses amounted to US$2.8 in Ethiopia and US$2.9 in Kenya.[20] A World Bank study showed that resilient infrastructure yields a return of US$4 for every US$1 spent.[21] The United Nations Office for Disaster Risk Reduction (UNDRR) estimates that every US$1 invested in risk prevention saves up to US$15 in future recovery costs.[22]

As shown in Figure 1, anticipatory DBTs and early resilience investments in ecosystem assets, infrastructure and livelihoods can work together to strengthen households' absorptive, adaptive and transformative capacities. When social protection programmes provide both types of support, they can help in managing risk, protecting development progress and enabling recovery. They also reduce long-term public spending on emergency response, strengthen communities before crises strike and support inclusive development. The challenge lies in accelerating the shift from reactive support to proactive, risk-informed social protection that meets the scale and urgency of the climate crisis.

Figure 1. Pathways to resilience through early action intervention in social protection programmes



1.3 Why scaling early action through social protection remains a challenge

Even though the value of social protection in building resilience is recognised, most countries, especially LDCs and SIDS, face deep-rooted structural, financial and operational barriers that limit their ability to scale early action through these systems. These constraints affect both the capacity to deliver timely, forecast-based support and the ability to use social protection as a platform for building lasting resilience in vulnerable communities. Barriers include:

- **Inadequate financing and patchy coverage:** most LDCs and SIDS struggle to invest sufficiently in social protection systems, let alone adapt them for climate resilience. Financing constraints are compounded by limited domestic fiscal space and competing policy priorities. While high-income countries spend nearly US$700 per capita on social protection a year, investments in low-income countries range from just US$4 to US$28 per person a year.[23] The result is limited reach and inadequate assistance.[24] Prior to the COVID-19 pandemic, up to four billion people globally lacked access to any form of social protection. During the pandemic, emergency responses in over 80% of low- and middle-income countries covered less than half of the population. In nearly 30% of countries, fewer than one in ten people received any form of support. Even where support existed, the value of benefits was often insufficient to meet basic needs.[25] For example, in Colombia, a new scheme offered only 2.5 days' worth of minimum wage per month.[26] Without scaled-up and sustained investment, social protection systems will remain inadequate, reactive and unable to deliver either just-in-time direct transfers or the longer-term resilience investments needed to reduce future risk.
- **Barriers to accessing climate finance:** while international climate finance could help close the funding gap, mechanisms for accessing finance restrict opportunities for early action. Vulnerable countries face long, technical and bureaucratic processes to access global funds. For instance, it takes an average of 5.5 years for an LDC to gain accreditation and secure funding from the Green Climate Fund.[27] Proposal-based models are poorly suited for pre-disaster support. They are slow, reactive and not designed for the urgency required to respond to early warning triggers or deliver anticipatory support. Their rigid mechanisms hinder countries from delivering flexible, forecast-based DBTs and from channelling climate finance into resilience-enhancing investments, such as drought-proofing infrastructure or ecosystem restoration through public works.
- **Weak integration of social protection and climate risk management:** while both climate adaptation and social protection are recognised policy priorities in many countries, in practice they are often siloed. Most social protection programmes are designed around life cycle risks or chronic poverty, not the acute, forecastable risks posed by climate change. Only a few programmes explicitly integrate climate resilience or risk reduction into their objectives. This disconnect makes it difficult to deliver timely, climate-informed assistance, whether in the form of early DBTs or investments to reduce future vulnerability.
- **Operational gaps in data, targeting and early warning systems:** even with political will and financing, delivery remains a challenge. Effective early action depends on strong systems for identifying at-risk populations, triggering support early and getting assistance to the right people. Many countries lack up-to-date beneficiary data or functioning social registries and early warning systems that can support timely disbursement. As a result, delays occur and support often arrives too late and after families have already lost livelihoods or resorted to negative coping strategies.
- **Slow and inefficient decision making:** in many settings, the governance of social protection and disaster response is fragmented across ministries and agencies. Bureaucratic inefficiencies can further delay the activation and delivery of support, even when early warnings are available. Without clearer mandates, faster decision chains and better coordination across institutions, early action through social protection will continue to face delays.
- **Uneven system readiness and delivery capacity:** the readiness of social protection systems to deliver climate-responsive support varies widely. Some countries have relatively mature systems with strong administrative capacity, digital registries and functioning delivery channels. Others are still building basic infrastructure and face serious capacity constraints at both the national and local levels.

Without urgent action to address these challenges, climate shocks will continue to drive poor and vulnerable populations deeper into poverty. In contrast, timely, well-designed social protection systems can prevent destructive coping strategies, reduce the long-term cost of crises and help communities bounce back stronger.

Delivering early action through social protection: the ASPIRE diagnostic tool

The ASPIRE diagnostic tool is designed to help governments and stakeholders assess the readiness of social protection programmes to deliver early action for climate resilience. This section introduces the ASPIRE tool and how it can be used to help identify gaps and develop practical, context-specific solutions for social protection to deliver both anticipatory support for those at risk of climate shocks and build resilience over the long term.

Countries face a range of challenges in delivering early action through social protection. These constraints vary depending on each country's exposure to climate risks, the maturity of its social protection infrastructure and its institutional readiness to act before or during crises.

To help governments and partners navigate these complexities, we developed the ASPIRE diagnostic tool. ASPIRE enables a systematic assessment of how well existing policies, systems and programmes are equipped to deliver climate resilience, both in the short term through anticipatory DBTs and over the long term through early resilience investments. This section introduces the ASPIRE tool, explains why it is needed, who it is for and how its structured approach can help countries identify gaps, prioritise reforms and target support to the populations most at risk.

2.1 What is ASPIRE?

A key challenge to developing solutions that support early action is that countries start from vastly different baselines. Climate risks vary by geography and hazard type, from droughts, floods and cyclones to sea level rise, while communities differ in their vulnerabilities and capacity to cope. Social protection systems also range widely in their level of maturity. This diversity means that there can be no one-size-fits-all solution. The ASPIRE tool was developed to fill this gap (more details on the ASPIRE toolkit and how to use it can be found at: www.iied.org/21901iied). The ASPIRE tool helps countries assess how well their social protection systems are positioned to deliver early action. This includes both anticipatory DBTs that can be triggered ahead of climate shocks and early investments that are needed to strengthen long-term resilience.

Governments often face overlapping constraints, such as fragmented mandates, limited financing, weak integration with early warning systems and gaps in programme coverage or design. At the same time, each country operates in a unique context, such as some having advanced digital and institutional infrastructure, while others have more nascent systems. ASPIRE supports a shift away from generic models to tailored, practical solutions that reflect each country's reality. It provides a structured, evidence-based framework to evaluate whether current policies, systems and programmes can respond to growing climate risks and what must change to improve their performance.

The tool is built around three core questions:

1. Are current policies, systems and programmes capable of delivering timely, targeted support to those most at risk?
2. Where are the critical gaps, whether institutional, technical or financial?
3. What concrete actions are needed to close those gaps and enable scalable early action?

Using the ASPIRE tool to answer these questions enables governments to strengthen the foundations of social protection systems so they can respond faster to crises and build resilience for the long term.

2.2 What domains does ASPIRE analyse?

ASPIRE provides a two-level diagnostic framework (see Figure 2 on page 14) to evaluate performance and gaps across national policies and systems and individual programmes, generating a comprehensive picture of what is working, what is missing and where improvements are needed.

At the national level, ASPIRE analyses 36 indicators across two domains:

- The **policy domain** assesses whether national strategies and frameworks explicitly address climate risks, promote anticipatory and adaptive social protection, and provide clear roles, responsibilities and objectives, and
- The **systems domain** examines the operational backbone needed to deliver early action, such as fiscal space, information systems, national registries, early warning integration, coordination across sectors and delivery infrastructure.

At the programme level, ASPIRE examines 33 indicators across two domains:

- **Programme design** indicators assess whether climate risk is integrated into target setting, eligibility criteria, benefit structures and scalability mechanisms, and
- **Programme functioning** evaluates whether social protection instruments help prevent harmful coping strategies, protect assets during crises and promote post-shock recovery, thereby contributing to absorptive, adaptive and transformative resilience.

The different areas of analysis at policy and programme level are summarised in Figure 3 on page 14.

The analysis helps identify whether key building blocks are in place. For example, are risks clearly defined in national policy? Are financial and administrative systems capable of supporting early action? Do programmes incorporate early warning triggers or climate-smart targeting? Are social registries up to date and shock-responsive? These insights allow stakeholders to move from general ambition to action.

For governments, ASPIRE helps prioritise policy and regulatory reforms based on country-specific gaps. It supports the design of climate (*continues on page 15*)

Figure 2. Policy and programme levels of assessment under ASPIRE

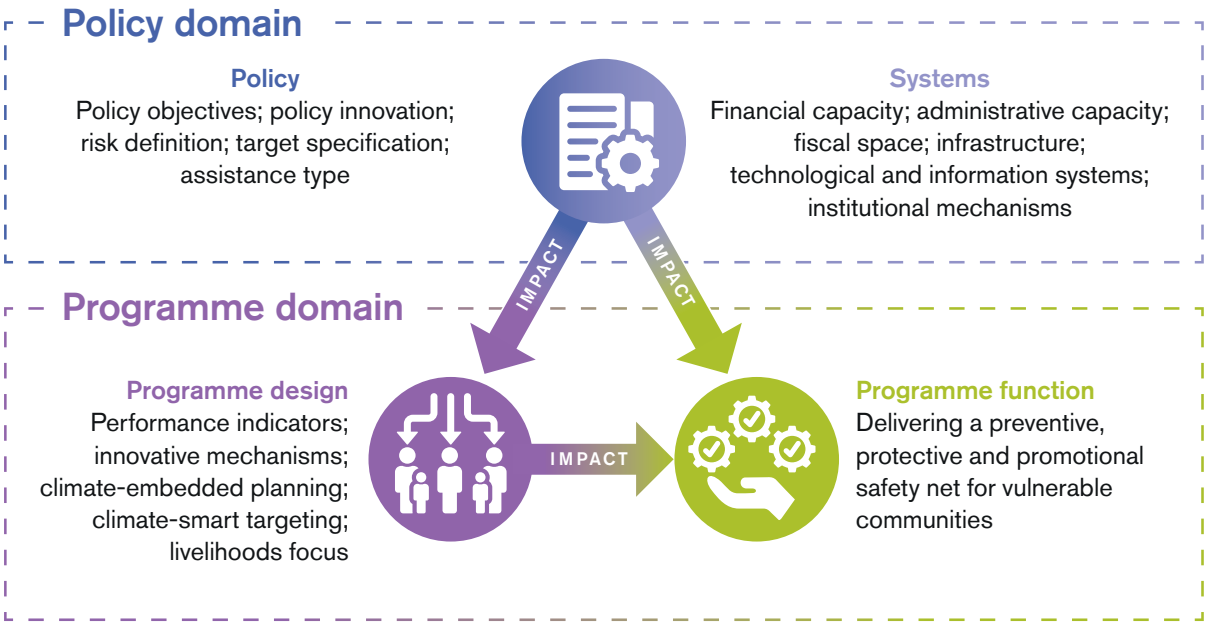
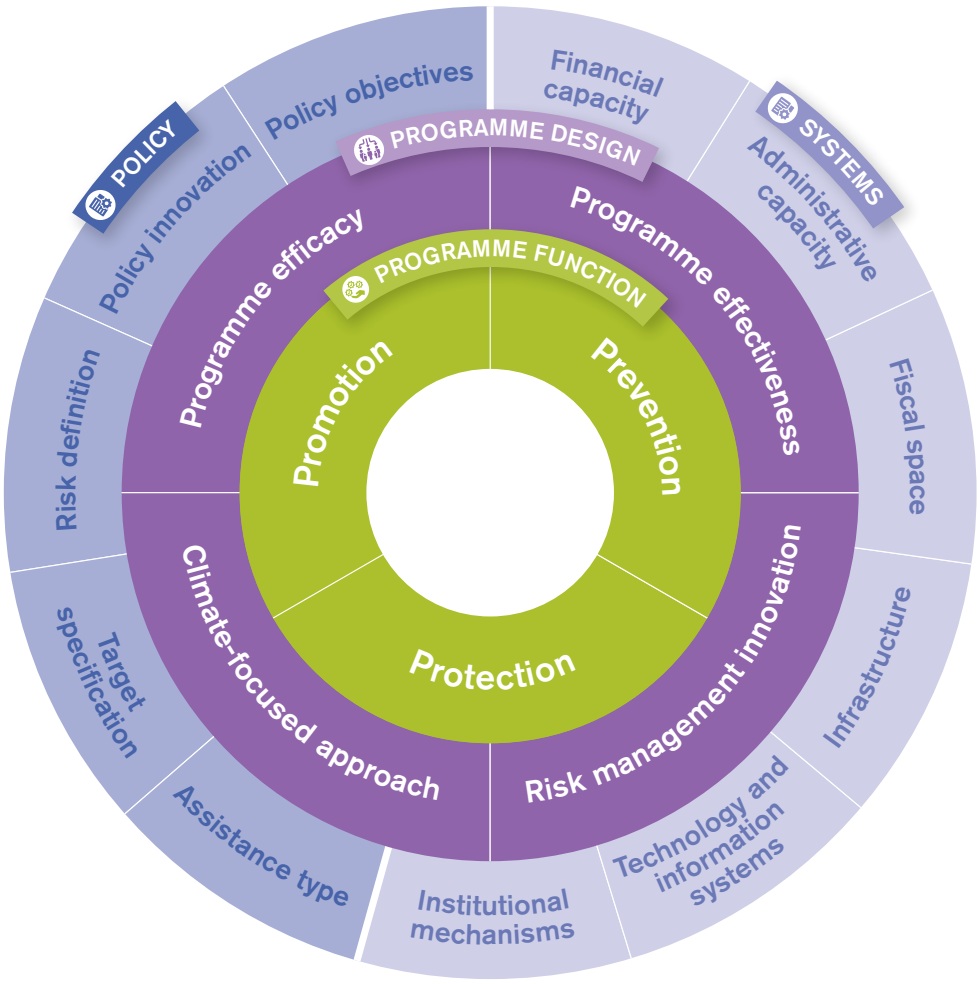


Figure 3. Criteria for assessment under the policy and programme domains



risk-responsive programmes, aligns policy objectives with delivery capacity and provides an evidence base for securing budget allocations or climate finance. It also helps build consensus across ministries by highlighting system interdependencies and coordination gaps.

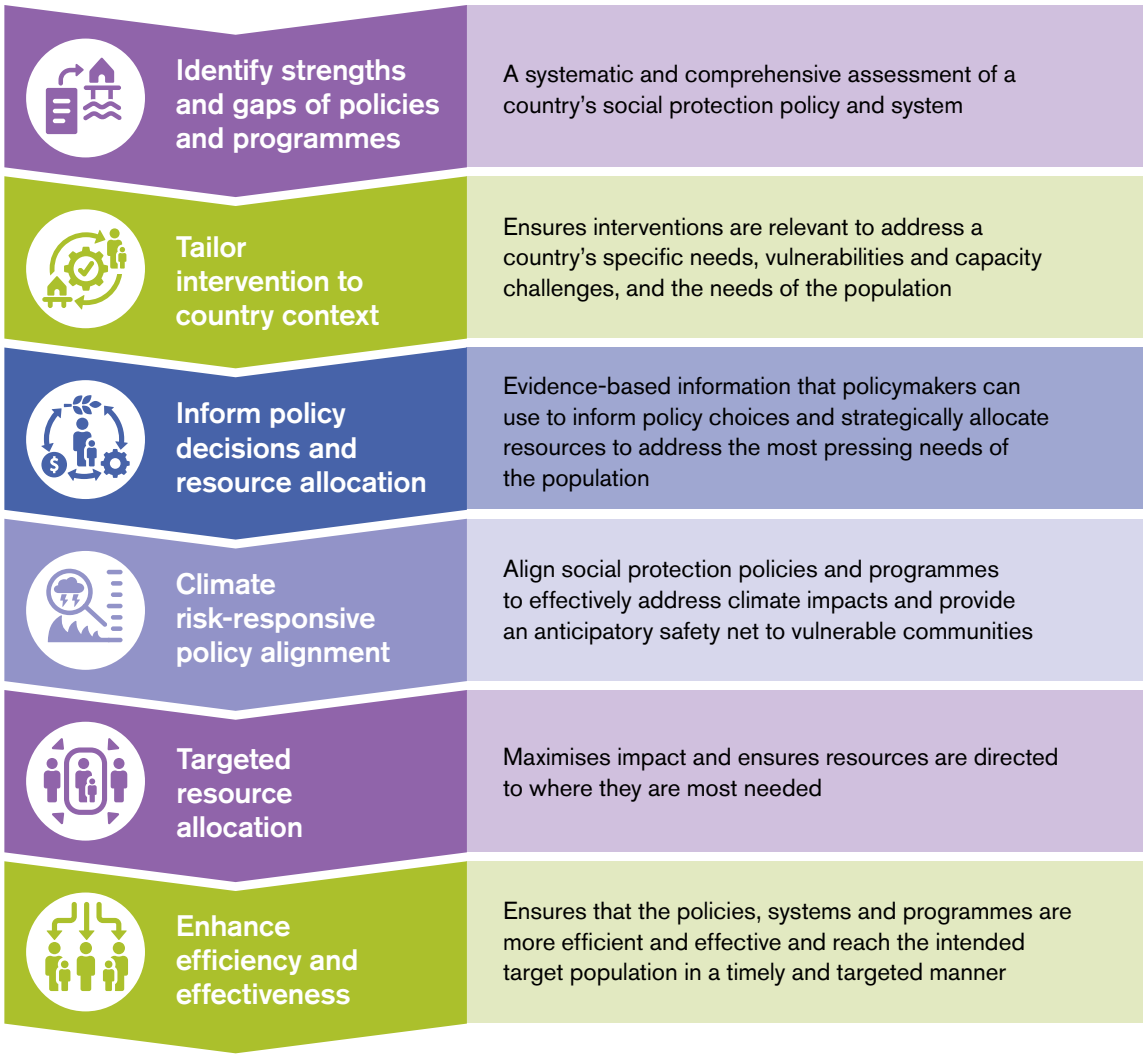
For funders and development partners, ASPIRE analysis provides a roadmap for where support is most needed, whether in financing, technical assistance or capacity strengthening. It allows donors to invest more strategically, coordinate more effectively and track progress over time.

For practitioners and implementers, the tool helps improve the design and functioning of specific programmes. It identifies where programmes fall short in terms of prevention, protection and promotion, and what changes, such as better integration of early warning data or new delivery mechanisms, can increase impact.

Figure 4 explains how ASPIRE helps address the challenges of delivering anticipatory risk-responsive social protection.

By combining policy assessment with operational diagnostics, ASPIRE provides a clear roadmap for strengthening social protection as a tool for early action, helping countries prepare, protect and promote resilience in the face of growing climate risks.

Figure 4. How ASPIRE helps address the challenges of delivering anticipatory risk-responsive social protection



Identifying solutions for early action from the ASPIRE assessment

This section sets out key components for successfully delivering early climate action through social protection programmes. To identify these, we did ASPIRE assessments of 24 social protection programmes across eight countries, examining the programmes' potential to deliver two pathways for climate action, namely anticipatory DBTs and early resilience investments via public works and livelihood support. We then did a meta-analysis to identify the essential components for success.

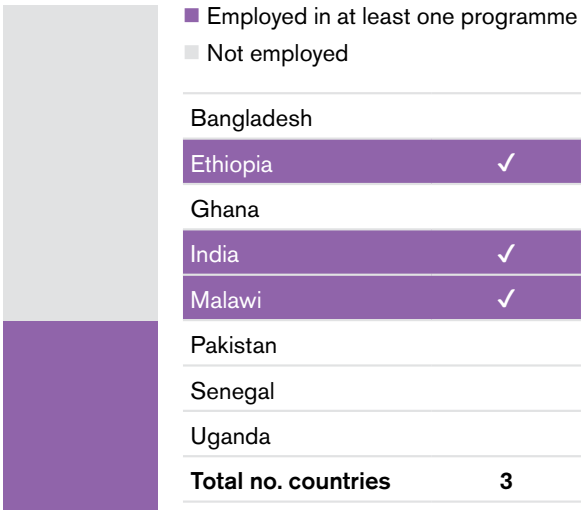
3

To understand how the ASPIRE diagnostic tool could be used in practice to assess how social protection programmes can deliver timely, climate-responsive support, we applied it across eight countries: Bangladesh,[28] Ethiopia,[29] Ghana,[30] India,[31] Malawi,[32] Pakistan,[33] Senegal[34] and Uganda[35]. These countries were strategically selected, based on their varying levels of climate risk (as measured by the INFORM Risk Index[36]), the maturity of their social protection systems and the availability of existing social protection programmes with potential for anticipatory DBTs or early resilience investments. In each country, ASPIRE was further applied to assess the readiness of three different social protection delivery mechanisms: public works, cash transfers and in-kind support schemes (a total of 24 social protection programmes).

The objective was to evaluate the potential of existing social protection programmes to deliver climate resilience by identifying strengths, gaps and priority actions. Five of the eight countries in this study are also front-runner countries under the Global Shield against Climate Risks initiative, which facilitates pre-arranged protection against climate and disaster-related risks for vulnerable countries. Our findings will be relevant for ongoing efforts to scale insurance-linked, anticipatory payouts and build system-wide resilience.

While the detailed assessment of these countries can be accessed through the resources provided in the endnotes,[37] this section presents a meta-analysis of those assessments, synthesising findings across the eight countries. Based on this analysis, we outline what solutions would look like for the two pathways of early action through social protection: anticipatory DBTs and early resilience investments.

Figure 5. Countries which have multi-hazard early warning systems and use it to deliver social protection programmes



3.1 Solutions for anticipatory DBTs: what will it take to make anticipatory social protection work?

Anticipatory DBTs are gaining traction as a powerful approach to preventing harm and reducing losses before climate shocks hit. While many countries have taken initial steps towards implementing anticipatory DBTs, significant gaps remain in translating intent into effective, timely action. This section draws on the ASPIRE assessment to outline what a well-functioning anticipatory system looks like in practice and where key weaknesses lie, across four domains: policy, systems, programme delivery and programme design.

3.1.1 Policy: embedding risk and anticipation into national frameworks

A core finding is that, while many countries are beginning to acknowledge climate risks in national policies, important gaps persist in how risks are defined, prioritised and translated into early warning systems and anticipatory triggers. For anticipatory social protection to function, policy frameworks must embed climate risk as a central design parameter, translating high-level policy intentions into practical implementation.

Defining and mapping risks and establishing early warning systems

Effective anticipatory action begins with identifying who is most at risk, from what hazards and where. The ASPIRE assessment shows that in most countries, risk maps and climate vulnerability assessments are either absent, fragmented or outdated, and where they do exist they are often not linked to social protection decision making.

Countries like Bangladesh and Uganda offer promising examples. In Uganda, the Office of the Prime Minister uses hazard maps to guide disaster response, while Bangladesh's Climate Change Strategy and Action Plan clearly identifies priority risks such as floods, cyclones and erosion, enabling more targeted preparedness. However, in many other countries, early warning systems are still disconnected from social protection planning, limiting their ability to trigger timely action (see Figure 5).

The ASPIRE assessment highlights that early warning systems must be integrated into social protection infrastructure, with clear mandates for data sharing, early action protocols and budgetary response plans. This requires strong collaboration with meteorological agencies and significant investment in technology and data systems. Without these linkages, early warnings often fail to translate into timely protection measures.

Developing risk-responsive policy frameworks

Most of the countries assessed have social protection strategies focused on chronic poverty, but very few make provisions for forecastable, climate-induced shocks. Ethiopia's PSNP is one of the exceptions, with a clear policy framework that allows the programme to expand in response to droughts, protecting assets and livelihoods before families fall deeper into crisis. Similarly, India's MGNREGS provides an additional 50 days of employment in case of severe drought, building on the existing 100-day wage guarantee to provide livelihood security during climate shocks.

Such frameworks, however, remain the exception. In many contexts, there is no formal mechanism for linking climate risk to pre-crisis social protection responses. The absence of anticipatory mandates in national policies is a major bottleneck, particularly in countries with high climate risk but limited institutional maturity. Figure 6 illustrates how few countries currently prioritise anticipatory DBTs in their social protection policy objectives.

Integrating climate-risk-based triggers into social protection

Trigger-based financing and pre-agreed thresholds are essential features of anticipatory DBTs. Yet only a handful of countries in the ASPIRE assessment have defined climate risk thresholds that can activate DBT responses in real time. Ethiopia's PSNP and Kenya's HSNP provide strong models, with mechanisms to scale up assistance when early warnings indicate worsening drought conditions. These allow for temporary expansions in coverage, benefit levels, or duration of support, helping households weather the crisis without irreversible losses.

Despite this, most programmes across the eight countries assessed still rely on post-shock targeting and disbursement. Where thresholds exist, they are rarely institutionalised or backed by automatic financing. As shown in Figure 7, only half of the countries have integrated climate triggers in at least one programme, which shows that their use in planning and delivery remains limited.

To bridge this gap, countries must invest in climate modelling, set pre-agreed action thresholds, and align their social protection systems accordingly. Doing so not only improves timeliness but also helps reduce long-term fiscal costs by preventing deeper loss and damage.

3.1.2 Systems: strengthening infrastructure and institutional readiness for early action

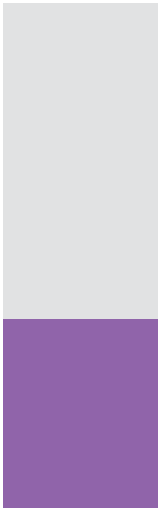
While strong policy intent sets the foundation, anticipatory social protection ultimately hinges on systems that are institutionally agile, with pre-agreed and readily available funding, and operationally ready. The ASPIRE assessment reveals uneven system maturity across the eight countries assessed, with wide variations in early warning integration, financing readiness, delivery infrastructure, and coordination platforms.

Develop anticipatory insurance schemes

Insurance-linked anticipatory financing is gaining global traction as a scalable way to release funds rapidly before or during a shock. However, the ASPIRE assessment shows that such mechanisms are still in early stages of integration with social protection systems.

A few frontrunners, such as Ethiopia, have piloted parametric insurance linked to both crop and livestock

Figure 6. Countries with national policies prioritising shock responsiveness or anticipatory action to climate risks



■ Features in at least one programme
□ Not featured

Bangladesh	
Ethiopia	✓
Ghana	
India	✓
Malawi	✓
Pakistan	
Senegal	
Uganda	
Total no. countries	**3**

Figure 7. Countries that have defined trigger points to activate anticipatory or shock-responsive social protection

■ Defined in at least one programme
□ Not defined

Bangladesh	
Ethiopia	✓
Ghana	
India	✓
Malawi	✓
Pakistan	
Senegal	✓
Uganda	
Total no. countries	**4**

losses. This allows for faster disbursement and provides a cushion against delayed humanitarian assistance. But most countries still lack the legal, actuarial or delivery infrastructure to operationalise such schemes. Figure 8 illustrates the limited uptake of these instruments across the countries assessed. Similarly, none of the countries were using innovative financing mechanisms (for example, resilience bonds) to raise resources for social protection.

A key challenge is that insurance payouts are rarely tied to social protection delivery. Without formalised channels, such as cash transfers, public works, or subsidies, the funds often fail to reach affected households quickly or equitably. There is growing evidence that insuring against losses from natural disasters yields a higher BCR than paying restoration costs.[38] Experience suggests that index-based insurance can be a cost-effective alternative to later humanitarian responses. However, parametric mechanisms must be tailored to context and should ensure delivery through existing social protection programmes.

Such an approach can encourage strategic planning and collaboration between governments, insurance companies, humanitarian organisations and communities, allowing them to develop response plans linked to insurance payouts that can be activated based on early warnings or immediately when a disaster occurs. Furthermore, anticipatory insurance can be linked to risk reduction and resilience. For example, to qualify for insurance or to reduce premium costs, countries or communities may be encouraged to put effective disaster risk reduction measures in place. This culture of preparedness can lead to significant cost savings, preventing a crisis from escalating and reducing the need for expensive humanitarian interventions. Insurance can also reduce dependency on unpredictable international aid flows, allowing countries to take ownership of their disaster risk management.

The Global Shield initiative provides an opportunity to pilot and scale such approaches by offering pre-arranged financial support for climate disasters. Linking this with social protection systems would enable context-specific, innovative financing solutions to emerge.

Build early warning-linked contingency planning and funds

Early warning systems alone cannot deliver timely responses; they must be paired with pre-agreed contingency plans and dedicated financing. Contingency funds are critical to anticipatory finance within social protection, enabling governments to act swiftly when populations face imminent shocks.

Our ASPIRE assessment shows that only Malawi, Senegal and Uganda have contingency funds specifically earmarked for climate-related emergencies. For example, Uganda's National Emergency Fund is activated during crises to support quick response and recovery. This helps prevent disruption to regular public spending and reduces reliance on external aid.

However, even where such funds exist, they are often siloed within disaster management departments and not tied to social protection systems. Moreover, few are linked to predefined early warning triggers.

Contingency funds enable faster disbursement and help ensure vulnerable populations receive timely support. Yet, Figure 9 shows that formal mechanisms to link such funds to social protection are still limited. Without these linkages, early warning data is underutilised, and

Figure 8. Countries using disaster risk financing instruments

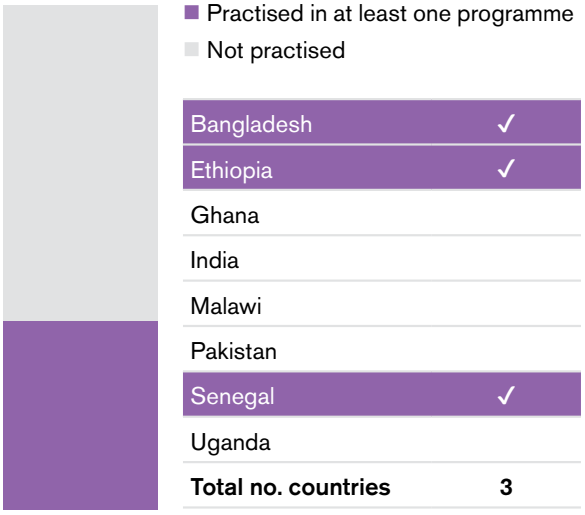


Figure 9. Countries with national plans that set out contingency plans/budgets that can be activated once trigger points are reached

financial disbursement is delayed, undermining the objective of anticipatory DBTs.

Establish portable benefit systems for displaced populations

Distress migration and displacement are among the most common impacts of climate change. Migrants and their families face severe vulnerabilities. Migrants may struggle with a lack of documentation, limited access to social networks, and increased risk of exploitation, while those left behind may experience declining income, food insecurity, and isolation. For instance, in Bangladesh, men frequently migrate after floods, leaving women to manage households without support. Yet, in most countries we assessed, portability of social protection benefits remains severely limited (see Figure 10).

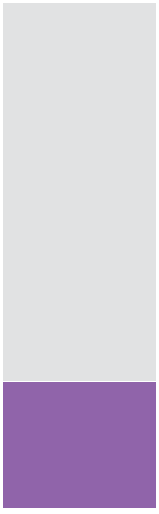
India stands out with its One Nation One Ration Card initiative, enabling beneficiaries to access food rations regardless of their location. This model offers valuable lessons for countries grappling with climate-driven mobility.

Portable benefits ensure that both migrants and households left behind can continue accessing entitlements. The ASPIRE assessment points to the need for interoperable databases, digitised registries, and decentralised delivery systems to build mobility-responsive protection.

3.1.3 Programme design: embedding flexibility and triggers for early action

Even when policies are in place and systems are capable, the effectiveness of anticipatory social protection ultimately depends on the design of the programmes themselves. Programmes must be flexible, risk-informed and scalable to meet needs before a crisis escalates. The ASPIRE assessment shows that while many programmes have built-in shock-responsive elements, few are fully anticipatory in design.

Figure 10. Countries that offer portable social protection benefits to support displaced or migrant families



■ Offered by at least one programme
■ No programme offers

Bangladesh	
Ethiopia	
Ghana	
India	✓
Malawi	
Pakistan	✓
Senegal	
Uganda	
Total no. countries	**2**

Design flexible social protection instruments that can scale early

To deliver support before or during climate shocks, programmes must be structured to allow for scaling in coverage, value or duration in response to early warnings. Only a few programmes, such as Ethiopia's PSNP and India's MGNREGS, incorporate such mechanisms.

For example, PSNP expands coverage and provides additional transfers during periods of drought, based on seasonal forecasts. Similarly, MGNREGS has predefined drought thresholds that automatically trigger extra employment days for vulnerable households. Yet such forecast-based, scalable design features remain rare. Figure 7 (page 18) highlights the limited number of countries embedding such mechanisms.

Embed trigger-linked adjustments into programme operations

The ASPIRE assessment shows that while some programmes respond to shocks, they tend to be reactive, with adjustments made after the impact. Embedding climate risk-based triggers directly into programme design ensures a proactive response, releasing support before losses accumulate.

This can involve adjusting the value or frequency of transfers when a shock is predicted, expanding eligibility criteria to cover more at-risk households and modifying the type of assistance (for example, shifting from food to cash, depending on market access).

In Malawi, elements of this are emerging under the Social Cash Transfer Programme, which is piloting forecast-based transfers in flood-prone districts. However, these practices are largely ad hoc and not yet institutionalised.

Figure 9 (page 19), which shows countries with national plans that set out contingency plans, illustrates the limited incorporation of pre-agreed, trigger-based responses into social protection programme design.

Allocate contingency financing and risk-layered instruments

Flexible programme design must be matched with pre-arranged financing. ASPIRE country assessments show that most programme budgets do not include contingency allocations for scaling during climate shocks. This undermines the operational feasibility of anticipatory DBTs, even when well-designed.

Some countries are beginning to explore risk-layered financing approaches, combining core budgets with forecast-based contingency funds and risk transfer mechanisms such as insurance. However, integration at the programme level remains limited.

Only a few governments — Bangladesh, Ethiopia and Senegal — have started aligning social protection delivery with these financial tools (see Figure 8 on page 19). None of the countries assessed were using innovative mechanisms such as resilience bonds to raise resources for social protection.

Evidence from cost-effectiveness assessments

Instruments like public works and in-kind support have shown high BCRs in high-risk settings. IIED analysis across 122 countries found that countries like India, Ethiopia and South Sudan derive greater returns on public works than cash alone, particularly where markets are disrupted by climate shocks.[39]

In India, the MGNREGS model offers an opportunity to pre-commit additional employment days in anticipation of drought using a trigger-based insurance payout mechanism. Designing programmes with this kind of financial elasticity and forward-linkage improves both absorption of risk posed by climate impacts and adaptability.

Anticipatory programme design is essential to connect policy intent and system capability with household-level impact. The ASPIRE assessment found that most programmes still lack the necessary flexibility and financing to act before disaster strikes. Embedding scalable design, pre-agreed triggers and risk-layered financing into programme operations is critical to shift from reaction to readiness.

3.1.4 Programme delivery: reaching the right people at the right time

Even the best-designed programmes cannot deliver impact without efficient, inclusive and timely delivery mechanisms. Anticipatory programme delivery hinges on real-time data, digital infrastructure, local coordination and rapid fund disbursement. While delivery platforms are improving in many countries, significant gaps remain in 'last mile' coverage, institutional coordination and readiness to act before crises unfold.

Set up digital delivery and real-time payment systems

Timely delivery of anticipatory support, whether in the form of cash, food or employment, relies on digital infrastructure that enables quick outreach, verification and payment. When a climate shock is imminent, delays can undermine the effectiveness of early action. Having the right digital tools in place is critical to reaching people before the worst impacts are felt.

Many countries have made progress in building digital systems. As shown in Figure 11, seven out of the eight countries assessed have established digitised national registries of vulnerable populations. This creates a solid starting point. However, none of these systems currently integrates climate risk information, such as who is vulnerable to which hazards and in which locations. Without this, it is difficult to use the registries to trigger timely support.

India offers an example of how end-to-end digital architecture can enable fast response. The JAM trinity (Jan Dhan Yojana bank accounts, Aadhaar biometric ID and mobile phones) allowed the government to deliver billions of dollars in DBTs, including wage support under MGNREGS during COVID-19.[40] In Cambodia, the IDPoor registry, combined with mobile payments, helped get support quickly to flood-affected households during the COVID-19 pandemic.[41]

Figure 12 shows that the use of mobile and biometric delivery systems is increasing across the eight countries

Figure 11. Countries with a digitised national database/social registry of vulnerable populations

Figure 12. Use of efficiency and effectiveness-enhancing platforms such as biometric, mobile-based delivery

assessed. However, coverage remains uneven and many programmes still rely on manual processes, especially at the local level. This limits the ability to act early at scale.

Link with climate information systems (artificial intelligence, models, early warning systems)

Anticipatory delivery depends on when action is triggered. This requires integrating early warning and climate information systems with delivery mechanisms. In most of the countries analysed, such integration is weak or absent.

Where links exist, they are nascent or fragmented. For example, CRISP-M in India connects MGNREGS to drought early warnings, allowing local governments to plan anticipatory wage days. However, such innovations remain isolated.

There is also significant untapped potential, as artificial intelligence and predictive tools could enhance anticipatory delivery. Countries need to integrate climate risk layers into existing social registries, expand mobile money and biometric authentication, link early warnings to payment platforms, and strengthen digital and delivery capacity at subnational levels.

Without these improvements, early action will remain slow and fragmented, reaching people only after losses have already occurred. Strengthening digital delivery systems is one of the most practical steps countries can take to make social protection work better for climate resilience.

Coordinate financial institutions and government pipelines for rapid disbursement

Rapid fund disbursement is the operational core of anticipatory delivery. It enables governments to get resources into the hands of vulnerable communities before the full impact of a shock sets in. Yet our findings show that few countries have pre-arranged financial pipelines ready for activation.

In Bangladesh, the Climate Change Trust Fund and the Disaster Response Fund allow early mobilisation of resources. Malawi has also established a Disaster Risk Management Fund that enables early financing for vulnerable districts. However, even where they exist, disaster risk management funds are not always embedded within social protection delivery systems.

The ASPIRE assessment found that coordination with financial institutions, banks, mobile money providers and treasury systems was lacking or siloed. During the COVID-19 pandemic, Bangladesh and India demonstrated how coordination across these actors can speed up disbursement. But in many other countries, procurement rules, banking delays, or unclear mandates continue to prevent timely action.

3.2 Solutions for early resilience investments: building long-term capacity through social protection

While anticipatory responses aim to cushion communities before shocks hit, early resilience investments are essential to shift vulnerable households beyond recurring risk thresholds. This section draws on the ASPIRE assessment to outline how social protection systems can evolve to reduce structural vulnerability and promote adaptation over time. We have identified areas where countries are making progress, such as linking social protection to natural resource management or investing in adaptive public works, but also where policy and programme design are still lagging behind long-term climate goals.

These insights can provide policymakers, funders and practitioners with a roadmap to operationalise climate-smart, inclusive and durable social protection strategies that go beyond temporary relief and deliver adaptive and transformative outcomes over time.

3.2.1 Policy: aligning social protection with climate and development goals

Mainstream climate risks into national social protection policies

One of the most important steps toward resilience-building is recognising climate risk mitigation as a central objective within national social protection strategies. Yet the majority of such policies do not currently embed climate risks into their strategic objectives. As illustrated in Figure 5 (page 17), only three of the eight countries explicitly reference climate adaptation or long-term vulnerability reduction in their frameworks. This omission makes it difficult to prioritise investments in risk-reducing infrastructure, such as water systems or protective assets, within social protection budgets.

Where progress is being made, for example in Ethiopia and India, it is largely through individual programmes rather than overarching policy mandates. Ethiopia's PSNP, for instance, includes a dual objective of protecting livelihoods while building community assets that reduce future vulnerability. Similarly, India's MGNREGS helps create natural resource management assets for communities while providing additional livelihood security during climate shocks. But national strategies often continue to view social protection as reactive or consumption-oriented, missing opportunities to promote adaptation.

To shift from a reactive to a proactive model, countries need to define climate vulnerability as a driver of chronic poverty and embed risk reduction as a core objective of their social protection frameworks.

Align social protection and national adaptation/ resilience strategies

A significant finding from the ASPIRE assessment is that there is a lack of policy coherence between social protection strategies and national adaptation plans (NAPs), disaster risk reduction (DRR) strategies and climate finance frameworks. This disconnect results in parallel efforts, where adaptation funding bypasses social protection systems and social protection programmes miss the opportunity to contribute to resilience targets under NAPs or nationally determined contributions (NDCs) — climate action plans that countries submit under the Paris Agreement.

Figure 13 shows the countries with cross-ministerial coordination mechanisms across at least one social protection programme. However, our assessment highlights that even where national coordination bodies exist, they often lack mandates to link social protection and climate planning.

Countries such as India, Senegal and Uganda are beginning to build stronger institutional bridges between social protection and climate adaptation. However, in most of the eight countries assessed, these sectors remain siloed.

A coordinated policy environment would allow countries to align funding, data systems and institutional mandates, maximising synergies between climate and social goals. It would also help to channel climate finance into social protection budgets, unlocking new funding streams for long-term resilience.

Figure 13. Countries with cross-ministry coordination bodies for the delivery of social protection programmes

■ Exist in at least one programme
□ Do not exist

Bangladesh	
Ethiopia	✓
Ghana	✓
India	✓
Malawi	✓
Pakistan	✓
Senegal	✓
Uganda	✓
Total no. countries	**7**

Support rights-based, inclusive legal frameworks

A key enabler of long-term resilience is embedding social protection in a legal and institutional framework that guarantees coverage for the most vulnerable. Many of the countries under review lack enforceable legislation mandating access to support during and between shocks. This leaves marginalised groups, particularly women, children, older people and people with disabilities, at greater risk of exclusion.

A rights-based approach helps ensure that resilience investments reach those most in need, even in contexts of fiscal tightening or political change. For example, India's National Food Security Act and MGNREGS Act legally guarantee access to food and wage employment, including during droughts. These legal guarantees have created institutional space for experimentation with early action and longer-term resilience interventions, such as MGNREGS piloting the use of the Climate Resilience Information System and Planning (CRISP-M) tool to provide additional employment days based on early warnings of drought.[42]

However, most countries invest far less in social protection as a percentage of GDP than is needed to meet minimum coverage standards. Legal frameworks must be supported by financing, inclusive eligibility criteria and robust grievance redress mechanisms to ensure accountability and responsiveness in delivery.

3.2.2 Systems: building the institutional and data backbone for long-term resilience

While policy intent is critical, the ability to deliver sustained, resilience-enhancing support depends on the systems that underpin social protection. The ASPIRE assessment reveals that across the eight countries, while some foundational systems exist, such as social registries or decentralised structures, they are often outdated, fragmented or poorly integrated with climate risk management efforts.

To deliver long-term resilience through social protection, countries must strengthen the administrative and data infrastructure needed to identify climate-vulnerable populations, align interventions across sectors and coordinate action from the national to the local level.

Strengthen social registries with dynamic vulnerability mapping

Accurate and updated registries are essential for reaching those most at risk and for targeting long-term resilience investments effectively. However, many countries still rely on static or outdated lists, with little integration of climate or hazard data.

In some countries, such as Malawi and Uganda, efforts are underway to expand and digitise registries. But

few countries have embedded dynamic vulnerability indicators, such as exposure to recurring droughts or displacement risk, into their targeting frameworks. This gap makes it difficult to pre-prioritise areas or groups for resilience investments.

The ASPIRE assessment underscores the need for climate vulnerability layers to be added to national databases. Doing so would allow social protection systems to proactively support people living in high-risk geographies or with repeated exposure to climate hazards.

Build integrated databases linking social protection with other critical sectors

Social protection cannot deliver resilience in isolation. The ASPIRE assessment highlights the need for integrated information systems that connect social protection with other key sectors such as agriculture, health, infrastructure and disaster risk management. For example, India's CRISP-M tool links social protection eligibility with agricultural vulnerability and early warning systems. But in most countries, these datasets remain siloed, managed by different ministries with limited interoperability.

Integrated databases would enable governments to align delivery with real-time risks (for example, pre-emptively deploying food or cash support in drought-prone agricultural zones) and to identify complementary investments (for example, pairing cash transfers with irrigation systems or providing drought or flood-resilient seed varieties). Such systems also support the design of bundled interventions, where social protection, extension services[ii] and risk finance are delivered together to support asset creation, food security or livelihood diversification.

Ensure coordination at the local and national levels

Robust systems for long-term resilience require multi-level coordination. National frameworks often provide the vision, but implementation is driven at the local level, particularly in rural areas most exposed to climate risks. Yet coordination mechanisms between central ministries and local governments remain weak or underfunded.

In some cases, local governments lack clear mandates or budgetary authority to deliver resilience-linked social protection interventions. In others, community organisations are not systematically included in planning or monitoring processes. Some countries (such as Bangladesh, Ethiopia and India) have developed coordination platforms, but these are not yet institutionalised across sectors or levels.

Strengthening subnational systems will require devolving decision-making power, investing in local delivery capacity and creating clear protocols for coordination across ministries, especially between social protection, DRR and climate adaptation functions. This also includes investing in local government capacity to collect data, monitor risks and implement responses tailored to local climate realities.

3.2.3 Programme design: structuring interventions for lasting resilience

Long-term resilience is not only about reaching people before disaster strikes; it is also about delivering the right kind of support to help them adapt and thrive over time. While most countries assessed have flagship social protection programmes in place, few are designed to explicitly address climate risk, build adaptive capacities or support livelihood transformation. To achieve transformational impact, programme design must embed features that enable communities to reduce dependency on external support, diversify incomes and rebuild stronger after each climate shock.

Design programmes that support natural resource management, conservation, irrigation and disaster risk reduction

Programmes that directly invest in ecosystem and water resource management are among the most effective for building community-level resilience. Public works programmes, in particular, offer a double dividend: they provide immediate income support while also creating assets that improve water retention, reduce erosion and restore degraded land.

Ethiopia's PSNP and India's MGNREGS are both strong examples. PSNP supports soil and water conservation structures and small-scale irrigation schemes, which have led to improvements in livestock holdings and farm income for between 4% and 25% of participating households, depending on the scheme. Similarly, under MGNREGS, afforestation, water harvesting and land development activities have improved agricultural productivity and enabled climate adaptation in drought-prone areas.

These investments also deliver mitigation co-benefits. Research shows that by 2030, MGNREGS could sequester up to 249 tonnes of CO_2 through its public works.[43] These climate-smart programme designs offer a compelling case for linking social protection to both adaptation and mitigation objectives under national climate strategies.

Use public works and asset transfers to promote income diversification

Beyond ecosystem restoration, well-designed public works and asset transfers can support households in building new and more resilient livelihoods. The ASPIRE

ii Extension services support rural communities by creating awareness and providing technical assistance, training and resources to improve agricultural output.

assessment shows that countries with such programmes are better positioned to address seasonal vulnerabilities and provide a stepping stone out of poverty.

In Malawi and Senegal, asset transfers comprising items such as livestock or small equipment have helped shift households into more stable livelihood pathways while reducing their exposure to climate-sensitive income sources such as rainfed agriculture. Additionally, public works create the infrastructure needed to support diversification, including roads and water management structures that enhance market access and reduce climate shock-related losses.

Design programmes to meet the needs of women, older people, people with disabilities and migrant populations

Climate risks are not experienced equally. Women, older people, people with disabilities and migrants often face greater exposure and fewer options for coping. Yet most social protection programmes do not systematically tailor their design to meet the differentiated needs of these groups.

Universal programme templates risk leaving behind or underserving those with limited mobility, poor digital access or lacking documentation. To address this, social protection programmes must embed inclusive design principles, such as simplified eligibility for older people or people with disabilities, community-based targeting for remote areas or portability features for migrants.

India's social pensions and One Nation One Ration Card are examples of how targeted and mobile delivery can reach groups who are often excluded. Malawi's Social Cash Transfer Programme also prioritises excluded households, including those caring for older people or people with disabilities. Customising programme design is essential to ensure that resilience investments reach those most at risk of falling into poverty after a shock.

3.2.4 Programme delivery: sustaining impact at the last mile

Effective programme delivery is where long-term resilience investments translate into real and sustained outcomes for vulnerable populations. While strong policy and design are essential, they must be matched with delivery systems that ensure resources consistently reach the right people, at the right time, in the right way.

Although delivery mechanisms are improving across several countries, many systems still lack the infrastructure, coordination and local responsiveness required to deliver climate-resilient support in an inclusive and sustained manner.

Deliver fee waivers and subsidies for essential services

Fee waivers and targeted subsidies, particularly for agricultural inputs, health services and utilities, can play a critical role in making early resilience investments more accessible to poor and climate-vulnerable households. These instruments reduce cost barriers and allow families to adopt climate-smart practices without compromising basic consumption.

Ghana, for instance, has used agricultural input subsidies to boost productivity among smallholder farmers, while Bangladesh has piloted anticipatory cash transfers ahead of floods to support household purchasing power. These subsidies not only address immediate needs but also reduce the long-term impact of repeated climate shocks.

Despite the importance of these mechanisms, few programmes systematically deploy fee waivers or subsidies as part of long-term resilience strategies. Where they exist, they are often reactive, underfunded or inconsistently implemented. Integrating such tools into regular social protection delivery, backed by clear eligibility criteria and robust fiscal planning, will be key to making these tools work at scale.

Invest in resilient infrastructure to enhance access and delivery

Resilience cannot be built without physical infrastructure that allows services, goods and support to flow to communities during and after climate shocks. Roads, irrigation systems and water management infrastructure are not only crucial for food security and market access but are also foundational to delivering social protection at the last mile.

Ethiopia's PSNP has demonstrated how linking social protection with the construction of rural roads, canals and soil conservation structures can improve both household resilience and local economies. Similarly, India's MGNREGS combines wage provision with the creation of water conservation, land development and harvesting structures, offering immediate income as well as long-term drought-proofing and flood resilience.

In most countries, investments in climate-resilient infrastructure remain disconnected from social protection delivery, often siloed in separate ministries or project pipelines. Integrating infrastructure investment into social protection programming, particularly through public works, can multiply impacts, offering both income support and adaptation gains.

Strengthen local institutions and community-based delivery

Community institutions are often the first responders in times of crisis. Their knowledge of local risks, trusted relationships with households and capacity to mobilise

support make them essential to long-term resilience delivery. In Bangladesh, India, Senegal and Uganda, local governments and community-based organisations have played vital roles in delivering nutrition, health and cash support, particularly to remote and marginalised populations. These models show that decentralised delivery, when well-supported, can significantly improve equity and efficiency.

ASPIRE findings show that where vertical integration is strong, linking national frameworks to local delivery systems, as in MGNREGS, there is greater alignment between risk, response and recovery. Investing in local capacity through training, staffing, digital tools and financial autonomy is therefore critical to enabling bottom-up resilience. This includes empowering local actors to make decisions, manage delivery platforms and adapt programmes to evolving climate risks at local level.

Together, the ASPIRE assessment across the eight countries and 24 social protection programmes clearly shows that delivering early action through social protection is not only possible, but already underway in many contexts. Countries are making tangible progress in integrating climate risk into policy frameworks, building system capacity and designing programmes that are both adaptive and inclusive. Yet, the gaps remain significant. Early warning systems are often disconnected from delivery mechanisms, financing is rarely pre-arranged and programmes still prioritise post-shock response over anticipatory support. If countries are to move from pilot projects to scale, these gaps must be addressed with urgency.

Understanding the business case for investment in early action

In this section, we compare the cost-effectiveness and benefits of different intervention types, which show that anticipatory DBTs and early resilience investments consistently deliver higher returns and perform more reliably than reactive approaches. We also model the total cost of covering financial losses from a severe disaster. In every country reviewed, anticipatory DBTs and early resilience investments cost less than current social protection programmes — and often cost less than the disaster-related financial losses themselves. These findings offer governments and partners detailed, costed evidence showing that they should allocate resources towards anticipatory systems.

4

As the global funding landscape for climate and development becomes increasingly constrained, governments and donors are being forced to make harder choices about where and how to invest. With rising debt burdens, competing development priorities, and climate shocks escalating in scale and frequency, there is a growing imperative to ensure that every dollar delivers maximum impact. In this context, understanding the economic returns of early action is essential.

While previous sections laid out the rationale and mechanisms for anticipatory DBTs and early resilience investments, this section addresses the critical question: what is the economic case for investing in early action? For governments, funders and policymakers navigating limited resources amid mounting risks, evidence of cost-effectiveness is vital, not only to justify investments but to inform smarter, long-term strategies.

In this section, we present findings from our economic analysis across the eight countries, which show the financial losses countries are likely to face under varying levels of disaster intensity. We also compare how four different intervention types mitigate those losses and at what cost. These intervention types include: existing social protection programmes; later humanitarian responses; anticipatory DBTs; and early resilience investments.

4.1 Understanding the scale of disaster impact and the financial losses expected to be suffered by countries

The frequency and severity of climate-related disasters have dramatically increased in recent decades, especially in countries already grappling with poverty, fragility and high exposure to natural hazards. We used the EM-DAT database of worldwide disasters[44] to analyse disaster data covering the past 62 years for the eight countries assessed. This shows that disasters are not only becoming more frequent but are also affecting significantly larger populations. Bangladesh and India, for instance, have both experienced multiple years where more than 100 million people were affected by floods, droughts and cyclones. In Ethiopia, a single year saw nearly 25 million people impacted by drought. These trends underscore the growing scale of vulnerability and the need for faster, scaled-up responses.

To understand the financial risks such disasters pose in future, we applied a loss exceedance probability (LEP) analysis. LEP estimates the probability that financial losses will exceed a given threshold in any year. A 5% LEP reflects a 1-in-20-year event (severe but plausible), while a 50% LEP represents more frequent, lower intensity shocks. This approach allows us to move beyond historical averages and use past disaster data to simulate a range of possible future losses.

Using EM-DAT data and country-specific vulnerability parameters, we modelled expected financial losses under three LEP thresholds (5%, 20% and 50%) across the eight countries. The results are presented on the following page in two graphs: one for five African countries (Ethiopia, Ghana, Malawi, Senegal and Uganda) in Figure 14, and another for three South Asian countries (Bangladesh, India and Pakistan) in Figure 15.

BOX 1. HOW WE CALCULATED THE COSTS AND BENEFITS OF EARLY ACTION

To arrive at realistic assumptions upon which to base our assessment of the costs and benefits of different intervention types, we reviewed a wide range of studies on the economic impact of social protection and early response programmes. One key reference was the 2012 study by Cabot Venton et al.,[50] which provides robust empirical cost and benefit data from Ethiopia and Kenya. We adjusted these figures for inflation to bring them in line with current economic conditions and country contexts, which allowed us to develop the assumptions that guided our analysis. More details on these assumptions are provided in Annex 1.

We then applied these parameters to primary data collected from 408 households across five flood- and drought-prone communes in Mopti region in Mali to calculate the cost and benefits presented in this section. These communities were selected to represent a mix of vulnerabilities, economic activities and exposure to climate risks. Over the past 30 years, they have experienced repeated and intensifying shocks, with significant impacts on livelihoods and food security. More information about the study area and the household-level loss and damage data can be found in Bharadwaj et al. (2025).[51]

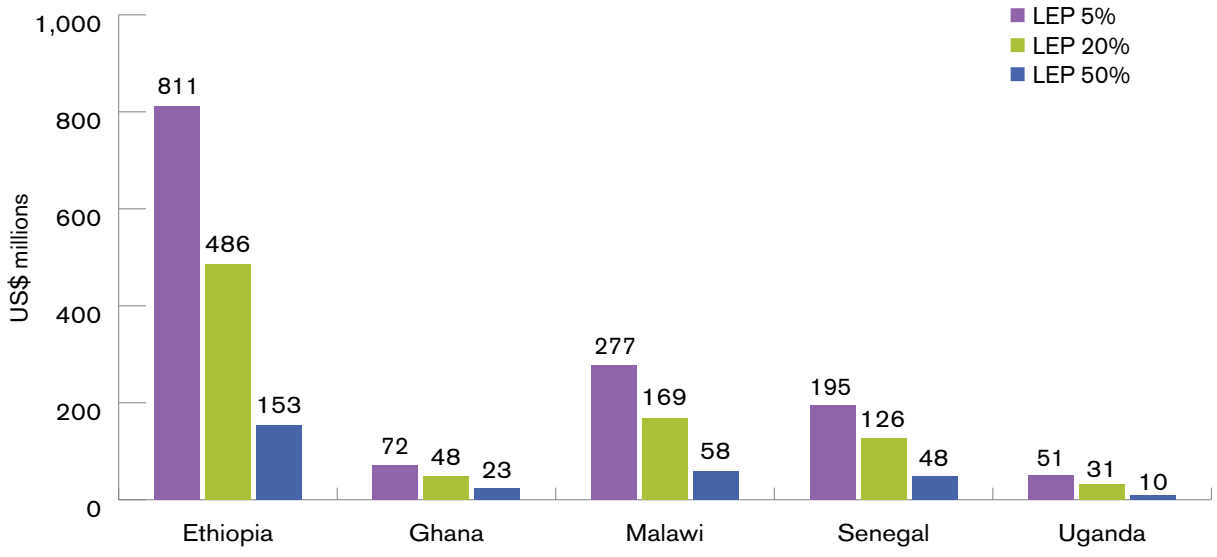
Using this combined dataset, we generated estimates of the potential costs, benefits and loss reduction associated with each intervention type. These estimates allowed us to calculate BCRs and benefit exceedance probabilities under different climate risk scenarios (detailed in Section 4.2.1), helping to establish the economic value of scaling early action.

Combining these data sources with probabilistic disaster modelling allowed us to estimate not only how much different interventions cost, but also how much loss they help avert, ultimately enabling a comparison of their BCRs and cost-effectiveness at scale.

As shown in Figure 14, estimated financial losses at different LEP thresholds reveal varying degrees of vulnerability. At the 5% LEP, Ethiopia faces the highest potential loss of US$811 million, followed by Malawi (US$277 million) and Senegal (US$195 million). Uganda and Ghana, though relatively less exposed in absolute terms, still face significant risks, with projected losses of US$51 million and US$72 million, respectively. While losses decline as the LEP threshold increases, they remain substantial and can significantly impact LDC economies. For instance, in Ethiopia, the estimated loss is still US$153 million at the 50% LEP.

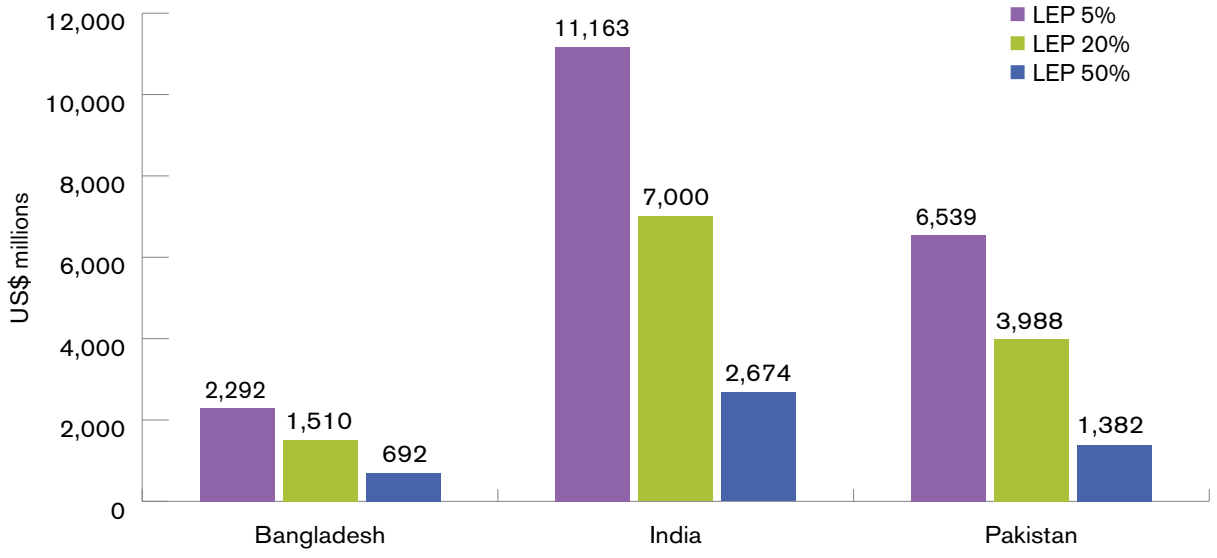
Figure 15 shows that financial risks in South Asian countries are significantly higher. India faces the steepest potential losses, with estimated damages exceeding US$11 billion at the 5% LEP level, nearly ten times those projected for Ethiopia. Pakistan and Bangladesh also show considerable exposure, with projected losses of US$6.5 billion and US$2.3 billion, respectively, under the same severe but plausible scenario. The 2022 Pakistan floods serve as a stark reminder of how devastating high-impact disasters can be if countries are unprepared. Even under more frequent, lower intensity events at the 50% LEP, losses

Figure 14. Financial losses at different LEP levels for five African countries, US$ millions



Source: IIED, using EM-DAT data.

Figure 15. Financial losses at different LEP levels for three South Asian countries, US$ millions



Source: IIED, using EM-DAT data.

remain substantial. In Pakistan, for instance, losses still reach US$1.4 billion, underscoring the need for preparedness even in moderate scenarios.

This highlights the need for forward-looking planning and pre-arranged resources to prepare for both high-impact, low-frequency disasters and low-impact but frequent events. This includes urgently developing adaptive, risk-layered financial and policy systems that can respond effectively across both frequent and extreme events.

By applying a LEP analysis, we can estimate not only the scale of likely financial loss but also how it compares with the cost of prevention. This forms the foundation for the economic case for early action: whether countries can absorb such losses and whether investments made today can reduce losses in the future. The following sections address these questions by analysing the cost-effectiveness and return on investment of different intervention options.

4.2 What the numbers say: comparing intervention costs

These growing climate risks are unfolding at a time when the global funding landscape for both climate and development is becoming increasingly constrained. Official development assistance is under pressure, humanitarian financing is being stretched across multiple global crises and climate finance, particularly for adaptation, remains limited and difficult to access. At the same time, many vulnerable countries have little fiscal space to respond to disasters and are already burdened with debt[45] and competing priorities. This context makes it even more urgent to invest in cost-effective, scalable and anticipatory mechanisms that can deliver faster, more targeted support before disasters spiral into crises.

In this section, we examine how different interventions perform in practice by comparing their cost-effectiveness, the extent of loss they prevent and the benefits they deliver (see Box 1 on how we have calculated the costs and benefits of early action), drawing on simulation results and household survey data. We analysed four types of interventions: existing social protection programmes; later humanitarian responses; anticipatory DBTs; and early resilience investments.

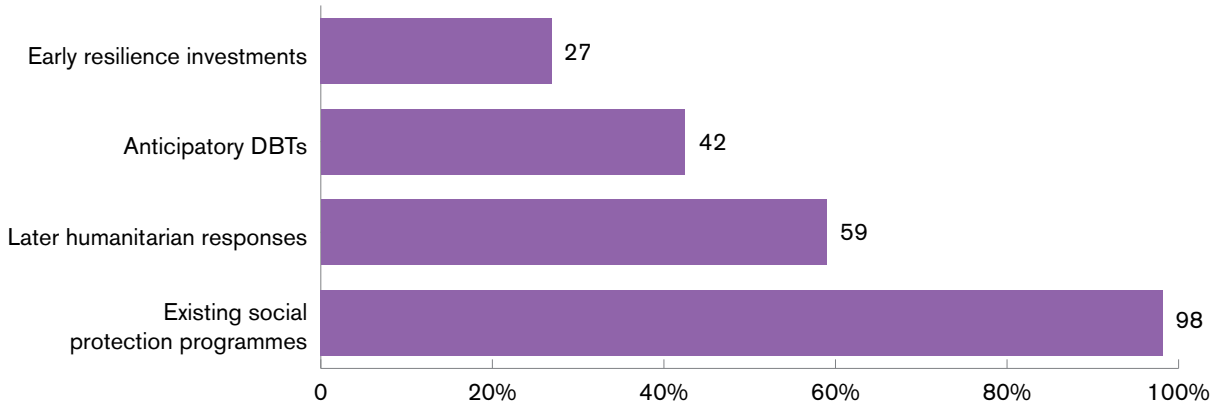
4.2.1 Loss reduction outcomes: protecting household income

Early action interventions play a critical role in shielding households from climate-related financial shocks. Based on the approach outlined in Box 1, we estimated the losses borne by households under the four intervention scenarios (see Figure 16). Our analysis shows that households relying solely on existing social protection in the sample area face losses amounting to 98% of their annual income during major disasters. Later humanitarian responses reduce this to 59%, while anticipatory DBTs bring it down to 42%. The greatest protection comes from early resilience investments, following which losses fall to just 27%.

These loss estimates are based on the total economic costs that climate shocks impose at the household level. We included a wide range of direct and indirect impacts, such as livestock deaths, food deficits, lost employment or income opportunities, healthcare costs and damage to essential infrastructure or productive equipment. By capturing these multi-dimensional losses, the analysis provides a more complete picture of how different interventions affect household vulnerability.

The differences in loss reduction between interventions highlight the importance of both the timing and type of support.

Figure 16. Losses borne by the households (as % of total income) under different intervention scenarios



4.2.2 Benefit per household: maximising returns where it matters most

Figure 17 highlights the significant variation in economic benefits that can be delivered to sample households analysed based on different intervention types. Early resilience investments yield the highest returns, generating an average of US$1,067 in benefits per household per year. Anticipatory DBTs follow at US$667, while later humanitarian responses provide more modest gains at US$400 and existing social protection programmes provide just US$328.

We calculated these figures by incorporating the economic value of losses that are avoided, reduced or compensated through each intervention type. Benefits were calculated as the total monetary value of averted impacts, such as avoided asset loss, income shortfalls, health expenditures or livelihood disruptions that households would otherwise bear during and after a climate shock.

The results underscore why timing and targeting matter. Interventions delivered early, whether in the form of anticipatory DBTs or early resilience investments, not only reduce exposure to climate risks but also maximise the value of public spending by improving household outcomes.

4.2.3 Cost-effectiveness: high return on early investment

The BCR is an important metric for assessing economic efficiency. It compares the value of avoided disaster losses and reduced aid costs to the cost of delivering the intervention. A higher BCR reflects greater value for money, showing that the intervention works well relative to its cost.

Figure 17. Estimated benefits per household per year under different intervention scenarios, US$

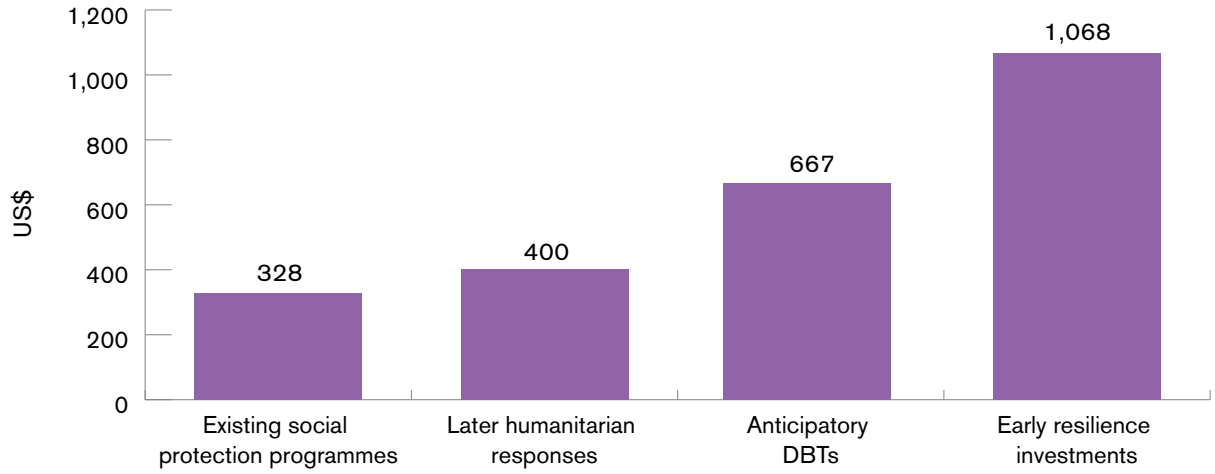
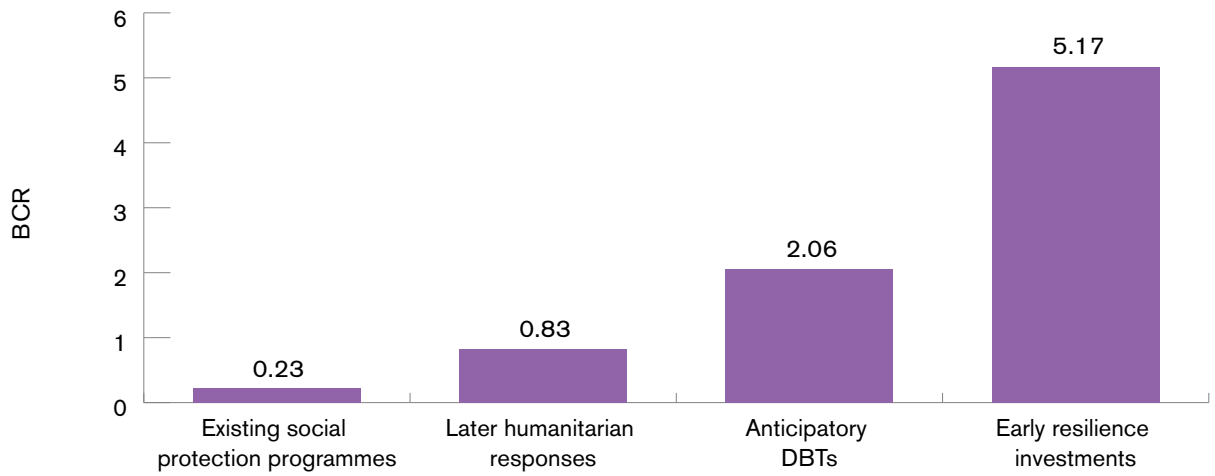


Figure 18. BCRs for different interventions



When assessed through BCRs, early action again demonstrates the strongest case for investment. As shown in Figure 18, early resilience investments yield a BCR of 5.17, meaning that every dollar invested delivers more than five dollars in avoided losses and other economic benefits. Anticipatory DBTs also perform strongly, with a BCR of 2.06, more than double that of later humanitarian responses (0.83) and nearly nine times that of existing social protection programmes (0.23).

These findings are particularly important for countries facing constrained fiscal space and growing exposure to climate shocks. They highlight that earlier investment is not just more impactful, it is also more efficient. In LDC and SIDS contexts, where every dollar must stretch further, choosing interventions with high BCRs becomes essential for building long-term resilience without deepening financial strain.

4.2.4 Reliability under uncertainty: performing well even under worst-case scenarios

While average BCRs provide a useful snapshot of cost-effectiveness, they do not fully capture the unpredictability of climate shocks. To test how reliably different interventions perform under a wide range of future conditions, we applied a Monte Carlo simulation[46] to estimate BCR exceedance probabilities. This method is widely used in risk modelling where variables such as disaster frequency, severity and programme costs are uncertain.

This type of probabilistic modelling is especially important given that the BCR, loss and benefit estimates in our analysis are based on data from selected regions. By stress testing these interventions against thousands of simulated disaster events, we demonstrate that the observed patterns are not coincidental or context-specific, but statistically robust. It allows decision makers to assess not just cost-effectiveness but also the likelihood of success under a range of real-world conditions, strengthening the argument for scaling early action through social protection.

For each intervention type, we conducted over 10,000 simulation runs and calculated the likelihood of exceeding key cost-effectiveness thresholds: a BCR of over 1 (benefits exceed costs); a BCR of over 2 (moderate return on investment); and a BCR of over 3 (high return on investment).

This probabilistic approach allows us to move beyond point estimates and evaluate the robustness of different strategies in real-world, volatile contexts. The result of the analysis, presented in Figure 19, reinforces the case for early action.

As shown in Figure 19, early resilience investments are the most robust investment, exceeding a BCR of 1 in 73% of simulations, a BCR of 2 in 67% and a BCR of 3 in 62%.

Figure 19. BCR exceedance probability for different interventions

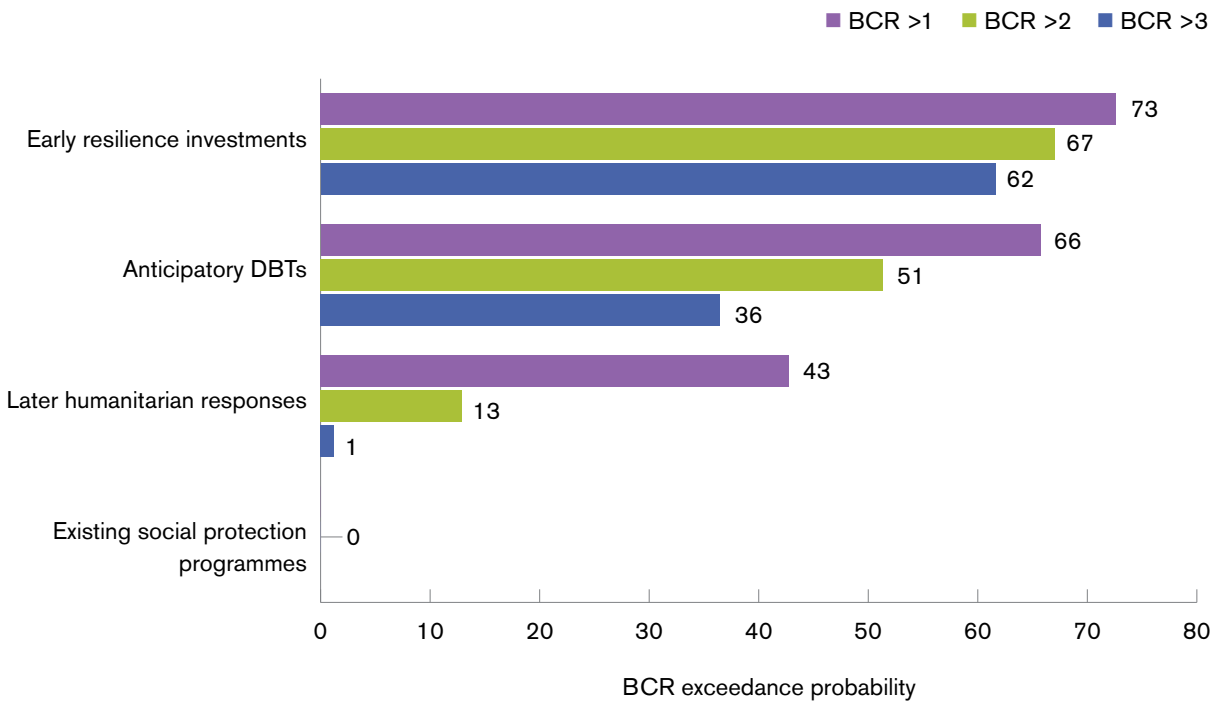


Figure 20. BCR exceedance probability curve — early longer-term resilience-building

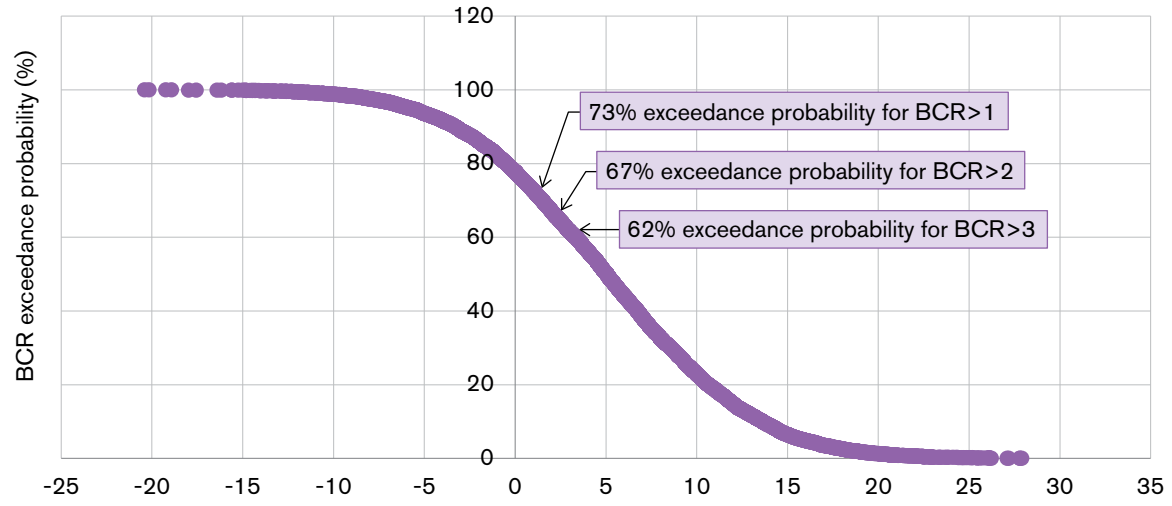
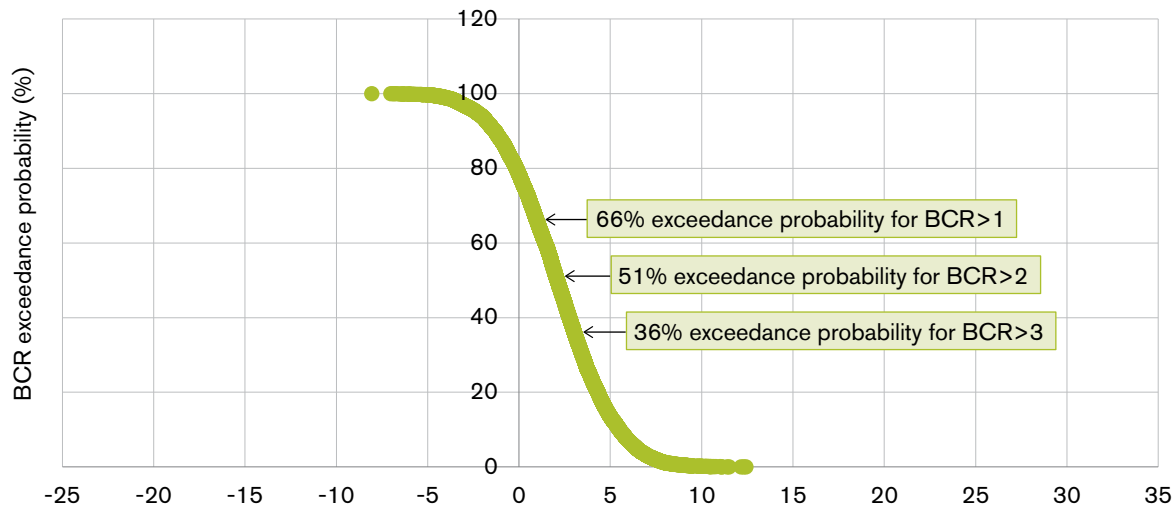


Figure 21. BCR exceedance probability curve — anticipatory DBT response



The BCR exceedance probability curve for early resilience investments remains strong even in worst-case scenarios, with returns consistently distributed across a wide range of outcomes (see Figure 20).

Anticipatory DBTs also perform reliably, though with slightly lower probabilities. They exceed a BCR of 1 in 66% of simulations, a BCR of 2 in 51% and a BCR of 3 in 36%. Figure 21 illustrates this with a similarly upward-skewed curve, showing that while not as high-performing as early resilience investments, anticipatory DBTs still offer dependable value for money in stress conditions.

By contrast, later humanitarian responses and existing social protection programmes fall short. Later humanitarian responses exceed a BCR of 3 in only 1.3% of simulations, while existing social protection programmes fail to exceed a BCR of 1 in any scenario, confirming their low reliability and efficiency under uncertainty.

4.3 Making the economic case for early action: measuring the cost of managing loss

The previous section demonstrated that early action, whether in the form of anticipatory DBTs or early resilience investments, consistently delivers higher returns, protects household income and performs more reliably than reactive approaches. But one critical question remains: How much would it actually cost to fully cover the expected financial losses from severe climate shocks?

To answer this, we modelled the total cost required to offset 100% of losses in a 1-in-20-year disaster event (LEP 5%) across all eight countries assessed. We then compared this benchmark loss figure of US$21.4 billion against the actual costs of delivering full coverage through the four different types of interventions.

As shown in Figure 22, existing social protection programmes would require a total of US$93 billion to fully offset the US$21.4 billion in losses across the eight countries, which is over four times the value of the losses they aim to cover. Later humanitarian responses fare slightly better but still overshoot, with a cost of US$25.8 billion. In contrast, anticipatory DBTs are significantly more efficient, requiring US$10.4 billion, less than half the projected loss. Early resilience investments emerge as the most cost-effective option, needing just US$4.1 billion, a fivefold reduction in cost compared to current systems and 80% lower than the humanitarian route.

We have also unpacked how these dynamics play out at the country level, providing the cost of full coverage under each intervention type across different country contexts (see Table 1 for the top-level figures and Annex 2 for a more detailed country-level assessment).

Our analysis of the economics of taking early action shows that this type of action is both feasible and sustainable. In a world of shrinking budgets and rising climate risks, governments should not put resources into inefficient systems that cost more than the crises they are meant to address. Investing early and strategically is a fiscal and policy imperative for funders.

These findings offer a clear economic justification for shifting from reactive to proactive approaches. In every country, anticipatory DBTs and early resilience investments not only cost less than current programmes but also often cost less than the projected financial losses themselves. In contrast, existing social protection programmes are consistently inefficient, requiring up to four to six times more investment to deliver the same outcome.

Beyond the strong economic rationale, early action through social protection also generates far-reaching development gains. By reducing household losses and helping families maintain stable access to food and essential goods during crises, these interventions help prevent long-term setbacks in education, health, nutrition and productivity. Children are less likely to be pulled out of school, households are less likely to sell productive assets or take on debt, and communities can recover more quickly. These benefits compound over time, strengthening human capital, preserving economic potential and reducing the intergenerational poverty.

Figure 22. Cost to cover 100% of financial losses caused by disasters at LEP 5% across all eight countries reviewed, US$ billions

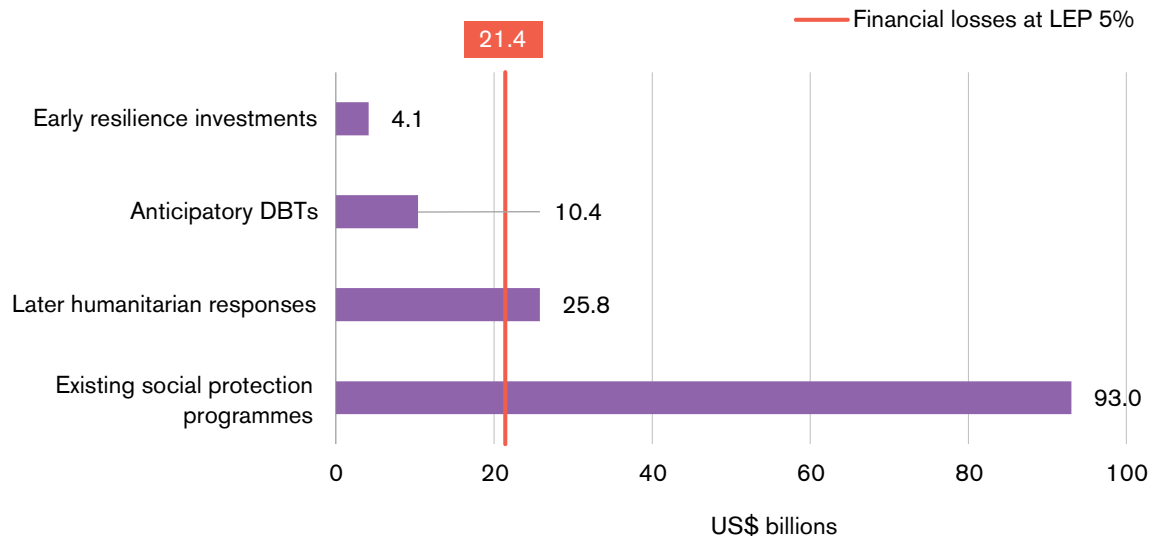


Table 1. Cost of covering financial losses caused by disasters at LEP 5%, US$ millions

COUNTRY	FINANCIAL LOSSES AT LEP 5%	EXISTING SOCIAL PROTECTION PROGRAMMES	LATER HUMANITARIAN RESPONSES	ANTICIPATORY DBTS	EARLY RESILIENCE INVESTMENTS
Bangladesh	2,292	9,965	2,761	1,113	443
Ethiopia	811	3,526	977	394	157
Ghana	72	313	87	35	14
India	11,163	48,535	13,449	5,419	2,159
Malawi	277	1,204	334	134	54
Pakistan	6,539	28,430	7,878	3,174	1,265
Senegal	195	848	235	95	38
Uganda	51	222	61	25	10
Total	**21,400**	**93,043**	**25,782**	**10,389**	**4,140**

Early resilience investments also promote more inclusive and equitable development. Vulnerable groups such as women, smallholder farmers, informal workers and people living in fragile or climate-vulnerable areas are often the hardest hit by climate shocks and the least likely to benefit from delayed or reactive aid. By reaching them earlier and more consistently and comprehensively, anticipatory DBTs and early resilience investments help close protection gaps, reduce inequality and build trust in state institutions.

Investing in early action also strengthens national and local systems. Scaling anticipatory and resilience mechanisms requires governments to improve risk data, coordinate across sectors, invest in delivery systems and forge partnerships with local actors. These institutional improvements benefit not only disaster response, but also broader governance, planning and service delivery.

As the climate crisis accelerates, evidence for early action presented here becomes essential for guiding national budgets and international funding priorities. Our findings give governments, funders, philanthropies, climate funds and global financial institutions a clear basis to rethink how they should allocate resources towards systems that act before losses spiral, not after. By committing resources ahead of shocks, they can protect households, avoid escalating recovery costs and make far more effective use of limited resources.

Looking forward

The ASPIRE assessment across the eight countries shows that early action through social protection is cost-effective and socially transformative. The findings make a strong case for shifting from reactive, post-disaster responses to proactive systems that act before losses escalate. The next step is to turn this evidence into concrete action by aligning policies, systems and financing so that anticipatory DBTs and early resilience investments become standard practice rather than exceptional pilot projects. Doing so will require governments, development partners, philanthropies, climate funds and the private sector to co-create country roadmaps, secure sustainable financing and scale delivery mechanisms that can reach the most vulnerable ahead of shocks.

5

Co-creating country roadmaps for system transformation

To translate ASPIRE analyses into action, countries will need clear, context-specific plans that embed early action into national social protection policies and strategies. These roadmaps should be co-created by governments, local actors, development partners and communities, drawing on ASPIRE diagnostics to prioritise policy reforms, system upgrades and delivery improvements.

To be effective, these roadmaps will need to: define clear, evidence-based risk triggers for activating early action; set out delivery protocols specifying roles, responsibilities and timelines; and secure sustainable financing so actions can be implemented without delay. Together, these elements will ensure that early action is embedded as a routine function of national social protection systems, rather than an ad hoc initiative.

Aligning and leveraging finance for early action

Turning roadmaps into implementation will require predictable and diversified financing that can be deployed quickly when triggers are met. This means aligning existing social protection, climate and disaster risk management funds with new and innovative sources, such as insurance-linked instruments, resilience bonds or catalytic philanthropic capital. Achieving this will require financing that blends multiple streams in a coordinated way, with each complementing and strengthening the others.

The FRLD offers a significant opportunity for funding through pre-defined triggers, scalable delivery via national systems and support for long-term systems strengthening.

Blending and matchmaking different sources of finance can be done by creating country platforms that pool resources from official development assistance, insurance-linked instruments, private investment and catalytic philanthropic capital. Philanthropic capital, with its flexibility, can move quickly, test new approaches, fill strategic gaps where other sources of finance can be slow or risk-averse, and de-risk private sector engagement by providing first loss capital, risk guarantees or grant funding for early-stage initiatives. These mechanisms can lower the financial risk for other investors and help crowd in additional public and private finance. Once evidence of successful approaches starts emerging, FRLD resources can help scale these efforts across countries.

As the ASPIRE assessment shows, even modest early investments can avert far greater losses, reduce costly recovery and deliver lasting gains. By reallocating a fraction of existing budgets and strategically leveraging the FRLD, climate funds and philanthropic capital, countries can protect more people at lower cost while making budgets work more efficiently.

Strengthening delivery systems to reach those in need

To support national roadmaps, countries must invest in systems that act quickly and reach those most at risk. This requires robust early warning systems, climate-informed social registries and rapid disbursement mechanisms linked to pre-agreed triggers.

Delivery networks will need to extend to the last mile, ensuring that women, smallholder farmers, informal workers and people in remote or fragile areas can be reached consistently and comprehensively. Strengthening local capacity, expanding digital payment infrastructure and partnering with grassroots organisations will be critical to ensuring that early action is not only rapid but also equitable. These investments will also strengthen national systems more broadly, enabling them to respond more effectively to a range of shocks and stresses.

Building shared accountability and scaling what works

Alongside sustainable finance and efficient delivery systems, countries need sustained political commitment, technical expertise and cross-sector collaboration. Country platforms should act as hubs for bringing together governments, development partners, philanthropies, civil society and the private sector to align priorities, coordinate resources and monitor progress.[47]

Connecting stakeholders from national to local levels, and establishing systems for peer learning and joint advocacy, can help scale promising models and allow learning from those that have not worked. By keeping early action high on political and financing agendas, these partnerships can ensure that the gains from ASPIRE-informed reforms are not only protected but expanded.

By acting on the above agenda, countries can make early action through social protection the norm, not the exception, and turn climate threats into opportunities for a more resilient and equitable future.

Related reading

Bharadwaj, R, Mitchell, T and Karthikeyan, N (2023) Anticipatory Social Protection Index for Resilience — ASPIRE. IIED, London. www.iied.org/21901iied

Bharadwaj, R. Mitchell, T, Karthikeyan, N, Raj, N, Chaliha, S, Abhilashi, R, Chinnaswamy, KBR, Deulgaonkar, I, Chakravarti, D and McCabe, T (2023) Delivering anticipatory social protection: country readiness assessment. IIED, London. www.iied.org/21896iied

Bharadwaj, R, Karthikeyan, N and Mitchell, T (2024) Food security in changing climates: social protection must respond to unfolding crises. IIED, London. www.iied.org/22516iied

Bharadwaj, R and Karthikeyan, N (2023) Shock-responsive social protection in fragile and conflict-affected states. IIED, London. www.iied.org/21526iied

Annexes

Annex 1. Approach and assumptions used in calculating intervention costs and benefits

To assess the economic case for early action through social protection, we estimated and compared the cost-effectiveness of four different types of interventions: existing social protection programmes; later humanitarian responses; anticipatory DBTs; and early resilience investments. This annex outlines the key assumptions, data sources, and modelling methods used to derive the comparative cost-effectiveness of each intervention type, as presented in Section 4 of this paper.

Basis for cost estimates

The unit costs of delivering each intervention type were adapted from the 2012 Cabot Venton et al.[48] study. These figures were updated to 2024 values by adjusting for inflation, exchange rates, and implementation costs relevant to the eight countries under review.

Table A1 provides the estimated annual per capita delivery cost (in US$) for each intervention type globally.

Table A1. Annual per capita cost of different interventions

INTERVENTION	COST PER PERSON PER YEAR (US$)
Existing social protection programmes	56.99
Later humanitarian responses	66.14
Anticipatory DBTs	44.33
Early resilience investments	28.31

Basis for benefit estimates

The benefit of each intervention was defined as the percentage of household losses and damages averted or compensated for through support. These estimates were based on a combination of:

- Empirical evidence from Cabot Venton et al. (2012) and other studies
- Simulation data and probabilistic risk models
- Household survey data from Mali, and
- Historic disaster response outcomes from the papers reviewed, as well as those based on data from Mali.

The loss estimates included both direct impacts (for example, loss of income, food, assets and shelter) and indirect costs (for example, health-related expenses, school dropouts and loss of livelihoods).

The percentage of avoided or compensated losses for each intervention type is presented in Table A2.

Table A2. Estimated share of losses avoided or compensated by intervention

INTERVENTION	% OF LOSSES AVOIDED AND COMPENSATED
Existing social protection programmes	25%
Later humanitarian responses	30%
Anticipatory DBTs	50%
Early resilience investments	80%

Methodology summary

Data sources

Historical disaster loss data: extracted from the EM-DAT database for the last 62 years

Primary household survey: data collected from 408 households across five climate-affected communes in Mopti, Mali

Programme documentation: reports and evaluations of flagship social protection programmes in ASPIRE countries, and

Costing benchmarks: from Cabot Venton et al. (2012), adjusted for 2024.

Modelling process

We employed LEP analysis to estimate financial risk under different disaster return periods (5%, 20% and 50% LEP). For each LEP scenario, we estimated:

- The total expected household-level financial losses
- The cost of fully offsetting these losses using each of the four intervention types, and
- The resulting BCRs.

To assess reliability, we ran 10,000 Monte Carlo[49] simulations per country, varying assumptions around disaster intensity, intervention reach and delivery costs. This allowed us to estimate BCR exceedance probabilities.

Inflation and currency adjustments

Cost estimates from earlier studies were converted into 2024–2025 US dollars using the World Bank's inflation deflator and historical exchange rate data. This ensured comparability across countries and time periods.

Sensitivity and stress testing

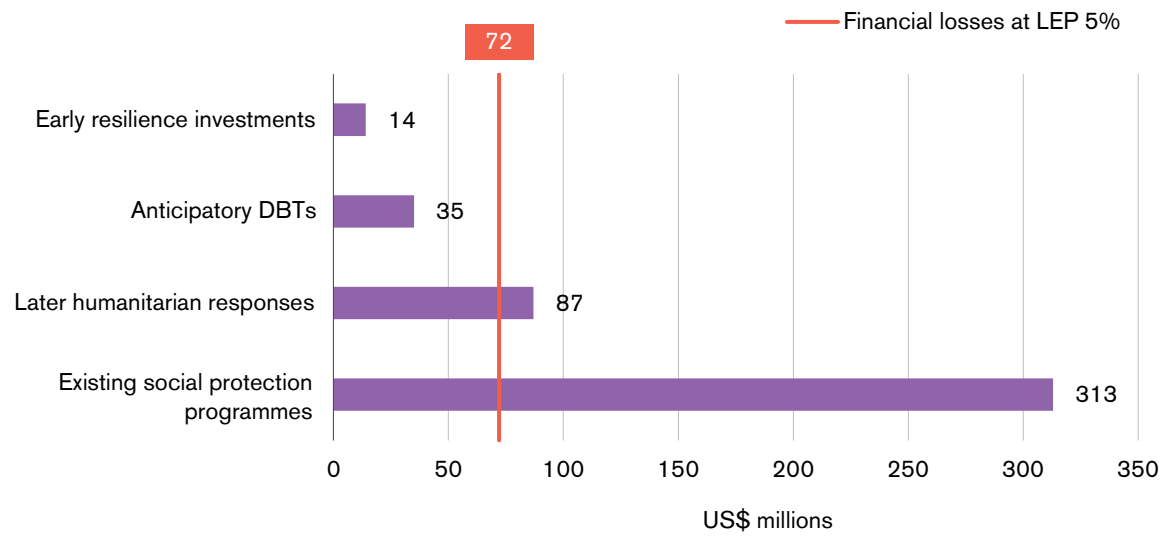
Each intervention was tested across best-, average- and worst-case scenarios using probabilistic modelling. This enabled a robust evaluation of which strategies remained cost-effective under different levels of climate shock severity and resource availability.

Annex 2. Measuring the cost of managing loss: country-level findings

To complement the aggregate economic analysis presented in Section 4, this annex presents detailed country-level findings from the eight ASPIRE countries. For each country, we estimated the projected financial losses from a 1-in-20-year climate disaster (5% LEP) and compared the cost of covering these losses through four intervention types: existing social protection programmes; later humanitarian responses; anticipatory DBTs; and early resilience investments. The cost estimates reflect the expenditure required to fully offset country-level losses in each scenario and highlight the difference in value for money across intervention types.

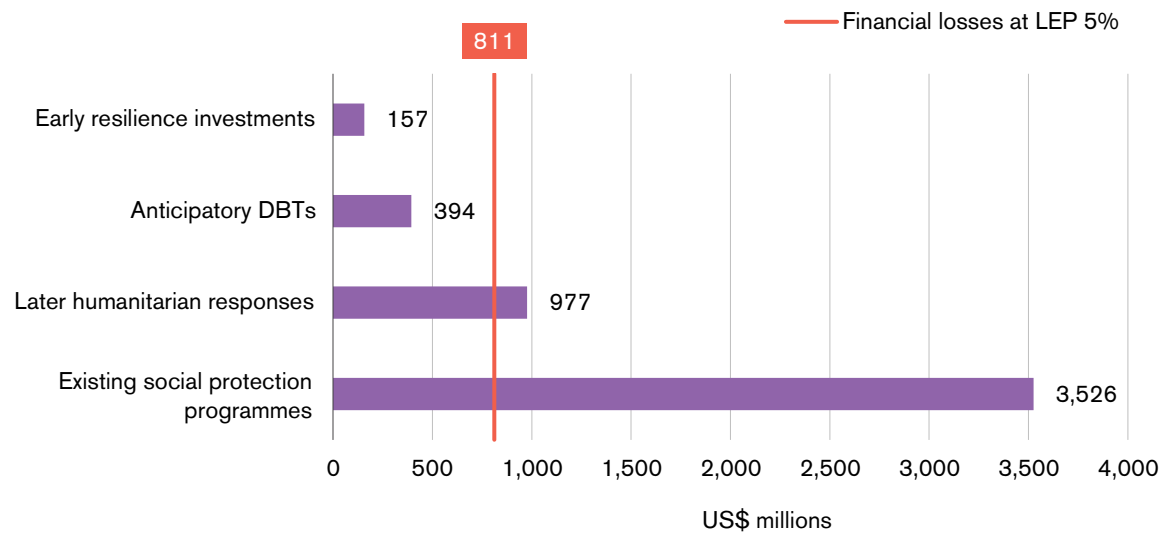
For Ghana (see Figure A1), projected losses from a severe climate event are estimated at US$72 million. Existing social protection programmes would cost over US$313 million to cover this, later humanitarian responses US$87 million, anticipatory DBTs half that at US$35 million and early resilience investments US$14 million.

Figure A1. Cost to cover 100% financial losses caused at LEP 5% — Ghana



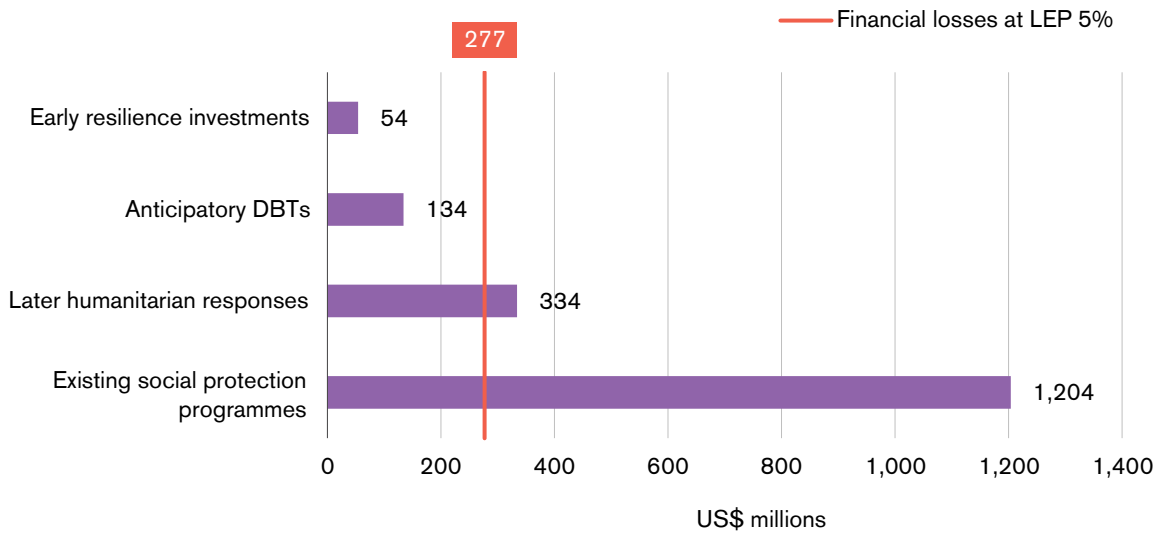
In Ethiopia (see Figure A2), losses are estimated at US$811 million. Existing social protection programmes would cost US$3.5 billion to cover this, later humanitarian responses US$977, anticipatory DBTs US$394 million and early resilience investments only US$157 million.

Figure A2. Cost to cover 100% financial losses caused at LEP 5% — Ethiopia



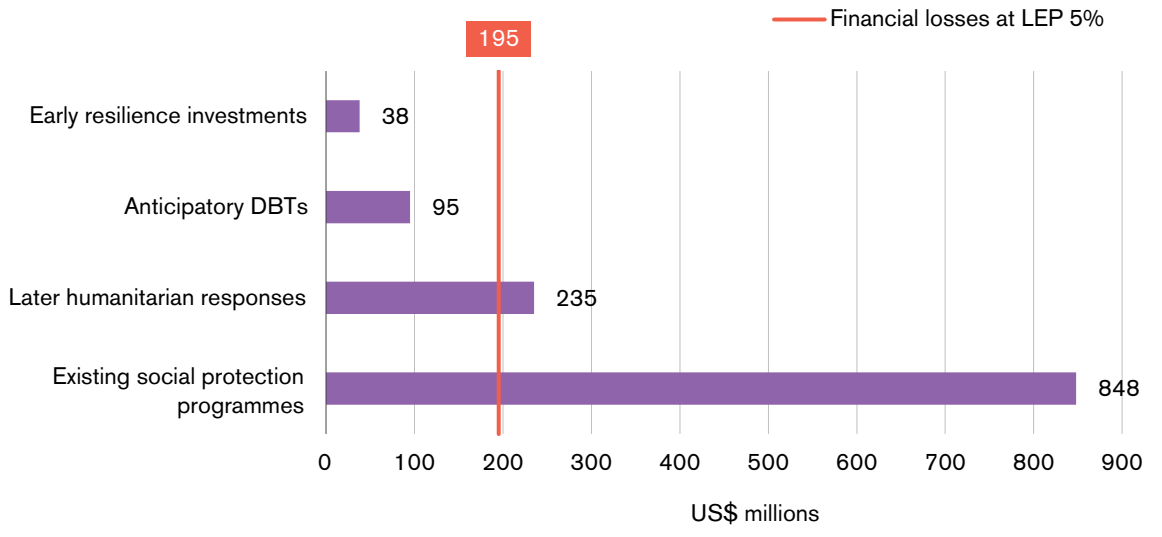
In Malawi (see Figure A3), losses are estimated at US$277 million. Existing social protection programmes would cost more than US$1.2 billion to cover this, later humanitarian responses US$334 million, slightly exceeding the loss, while anticipatory DBTs could bring the cost down to US$134 million and early resilience investments is the most cost-effective at just US$54 million.

Figure A3. Cost to cover 100% financial losses caused at LEP 5% — Malawi



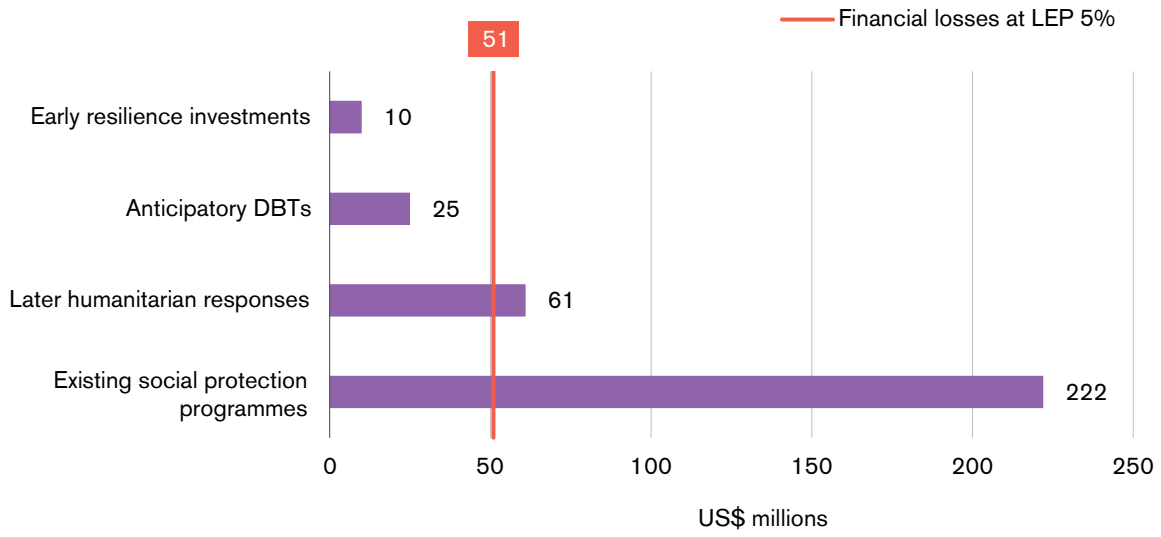
In Senegal (see Figure A4), losses are estimated at US$195 million. Existing social protection programmes would cost more than US$848 million to cover this, later humanitarian responses US$235 million, anticipatory DBTs just US$95 million and early resilience investments only US$38 million.

Figure A4. Cost to cover 100% financial losses caused at LEP 5% — Senegal



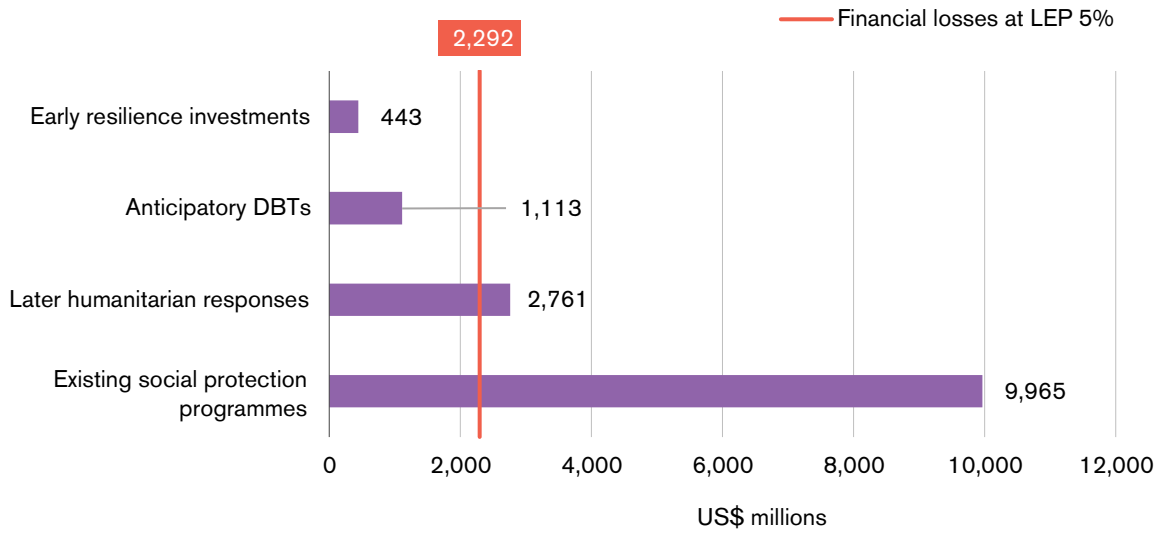
For Uganda (see Figure A5), where losses are estimated at US$51 million, the same pattern holds true. Existing social protection programmes would cost US$222 million to cover this, later humanitarian responses US$61 million, anticipatory DBTs US$25 million, while the lowest cost solution is early resilience investments at US$10 million.

Figure A5. Cost to cover 100% financial losses caused at LEP 5% — Uganda



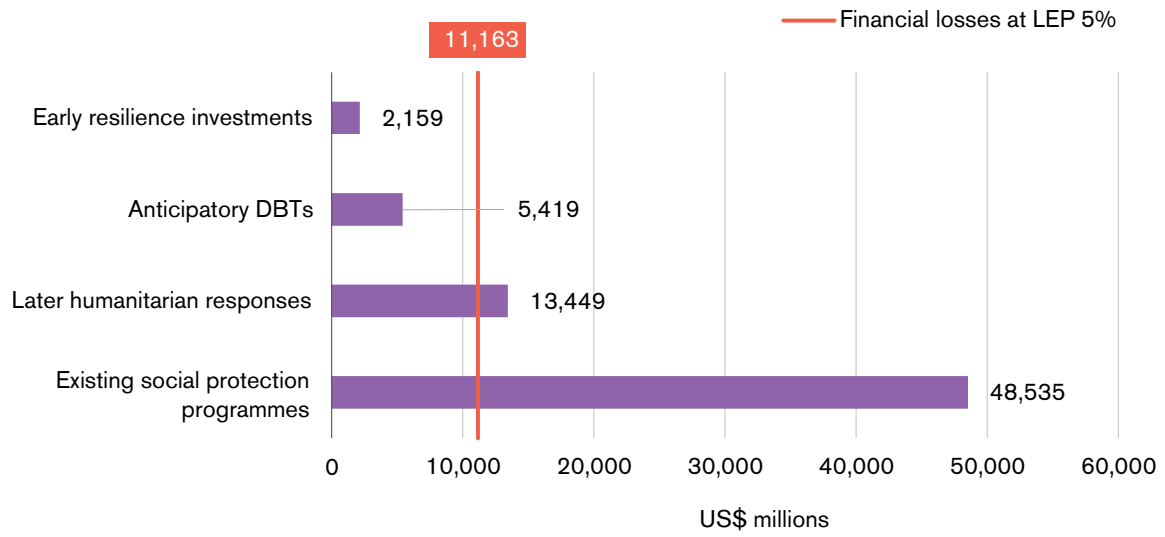
In Bangladesh (see Figure A6), projected losses from a severe climate event are estimated at US$2.3 billion. Covering this through existing social protection programmes would cost more than US$9.9 billion, later humanitarian responses fare slightly better but still exceed the actual damage at US$2.8 billion, anticipatory DBTs would cost around US$1.1 billion, while early resilience investments proves the most economical solution at just US$443 million.

Figure A6. Cost to cover 100% financial losses caused at LEP 5% — Bangladesh



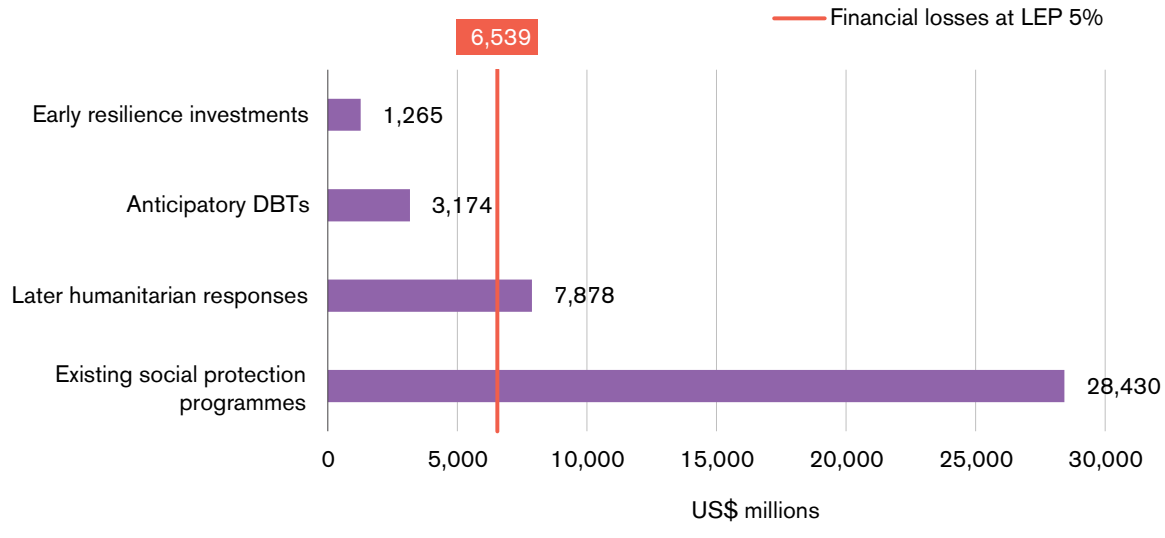
In India (see Figure A7), the country's high exposure to climate risk is projected to result in losses of over US$11 billion. Existing social protection programmes would cost a staggering US$48.5 billion to cover this, later humanitarian responses US$13.4 billion, still exceeding the loss, anticipatory DBTs US$5.4 billion, while early resilience investments deliver the same outcome for just US$2.2 billion.

Figure A7. Cost to cover 100% financial losses caused at LEP 5% — India



In Pakistan (see Figure A8), where the 2022 floods remain a painful reminder of escalating risk, losses are estimated at US$6.5 billion. Existing social protection programmes would cost US$28.4 billion to cover this, later humanitarian responses US$7.9 billion, anticipatory DBTs US$3.2 billion and early resilience investments can deliver full coverage for just US$1.3 billion.

Figure A8. Cost to cover 100% financial losses caused at LEP 5% — Pakistan



These country-level findings reinforce the central finding of the ASPIRE economic assessment: early action through anticipatory DBTs and early resilience investments not only reduces the human and economic toll of climate disasters but does so at a fraction of the cost of reactive approaches. Investing in forward-looking, scalable and risk-informed social protection systems offers a pragmatic and cost-effective strategy to reduce future losses and protect development gains.

References

1 Masters, J (2025) The planet had 58 billion-dollar weather disasters in 2024, the second-highest on record, Yale Climate Connections, 24 January.

2 See note 1.

3 Copernicus (2025) Copernicus: 2024 is the first year to exceed 1.5°C above pre-industrial level, Copernicus Climate Change Service, 10 January.

4 World Weather Attribution (2024) When risks become reality: extreme weather in 2024, 27 December.

5 Bangalore, M, Hallegatte, S, Bonzanigo, L, Kane, T, Fay, M, Narloch, U, Treguer, D, Rozenberg, J and Vogt-Schilb, A (2016) Shock waves: managing the impacts of climate change on poverty. World Bank, Washington DC.

6 Clement, V, Rigaud, KK, de Sherbinin, A, Jones, B, Adamo, S, Schewe, J, Sadiq, N and Shabahat, E (2021) Groundswell Part 2: acting on internal climate migration. World Bank, Washington DC.

7 Giguere, J, Otto, FEL, Tannenbaum, A and Vahlberg, M (2025) Climate change and the escalation of global extreme heat: assessing and addressing the risks. Climate Central, Red Cross Red Crescent Climate Centre, World Weather Attribution.

8 World Health Organization (2023) Climate change, WHO Factsheets, 12 October.

9 World Health Organization, Air pollution, www.who.int/health-topics/air-pollution. Accessed 24 July 2025.

10 International Labour Organization (2017) World Social Protection Report 2017–19: universal social protection to achieve the Sustainable Development Goals. ILO, Geneva.

11 Norton, A, Seddon, N, Agrawal, A, Shakya, C, Kaur, N and Porras, I (2020) Harnessing employment-based social assistance programmes to scale up nature-based climate action, *Philosophical Transactions of the Royal Society B: Biological Sciences*, 375(1,794). doi:10.1098/rstb.2019.0127.

12 See note 10.

13 Bandiera, O, Burgess, R, Das, NC, Gulesci, S, Rasul, I, Shams, R and Sulaiman, M (2011) Asset transfer programme for the ultra poor: a randomized control trial evaluation. CFPR Working Paper No. 22. BRAC, Dhaka.

14 Cabot Venton, C, Fitzgibbon, C, Shitarek, T, Coulter, L, Dooley O (2012) The economics of early response and disaster resilience: lessons from Kenya and Ethiopia.

15 See note 14.

16 Fuentes-Nieva, R and Seck, PA (2010) The short- and medium-term human development effects of climate-related shocks: some empirical evidence, in Fuentes-Nieva, R and Seck, PA (eds) Risk, shocks, and human development. Palgrave Macmillan, London, pp.152–184. doi:10.1057/9780230274129_7.

17 Pandey, K (2023) Study looks at India's rural work guarantee scheme through a climate lens, *Mongabay*, 14 April.

18 Kaur, N, Agrawal, A, Steinbach, D, Panjiyar, A, Saigal, S, Manuel, C, Barnwal, A, Shakya, C, Norton, A, Kumar, N, Soanes, M and Venkataramani, V (2019) Building resilience to climate change through social protection: lessons from MGNREGS, India. IIED, London.

19 Bharadwaj, R, Mitchell, T, Karthikeyan, N, Raj, N, Chaliha, S, Abhilashi, R, Chinnaswamy, K, Raghini, B, Deulgaonkar, I, Chakravarti, D and McCabe, T (2023) Ethiopia readiness assessment: delivering anticipatory social protection. IIED, London.

20 See note 14.

21 Hallegatte, S, Rentschler, J and Rozenberg J (2019) Lifelines: the resilient infrastructure opportunity. Sustainable Infrastructure Series. World Bank, Washington DC.

22 United Nations Office for Disaster Risk Reduction, Our impact, www.undrr.org/our-work/our-impact. Accessed 24 July 2025.

23 Marcos Barba, L, van Regenmortel, H and Ehmke, E (2020) Shelter from the storm. The global need for universal social protection in times of COVID-19. Oxfam GB, Oxford. doi:10.21201/2020.7048.

24 See note 23.

25 See note 23.

26 See note 23.

27 Djabare, K, Tovivo, K and Koumassi, K (2021) Five years of the Green Climate Fund: how much has flowed to Least Developed Countries? Climate Analytics, Berlin.

28 Bharadwaj, R, Mitchell, T, Karthikeyan, N, Raj, N, Chaliha, S, Abhilashi, R, Chinnaswamy, K, Raghini, B, Deulgaonkar, I, Chakravarti, D and McCabe, T (2023) Bangladesh readiness assessment: delivering anticipatory social protection. IIED, London.

29 See note 19.

30 Bharadwaj, R, Mitchell, T, Karthikeyan, N, Raj, N, Chaliha, S, Abhilashi, R, Chinnaswamy, K, Raghini, B, Deulgaonkar, I, Chakravarti, D and McCabe, T (2023) Ghana readiness assessment: delivering anticipatory social protection. IIED, London.

31 Bharadwaj, R, Mitchell, T, Karthikeyan, N, Raj, N, Chaliha, S, Abhilashi, R, Chinnaswamy, K, Raghini, B, Deulgaonkar, I, Chakravarti, D and McCabe, T (2023) India readiness assessment: delivering anticipatory social protection. IIED, London.

32 Bharadwaj, R, Mitchell, T, Karthikeyan, N, Raj, N, Chaliha, S, Abhilashi, R, Chinnaswamy, K, Raghini, B, Deulgaonkar, I, Chakravarti, D and McCabe, T (2023) Malawi readiness assessment: delivering anticipatory social protection. IIED, London.

33 Bharadwaj, R, Mitchell, T, Karthikeyan, N, Raj, N, Chaliha, S, Abhilashi, R, Chinnaswamy, K, Raghini, B, Deulgaonkar, I, Chakravarti, D and McCabe, T (2023) Pakistan readiness assessment: delivering anticipatory social protection. IIED, London.

34 Bharadwaj, R, Mitchell, T, Karthikeyan, N, Raj, N, Chaliha, S, Abhilashi, R, Chinnaswamy, K, Raghini, B, Deulgaonkar, I, Chakravarti, D and McCabe, T (2023) Senegal readiness assessment: delivering anticipatory social protection. IIED, London.

35 Bharadwaj, R, Mitchell, T, Karthikeyan, N, Raj, N, Chaliha, S, Abhilashi, R, Chinnaswamy, K, Raghini, B, Deulgaonkar, I, Chakravarti, D and McCabe, T (2023) Uganda readiness assessment: delivering anticipatory social protection. IIED, London.

36 European Commission: Joint Research Centre (2022) INFORM report 2022: shared evidence for managing crises and disasters. Publications Office of the European Union. doi:10.2760/08333.

37 Detailed country-level assessments using the ASPIRE toolkit can be found at the following links:

- Bangladesh: www.iied.org/21911iied
- Ethiopia: www.iied.org/21916iied
- Ghana: www.iied.org/21921iied
- India: www.iied.org/21926iied
- Malawi: www.iied.org/21931iied
- Pakistan: www.iied.org/21936iied
- Senegal: www.iied.org/21941iied
- Uganda: www.iied.org/21946iied

38 Linnerooth-Bayer, J and Mechler R (2009) Insurance against losses from natural disasters in developing countries. United Nations Department of Economic and Social Affairs Working Papers. UN, New York. doi:10.18356/ddba5e66-en.

39 Bharadwaj, R (2022) Social protection to enhance climate resilience: what works where? IIED, London.

40 Bhat, S (2025) The digital transformation and efficiency of India's direct benefit transfer model, *DD News*, 24 February.

41 Ly, S, Nicoli, M, Shrestha, M, Palacios, RJ, Bossone, B, Tong, K, Karamba, RW, Vashakmadze, ET and Heav, C (2021) Cambodia economic update: road to recovery. World Bank Group, Washington DC.

42 Bharadwaj, R, Abhilashi, R, Kaur, D and Kumar, A (2022) The power of 'tech plus people' in collective climate action. IIED, London.

43 Ravindranath, NH and Murthy, IK (2018) Estimation of carbon sequestration under MGNREGA: achievement and potential in India. Indian Institute of Science and Imperial College London.

44 EM-DAT — The International Disaster Database, Centre for Research on the Epidemiology of Disasters, www.emdat.be. Accessed 24 July 2025.

45 Bharadwaj, R, Mitchell, T, Karthikeyan, N and Kumar, BA (2023) Sinking islands, rising debts: urgent need for new financial compact for Small Island Developing States. IIED, London.

46 Grossi, P and Kunreuther, H (eds) (2005) Catastrophe modeling: a new approach to managing risk. Huebner International Series on Risk, Insurance and Economic Security, 25. Springer, New York. doi:10.1007/b100669; Metropolis, N and Ulam, S (1949) The Monte Carlo Method, *Journal of the American Statistical Association*, 44(247), pp.335–341. doi:10.1080/01621459.1949.10483310.

47 Bharadwaj, R and Blair, T (2025) Addressing the climate finance gap through locally led country platform approach, Loss and Damage Research Observatory, 7 February.

48 See note 14.

49 See note 46.

50 See note 14.

51 Bharadwaj, R, Karthikeyan, N, Chaliha, S and Dembele, B (2025) Addressing climate and conflict-related loss and damage in fragile states: a focus on Mali. IIED, London.

Climate change is no longer a distant risk but a systemic development crisis. The impacts are particularly devastating for the least developed countries and Small Island Developing States, where repeated shocks are eroding hard-won development gains and driving households deeper into poverty. This paper demonstrates how taking early action through social protection programmes is more cost-effective than reactive, post-disaster responses and can be socially transformative. It highlights two complementary pathways for building resilience: anticipatory direct benefit transfers and longer-term resilience-building investments, and presents the business case for these approaches — including benefit–cost ratios and return on investment — compared with existing social protection and humanitarian responses. The findings are based on analysis from eight countries: Bangladesh, Ethiopia, Ghana, India, Malawi, Pakistan, Senegal and Uganda.

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