

Falling through the gaps

How global failures to address the climate crisis are leading to **increased losses and damages**

Evidence from Bangladesh, Indonesia, and Nepal



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Acknowledgements:

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Executive summary

Global failures to mitigate and adapt to the climate crisis are causing massive losses and costly damages to the lives, livelihoods, and futures of communities around the world.¹

This is not just a future problem: in 2022, for example, Pakistan suffered a heatwave that pushed the limits of human liveability, peaking at 49.5°C in May, followed by catastrophic flooding that damaged or destroyed more than a million homes and countless acres of crops, causing more than US\$30 billion in economic losses and over \$16 billion in reconstruction needs (The World Bank, 2022).

It is becoming all too evident that the climate crisis is causing human, cultural, economic, and ecological devastation. Much of this is avoidable; some is irreversible. While much more evidence is needed at the national, subnational, and community level to fully understand the scale and scope of losses and damages, it is urgent that we mobilize concrete, practical action and formulate effective policies in the face of rising climate-related risks and impacts.

Global efforts to **avert and minimize** losses and damages, including through mitigation and adaptation, have been woefully inadequate. Efforts to **address** resultant losses and damages are highly insufficient, and national and international humanitarian response systems are already overstretched and underfunded. As a result, a vast proportion of losses and damages is borne by vulnerable households and communities; these same communities have the least capacity to cope. There is a moral imperative to act in solidarity with those who are suffering now and to develop an approach that will protect generations to come.

The international community must scale up action and urgently establish and resource a comprehensive approach to averting, minimizing, and addressing losses and damages. At COP27 in Sharm el-Sheikh, historic steps were taken when negotiators agreed not only to include 'Loss and Damage' as a formal agenda item but also to establish new funding arrangements, including a dedicated Loss and Damage Fund, to assist particularly vulnerable developing countries in dealing with the adverse effects of climate change. A transitional committee will be established to make recommendations for operationalizing the fund for consideration and adoption at COP28, whilst ensuring coordination and complementarity with existing funding arrangements inside and outside the United Nations Framework Convention on Climate Change (UNFCCC).

¹ The IPCC (2022b) defines 'losses and damages' in lower case as (observed) impacts and (projected) risks from climate change. The capitalized 'Loss and Damage' refers to political debates and activities under the UNFCCC following the creation of the Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts (Loss and Damage Mechanism, or WIM) in 2013. The growing needs associated with losses and damages have also been recognized in the Sharm el-Sheikh Implementation Plan, agreed at COP27 (see <https://unfccc.int/documents/624444>).

Parties also agreed on the mechanisms to operationalize the Santiago Network on Loss and Damage (SNLD).² The SNLD aims to provide technical assistance to developing countries and local communities to avert, minimize, and address losses and damages. However, questions remain around how much finance will be made available for the SNLD and how it will deliver technical assistance. As with the Loss and Damage Fund, significant efforts need to be made to ensure its operationalization and its ability to effectively channel resources to where they are most needed, and to close the gaps within the current funding landscape (Hillier et al., 2022).

Besides furthering developments on Loss and Damage, COP27 served as a reminder to continue focusing on mitigation and adaptation in order to close the gaps that are leading to climate disasters of the kind experienced by Pakistan last year. Real progress on Loss and Damage can only be established when incorporating the full spectrum of averting, minimizing, and addressing the impacts of climate change.



A local response team works to prevent floodwater entering settlements bordering the Triyuga River, July 2020. Nepal © Red Cross Society

² See <https://unfccc.int/santiago-network>

Evidence from Bangladesh, Indonesia, and Nepal

To better understand the realities and needs of frontline communities, the Zurich Flood Resilience Alliance explored flooding impacts and risks in Bangladesh, Indonesia, and Nepal.

Case studies on losses and damages in these countries are summarized in this report. They build upon empirical observations, including post-event forensic analysis (e.g. the Post-Event Review Capability (PERC)),³ resilience assessments (e.g. the Flood Resilience Measurement for Communities (FRMC))⁴ (see Box 1), relevant global and national impact and risk databases, and reflections of key actors and communities themselves.

For each case study, we sought to answer the following sets of key questions:

- What are the losses and damages associated with climate change?
- Where are these not being measured and why are they poorly reported?
- What is being done to manage these risks through adaptation (including disaster risk reduction (DRR))?
- How effective are these efforts and what are the challenges?
- Where are these impacts not being managed?
- What is being done by whom to avert, minimize, and address the losses and damages experienced by communities?
- And, critically, what are the gaps?

In all three countries, flooding and associated losses and damages are already increasing, whether from coastal, riverine, and pluvial floods in Bangladesh; glacial lake outbursts and flash floods in Nepal; or storm surges in coastal areas of Indonesia.



Gathering data in Vietnam using the FRMC tool. © Ho Thi Hoa, Plan International

BOX 1: Strengthening community resilience through innovative, evidence-based tools from the Zurich Flood Resilience Alliance

Flood Resilience Measurement for Communities (FRMC): the FRMC tool allows users to generate evidence about the ways in which a given area or community is already resilient to floods and provides guidance to develop that resilience further. So far, it has been applied to more than 300 communities in some 30 countries.

Post-Event Review Capability (PERC): following large floods, the PERC tool reviews flood resilience, flood risk management, and post-flood interventions. It summarizes lessons learned, opportunities for improvements, and recommendations for future flood resilience measures.

³ See <https://floodresilience.net/perc/>

⁴ See <https://floodresilience.net/frmc>

Vulnerable countries and households are shouldering the economic costs of climate change

The economic costs of climate change are alarming: by 2050, economic losses in Nepal and Bangladesh are estimated to be up to 2.2% and 2.0% of annual GDP, respectively; by 2100, economic losses in Indonesia could be 2.5–7% of GDP.⁵ While some of these costs are covered by international assistance or by local and national authorities, the lion's share is borne by affected households.

For example, in 2015, rural households in Bangladesh spent an estimated \$2 billion on climate and disaster risk management – double what was spent by the government and more than 12 times what was received from multilateral institutions (Eskander and Steele, 2019). To do this, households living in poverty had to divert money away from basic needs, such as food, education, and health, to repair damage to their homes, replace animals or destroyed crops, and implement disaster risk management measures, such as raising their houses above flood levels. These costs hit female-headed households much harder – while absolute amounts spent were similar to male-headed households, as a percentage of income they spent three times more.

Climate change is undermining human well-being and planetary health

Non-economic losses and damages include human pain, suffering, and casualties; loss of cultural heritage and social and cultural identity; and loss of biodiversity and damage to natural ecosystems. Our research found that:

- in Bangladesh, in the aftermath of floods, there is a rise in child labour and the marriage of underage girls as households are unable to afford education for their children;
- in Indonesia, floods are causing coastal erosion, damage to coral reefs, migration of fish stocks, and biodiversity loss – all of which can have irreversible and damaging effects far beyond Indonesia's borders;
- in Nepal, after the 2014 floods, people reported higher levels of illness and effects on children's growth and development, as well as high levels of stress and anxiety, leading to higher rates of depression and increased risk of suicide.

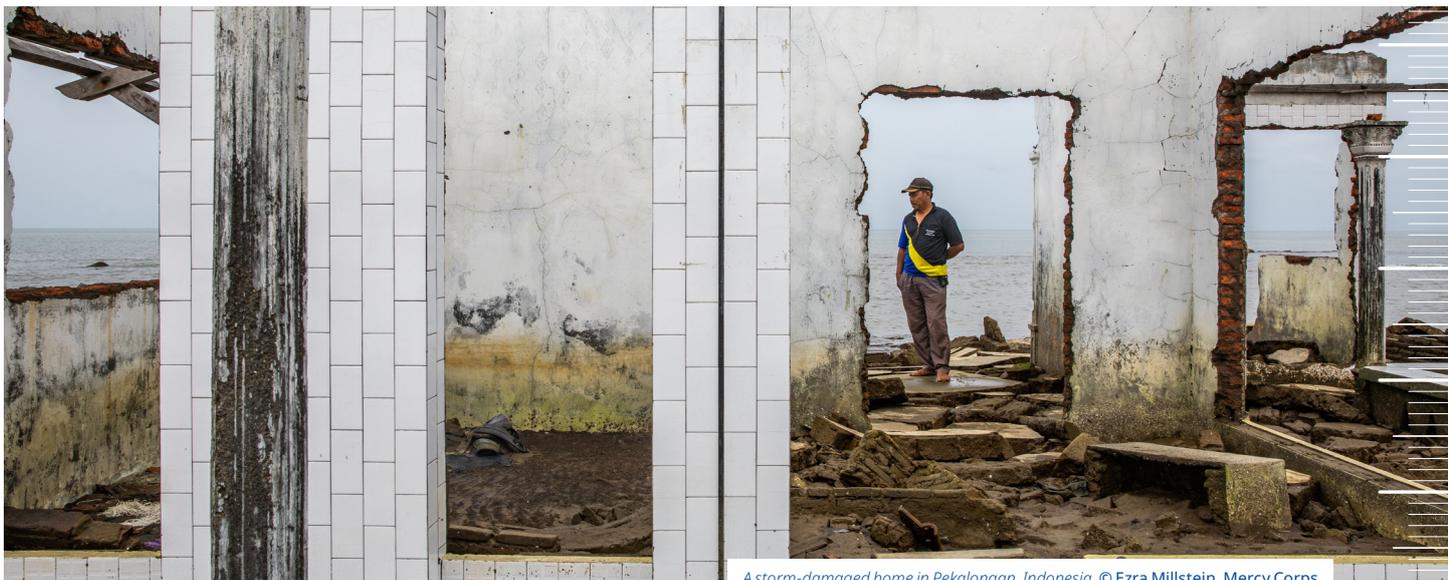
⁵ Estimates are taken from the Asian Development Bank (Nepal), IPCC (Bangladesh), and the World Bank (Indonesia).

Affected countries cannot avert, minimize, and address losses and damages alone

The governments of Bangladesh, Indonesia, and Nepal are attempting to avert, minimize, and address losses and damages in various ways. For example, Nepal recently approved a national framework on climate change-related losses and damages; Bangladesh is discussing establishing a national Loss and Damage mechanism; and Indonesia is setting up institutional architecture for observing, reporting, and responding to climate change-related disasters. All three countries are already dealing with the impacts of climate-related losses and damages, responding to floods, heatwaves, and more. There is some international assistance available, but not enough to meet even current needs.⁶

Countries are facing escalating challenges, particularly a lack of resources to cover the full range of activities needed to keep populations and ecosystems safe, and to respond when losses and damages do take place. These challenges include reaching the local level; averting, minimizing, and addressing the losses and damages experienced by households and communities; and ensuring that truly no one is left behind. Thus, while protection schemes do exist in Bangladesh, Indonesia, and Nepal, social protection programmes are not shock-responsive. Insurance is often inaccessible to those most affected by climate change-related disasters, and it is rarely affordable: for example, only 0.16% of the Bangladeshi population is covered by non-life insurance (LightCastle Analytics Wing, 2021).

Given these many challenges, both financial resources and additional capacity are needed for national authorities to establish and implement effective policies and take the necessary action to avert, minimize, and address losses and damages.



A storm-damaged home in Pekalongan, Indonesia. © Ezra Millstein, Mercy Corps

⁶ For example, the UN Pakistan floods response plan is less than 40% funded: <https://fts.unocha.org/appeals/1108/summary>



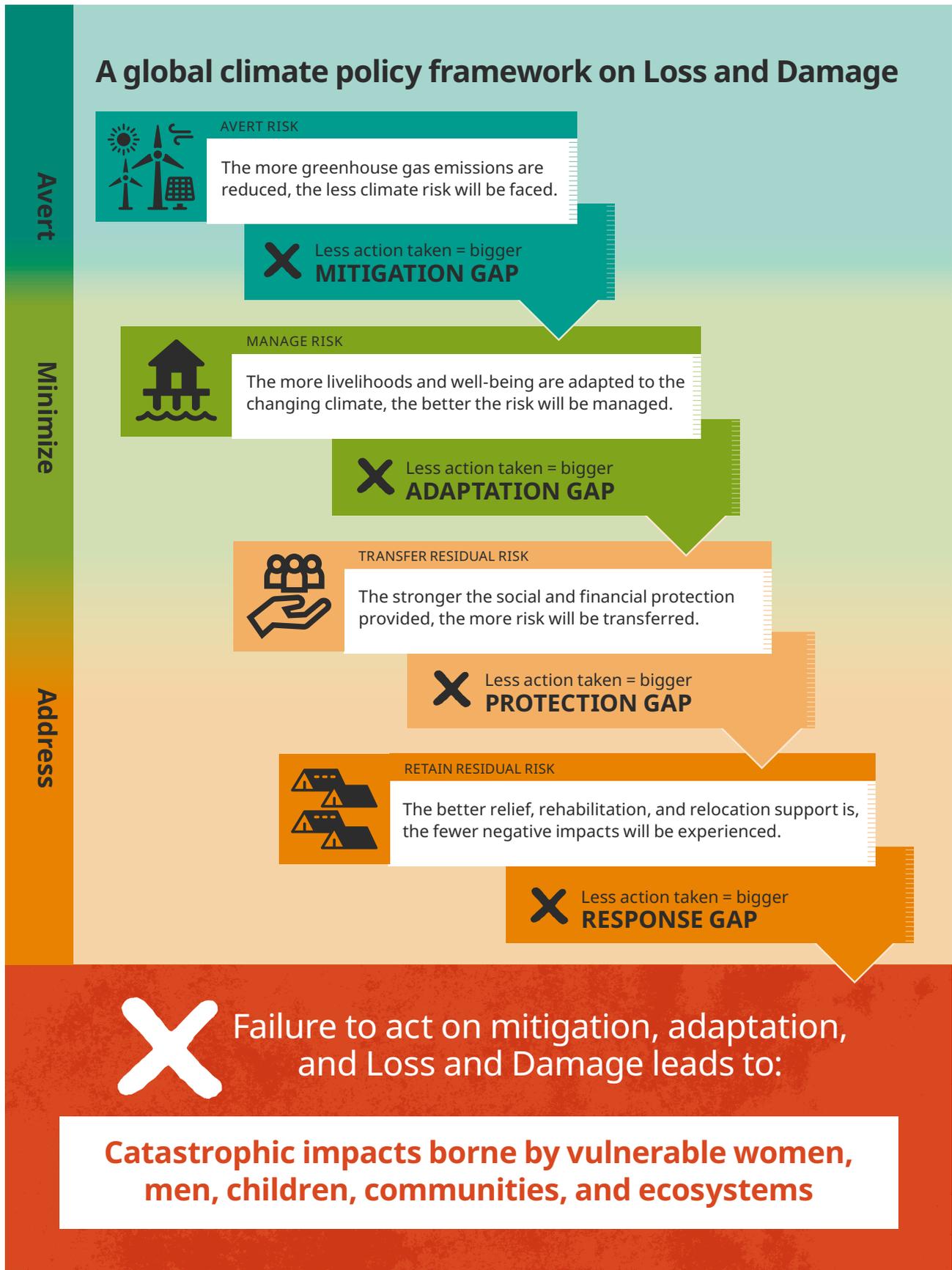
A flooded primary school in Thiès, Senegal. © Practical Action

Mind the gaps: adaptation, protection, and response

How did we get to a situation where climate change is causing damage, destroying homes, infrastructure, agriculture, biodiversity, and ecosystems, and leading to the loss of lives, livelihoods, dignity, and hope?

Insufficient global action on mitigation has led to a certain amount of global warming being ‘baked into’ the climate system, making it impossible to entirely avert the risks and impacts being observed today. Consequently, the global community must now also focus on efforts to minimize climate-related impacts through adaptation and disaster risk management. Yet inadequate funding and ineffective policies mean that adaptation in climate-vulnerable developing countries is often ‘fragmented, small in scale, [and] designed to respond to current impacts and near-term risks’ (IPCC, 2022f: 20). As such, it is ill-equipped to comprehensively minimize and address the consequences of crises today and in the future. This in turn creates a significant and growing climate **adaptation gap** (see Figure 1). Adaptation costs in developing countries could reach an annual figure of \$300 billion in 2030, yet international public finance amounts to barely 10% of this.

Insufficiently effective adaptation and the fact that some physical processes associated with the climate crisis – such as rising sea levels – are now unavoidable have led to countries and communities around the world experiencing large-scale losses and damages. Efforts to minimize and address these failures through, for example, financial and social protection, and through the provision of assistance and support for rehabilitation, are falling short due to inadequate investment, resulting in a **protection gap** and **response gap**.

FIGURE 1: A global climate policy framework on Loss and Damage⁷

⁷ This diagram summarizes the Loss and Damage policy framework, impacts, and gaps. It is simplified to increase clarity, recognizing that it does not capture the full nuance of the negotiations.

Data matters: a key ingredient for better policy design

All country case studies emphasize the need for better and more comprehensive data about losses and damages in order to be able to design more effective policies.

First, policymakers need better measurement tools so that they can understand the full scope of losses and damages, both economic and non-economic, and estimate the financial requirements to avert, minimize, and address them, reflecting national-, regional-, and local-level community needs. To enhance the comparability of estimates, these tools should ideally be systematized globally.

Second, as not all losses and damages can be easily quantified, policymakers need a better understanding of the impacts of hazards on people's lives and on the well-being of communities and their environments. Local communities, indigenous and local knowledge, narratives of lived experience, and qualitative insights on where community well-being is being disrupted are key to understanding these non-economic impacts ex post and ex ante.

Third, policymakers need a better understanding of how community resilience can be improved. More data is needed to understand the causes and consequences of climate risks and impacts, as well as the resilience of communities to overcome these impacts, based on local understanding and knowledge. The FRMC and PERC tools could help fill these information gaps. For example, in Nepal, the FRMC tool has been used to identify locally applicable good practices to address community resilience priorities. As a result, Practical Action and Mercy Corps flood resilience practices, such as bio-dikes, raised granaries, and safe shelters, are being implemented and financed by local government.



The resilience-building interventions carried out by these community volunteers in Jordan were determined by collecting and studying data using the FRMC. © Mercy Corps



Flooded streets in Nangapur, Nepal. © Practical Action

Policy recommendations⁸



Cover the adaptation gap: massive investments are needed now to prevent and manage avoidable losses and damages for the most vulnerable people. Adaptation investments reduce the irreversible harm that otherwise cannot be recovered through risk transfer or response mechanisms.

- At a minimum, developed nations should make good on the commitment to provide \$100 billion of climate finance per year, with 50% for adaptation, and a focus on grants, not loans.
- Adaptation investment needs to reach the local level and be locally led in order to enhance the resilience of climate-vulnerable communities.
- Losses and Damages should be included in the Global Stocktake⁹ as evidence of the limits to adaptation and the failure to mitigate.



Close the protection gap: major investments are needed in all climate-vulnerable countries to increase protection and boost adaptation to unavoidable risk.

- The lessons from shock-responsive social protection, weather-indexed insurance, and similar schemes should be assimilated and used by national and international agencies to create or strengthen comprehensive and shock-responsive social protection programmes and, where appropriate, well-designed insurance schemes.
- Support for comprehensive protection schemes should be provided through global climate funds.

⁸ These policy recommendations were updated in December 2022 to reflect the outcomes of COP27, compared to the 'Policy Brief on Losses and Damages' published by the Alliance in October 2022 (see <https://floodresilience.net/resources/item/closing-the-gaps-a-framework-for-understanding-policies-and-actions-to-address-losses-and-damages>).

⁹ The Global Stocktake is a process for taking stock of the implementation of the 2015 Paris Agreement, with the aim to assess the world's collective progress towards achieving implementation and the agreement's long-term goals.



Address the response gap: new approaches are urgently required, including the establishment and operationalization of the Loss and Damage Fund, to ensure that the most vulnerable women, men, and children do not suffer the costs of the climate crisis where the means to adaptation are exhausted.

- New and additional finance for addressing losses and damages, such as financial and social protection, relief, and rehabilitation, alongside effective tracking and accountability mechanisms should be generated urgently.
- The Transitional Committee, the Glasgow Dialogue,¹⁰ and other related processes should advance effective tracking and accountability mechanisms for Loss and Damage funding, ensuring coordination and complementarity between new and existing funding arrangements. This needs to go together with the development of harmonized and comprehensive ways to assess losses and damages ex post and ex ante.
- Loss and Damage should be included in discussions on the New Collective Quantified Goal¹¹ in addition to mitigation and adaptation finance.



Enhance policymaking and implementation capacity: systems need to be strengthened at all levels so that increased funding can be delivered effectively.

- Vulnerable countries should establish comprehensive and effective national and subnational policies, institutional frameworks, strategies, mechanisms, and programmes that support adaptation and avert, minimize, and address losses and damages in a way that is holistic rather than incremental, focuses on vulnerable locations and ecosystems, and meets the needs of the most vulnerable people and communities.
- The SNLD needs to become fully operationalized and needs to be underpinned by sustainable funding in order to provide the extensive technical assistance to climate-vulnerable countries and communities that is required.

¹⁰ See <https://unfccc.int/event/glasgow-dialogue>

¹¹ The 2015 Paris Agreement stipulates setting a New Collective Quantified Goal for Climate Finance prior to 2025. This goal is to be built on the commitment to provide \$100 billion per year by 2030, and must consider the needs and priorities of developing countries.



More and better data: investment is required to build evidence on the scope of risks and impacts – economic, human, and ecological – and on the effectiveness of the policies and programmes designed to minimize and address them.

- National agencies for disaster risk management, climate adaptation, social protection, and so on need to be helped to coordinate better and to share data and tools, with national Loss and Damage contact points established across sectoral mandates.
- More data and evidence are needed, developed in collaboration with local communities, to better prepare communities against climate change-related hazards.



Scale up successful locally led response mechanisms

- Global and national funds should finance the expansion of measures to avert, minimize, and address losses and damages that have proven to be effective, are locally led, and meet the specific needs of the communities they support.
- The work of the Transitional Committee on Loss and Damage should consider how locally led approaches could be scaled up in order to meet the specific needs of communities experiencing loss and damage.



The Zurich Flood Resilience Alliance is a multi-sectoral partnership which brings together community programmes, new research, shared knowledge, and evidence-based influencing to build community flood resilience in developed and developing countries. We help people measure their resilience to floods and identify appropriate solutions before disaster strikes. Our vision is that floods should have no negative impact on people's ability to thrive. To achieve this, we are working to increase funding for flood resilience; strengthen global, national, and subnational policies; and improve flood resilience practice.

Find out more: www.floodresilience.net

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Acronym list

BAPPENAS Ministry of National Development Planning of the Republic of Indonesia

BIPAD Building Information Platform Against Disaster

BNPB National-level disaster management agency in Indonesia

CBF Climate Bridge Fund

CDMC Community disaster management committee

COP Conference of the Parties

CSO Civil society organization

CVCA Climate vulnerability and capacity assessment

DIBI Indonesian disaster information data

DRR Disaster risk reduction

FRMC Flood Resilience Measurement for Communities

GCF Green Climate Fund

IIASA International Institute for Applied Systems Analysis

IOD Indian Ocean Dipole

IPCC Intergovernmental Panel on Climate Change

LDCRMP Local disaster risk management planning

MoDMR Ministry of Disaster Management and Relief in Bangladesh

NDC Nationally determined contribution

PDNA Post-disaster needs assessment

PERC Post-Event Review Capability

PPPA Public Private Partnership Authority

PVCA Participatory capacity and vulnerability analysis

SBI Subsidiary body for implementation

SNLD Santiago Network on Loss and Damage

UNEP United Nations Environment Programme

UNFCCC United Nations Framework Convention on Climate Change

WIM Warsaw International Mechanism on Loss and Damage associated with Climate Change Impacts (Loss and Damage Mechanism)



Residents of Chosica, Peru address the damage caused by flash floods in 2015. © Practical Action

1. Introduction

As a result of climate change, floods, heatwaves, and wildfires are increasing in frequency, duration, and intensity around the world.

They are causing damage, destroying homes, infrastructure, and agriculture, and are leading to loss of lives and livelihoods, particularly across the Global South. The Intergovernmental Panel on Climate Change (IPCC) estimates that up to 3.6 billion people (45% of the global population) live in contexts of high vulnerability to climate change. Key regional hotspots of high vulnerability are found, among others, in West, Central, and East Africa, South Asia, Central and South America, Small Island Developing States, and the Arctic. Climate crises (those already happening and the worrying future risks that scientists forecast) affect the most vulnerable households and communities – those who have limited coping capacity – sometimes with existential implications. Livelihoods are becoming unsustainable, declines in household income mean children are taken out of school, and poverty traps are widening (IPCC, 2022b).

Over the past 20 years, much attention has been given first to reducing greenhouse gases (mitigation) and then to minimizing the impact on people (through adaptation). However, we have known for some time that a climate adaptation gap exists – both because funding and policy for adaptation is inadequate and because certain impacts simply cannot be avoided by adaptation measures. In this context, Inger Andersen, the executive director of the United Nations Environment Programme (UNEP), has called for ‘a step change in adaptation ambition for funding and implementation to significantly reduce damages and losses from climate change’ (UNEP, 2021, p: XI). However, even with such a step change, adaptation efforts cannot reduce losses and damages to zero.

COP27 marked a historic step in the effort to address the losses and damages resulting from failures to mitigate and adapt to climate change, with the agreement to establish a Loss and Damage Fund. However, the real success of COP27 will be determined by the progress made towards the creation of this fund and its complementarity with existing funding arrangements. This is becoming even more important with stalled progress on mitigation, adaptation, and climate finance discussions, which only further increases the risks of climate-induced disasters and related losses and damages borne by vulnerable households and communities.

Box 2 sets out taxonomies for risk management and adaptation, and nomenclature for Loss and Damage.

BOX 2: Making sense of key concepts

Policy discussions on both Loss and Damage and climate adaptation involve a number of frameworks and taxonomies that need to be integrated. A brief overview is provided below.

Loss and Damage versus losses and damages

Lowercase ‘losses and damages’ are now commonly used to denote (observed) impacts and (projected) risks from climate change. Capitalized ‘Loss and Damage’ generally refers to the political debate under the United Nations Framework Convention on Climate Change (UNFCCC) following the establishment of the Warsaw International Mechanism on Loss and Damage associated with Climate Change Impacts (Loss and Damage Mechanism, or WIM) in 2013.



A river monitoring station in Nepal.
© Michael Szönyi, Zurich Insurance

Damages generally refer to direct and/or repairable impacts on livelihoods, infrastructure, and ecosystems. Losses include irrecoverable effects on lives, including casualties, biodiversity loss, and the indirect socio-economic impacts on livelihoods, communities, cultures, and countries (Mechler et al., 2019). This report focuses on losses and damages as experienced by communities and the measures needed to address this, rather than the Loss and Damage policy processes.

A technical risk management and adaptation taxonomy (avoided, unavoided, unavoidable)

Climate-related disasters are causing losses and damages around the world. Some of these climate impacts and risks could have been, and can be, avoided (reduced and managed), for example by investing in strong climate adaptation and disaster risk reduction. Other losses and damages are linked to unavoidable and irreversible increases in hazards, such as through committed sea level rise over centuries to come.

A policy-oriented Loss and Damage taxonomy (avert, minimize, address)

Loss and Damage policy has focused on losses and damages that could be averted (for example by implementing climate mitigation strategies to fight global warming), minimized (by adaptation and disaster risk management), and addressed (by responding to needs associated with residual impacts of climate-related hazards – rehabilitation, relocation, and longer-term recovery).



Community members participating in a reforestation project in Playones, Nicaragua. © Plan International

To respond to this growing challenge, and in recognition that flood losses and damages are currently, and will be, the leading future climate impact (Rentschler et al., 2022), the Zurich Flood Resilience Alliance has come together to explore possible solutions to realize its vision that floods have no negative impact on people’s and businesses’ ability to thrive. The Alliance works on the basis that, by providing targeted support, all communities can undertake proactive measures to build flood resilience. The Alliance is also generating evidence of what works and what does not in order to enhance the enabling policy environments. And finally, the Alliance is informing existing domestic and global funds, so that they are better targeted, as well as highlighting the need for new and additional investments, so that more resources can be allocated to build the resilience of the most climate-vulnerable communities around the world, in developed as well as developing countries.

For many years, as part of the Loss and Damage policy dialogue, the most impacted nations have been calling urgently for increased action, resources, and support to respond to losses and damages that either cannot or have not been reduced by adaptation. At last, national and international policy is responding to those calls and turning attention to what can be done to help support and rehabilitate people who have suffered losses and damages. This encompasses two options. The first is risk transfer, whereby one party assumes the liabilities of another, for example through insurance, social safety nets, or other means. The second is through public financing and support to respond to those losses and damages not covered through existing means.

Sadly, both elements are currently woefully inadequate. In 2022 the IPCC pointed to the lack of finance for climate risk transfer (IPCC, 2022b). Also, as this report highlights, there is a global failure to respond to those losses and damages not covered – particularly those impacting on the most vulnerable. We are terming this the **response gap** – those losses and damages that have not been averted, reduced, transferred, or responded to and are instead being borne by people who are directly affected by climate impacts and risks.

However, for policy discussions on Loss and Damage to progress, including the work of the Transitional Committee, a number of knowledge gaps need to be filled, including:

- frameworks to evaluate the true current and projected losses and damages;
- frameworks to best assess and address needs resulting from losses and damages;
- defining and delineating concepts such as ‘climate adaptation’, ‘disaster risk reduction’, and ‘addressing losses and damages’ so we can better understand whether actions are responding to the needs on the ground.

This report builds on work by the Alliance on adaptation finance, which found large gaps with regard to providing the finance pledged for adaptation of the most vulnerable in developing countries. Pledges were made by industrialized countries to provide \$100 billion of climate finance (of which \$50 billion is earmarked for adaptation) to developing countries each year between 2020 and 2025, but in 2020, 2021, and 2022, developed countries fell short of this promise. Even where pledges were met, often they did not reach the most vulnerable low-income countries where climate risks are experienced most acutely (The Zurich Flood Resilience Alliance, 2021).

This new report looks in more detail at where adaptation either has not or cannot reduce losses and damages. It provides evidence on impacts and risks from the frontlines of climate change in Bangladesh, Indonesia, and Nepal.¹² It provides a conceptual framework showing how gaps in climate action to date have led to losses and damages, and applies this to current cases. For each case study, the impact of climate change, the costs associated with losses and damages, policy and institutional frameworks, and information and knowledge gaps are. Suggestions are put forward to improve the policy and finance frameworks to support those most at risk from unaddressed impacts of climate change.

¹² Individual case studies were developed by Zurich Flood Resilience Alliance teams in Bangladesh, Nepal, and Indonesia, focusing on flood-related impacts and risks. Country teams carried out research and literature reviews, focus group discussions, and key informant interviews, including with disaster-affected communities, humanitarian response NGOs, microcredit organizations, and local and national government officials.



Rehana, a Local Resilience Agent in Bangladesh, uses an app-based alert system to warn community members about flood events. © Practical Action

2. Taking a global perspective

2.1. Conceptualizing losses and damages

‘Losses and damages’ is the term used for the harm resulting from sudden-onset events (climate disasters such as cyclones and flooding) as well as slow-onset processes (such as sea level rise, glacial retreat, and desertification).

Losses and damages affect human systems, such as livelihoods, and natural systems, such as biodiversity, and impact on people's health and well-being. According to the IPCC (2022b), global warming of 1.1°C has already caused widespread disruption in nature and affected the lives of billions of people, despite efforts to adapt. Frequent and severe climate extremes have caused widespread, pervasive impacts on ecosystems, people, communities, and infrastructure, and these weather extremes, increasingly attributable to human-induced climate change, are already irreversible on century-long timescales.

Evidence on the realities of climate losses and damages is often fragmented, and measuring climate adaptation progress lacks clarity and consensus in approaches. However, a range of tools and databases do exist to determine losses and damages as part of risk, vulnerability, and capacity assessments as well as post-event impact assessments. Particularly tools and assessments that can reach to local levels, such as analyses and narratives of lived experiences of losses and damages, forensic analyses as well as participatory, community-driven resilience assessments, could be made further use of to display the array of actual and potential impacts, vulnerabilities, and resilience (see Box 3). Losses and damages represent to some extent a failure to adapt to climate impacts and risks and therefore indicate soft adaptation limits,¹³ which means that further adaptation is possible but hampered by limited access to technology, knowledge, and finance, among other things (OECD, 2021; UNFCCC, 2022).

¹³ IPCC (2022b) defines adaptation limits as follows: the change in climate where adaptation is unable to prevent damaging impacts and further risk. Soft limits occur when additional adaptation may be possible if constraints can be overcome. Hard limits occur when no additional adaptation is possible.

BOX 3: Evidence, tools, and databases for assessing losses and damages

Post-event (assessment of actual impacts)

- Top-line statistics: disaster and climate impact databases at global (e.g. EMDAT, Desinventar, IPCC Atlas) or national scale (e.g. BIPAD in Nepal).
- Damage and loss socio-economic assessment: United Nations Economic Commission for Latin America and the Caribbean (ECLAC) approach for national-level damage and loss assessment and post-disaster needs assessment (PDNA) (see UNECLAC, 2015).
- Analyses and narratives of lived experiences of economic and non-economic losses and damages: individual country studies and meta-analysis (see Tschakert et al., 2019).
- Post-event analyses: forensic analyses to understand causes and consequences of impacts (e.g. PERC assessment).



Visual markers, like this one in Can Tho, Vietnam, serve as an effective reminder of past flood events. © Karen MacClune, ISET-International

Pre-event (understanding of potential impacts)

- Physical and statistical climate and disaster risk assessments and models (e.g. Aqueduct, International Institute for Applied Systems Analysis (IIASA) Hotspots database for climate risks, IPCC Atlas).
- (Participatory) vulnerability capacity and resilience assessment: used by NGOs and others to understand vulnerability and capacity in order to implement resilience measures (e.g. participatory capacity and vulnerability analysis (PVCA) or climate vulnerability and capacity assessment (CVCA)).¹⁴
- Climate attribution to examine contribution of anthropogenic (human-induced) climate change to trends in hazards and impacts (e.g. World Weather Attribution Initiative).¹⁵

¹⁴ <https://floodresilience.net/frmc>; <https://floodresilience.net/resources/item/integrated-disaster-risk-reduction-and-climate-change-participatory-capacity-and-vulnerability-analysis-pvca-toolkit>

¹⁵ <https://www.worldweatherattribution.org>

While major efforts are being taken to generate relevant and useful information by countries and the international community, there is a lack of systematic evidence of lived experiences at the community scale. This report develops such accounts and narratives. It also draws on efforts to learn lessons from climate change impacts retrospectively, such as the PERC tool (see Box 4).

BOX 4: PERC: a tool for forensic analysis of causes and consequences of climate-related impacts

The Zurich Flood Resilience Alliance developed PERC as a methodological framework to conduct forensic, systems-level analysis of why a hazard became a disaster and to identify opportunities for building resilience (Keating et al., 2016; Venkateswaran et al., 2020). Drawing on secondary research and key informant interviews, the PERC methodology focuses on understanding the dynamic interactions between systems, agents, and institutions, and their role in creating and reducing risks. It looks across the disaster risk management cycle and across scales and sectors to analyse why the disaster manifested in the way it did and to identify key successes and critical gaps in how a disaster and the antecedent risk management provisions were governed. To date, 25 PERCs have been conducted. Further information can be found at <https://floodresilience.net/perc>.



The Alliance conducted a PERC study in southern Africa in the aftermath of cyclones Idai and Kenneth, to highlight key opportunities for building resilience. © Ezra Millstein, Mercy Corps

In the context of dealing with losses and damages, international climate policy and Loss and Damage debates have focussed on options for supporting the most vulnerable through disaster risk reduction and climate change adaptation in order to build resilience to climate-related disasters. The attribution of climate risks to anthropogenic (human-induced) climate change and the fact that those most vulnerable to climate change are generally the least responsible for causing it support proposals made for sharing the costs of managing climate impacts and risks. Box 5 sets out the global impacts and risks as identified by the IPCC and how these are falling on the most vulnerable.

BOX 5: IPCC status report on present global impacts and future risks

Present impacts

- Up to 3.6 billion people globally live in contexts of high vulnerability to climate change. Key regional hotspots of vulnerability are found, among others, in West, Central, and East Africa, South Asia, Central and South America, Small Island Developing States, and the Arctic.
- As more people move to urban areas, those living in informal settlements and in rapidly growing urban communities are the most vulnerable.

Future risks

- The risks are greatest for nature and people in regions experiencing the highest temperatures, those living along coastlines, in the frozen parts of the world, along rivers, and where other threats exist, but these can be moderated to some extent.
- Sea level rise will put people living in coastal cities and settlements at greater flood risk, and low-lying coastal ecosystems, such as mangroves, will be submerged and lost.
- Life on low-lying and atoll islands and in some mountain areas will become increasingly challenging.
- With increasing global warming, losses and damages increase and become progressively more difficult to avoid; they are strongly concentrated among the most vulnerable, and are not comprehensively covered by current financial, governance, and institutional arrangements.
- Reducing greenhouse gas emissions to limit global warming to 1.5°C would substantially reduce climate-related losses, but risks cannot be eliminated completely.

Source: IPCC, 2022d

Loss and Damage discussions have significantly progressed, with the landmark decision at COP27 to have an agenda item on Loss and Damage finance and to establish a fund, building on the momentum that has been created over the last few years. While this discourse started at the establishment of the UNFCCC in the early 1990s, it took over 20 years for it to be recognized institutionally with the establishment of the Loss and Damage Mechanism at COP19 in 2013, and then in 2015 at COP21, through the inclusion in Article 8 of the Paris Agreement.

2.2. A framework for averting, minimizing, and addressing losses and damages

2.2.1 Evidence and gaps

The cumulative scientific evidence of the latest IPCC working group report on 'Impacts, adaptation and vulnerability' (IPCC, 2022b) is emphatic: climate change is a threat to human well-being and the health of the planet. This follows from the 2021 report on the physical science of climate change that suggested it is 'unequivocal that human influence has warmed the atmosphere, ocean, and land'. Widespread and rapid changes in the atmosphere, ocean, cryosphere, and biosphere have occurred. (IPCC, 2021a: p. 4)

Recent IPCC reports have identified major gaps (see box 6) in responses to climate change (IPCC, 2022b; IPCC, 2022c). The climate mitigation gap highlights that current and planned greenhouse gas emission reductions mean that, by 2040, the world is more likely than not to warm more than the 1.5°C target established at COP21 in the Paris Agreement (IPCC, 2022c). Extreme weather events require preparedness and response, whether they are exacerbated by climate change or not. Effective climate mitigation avoids the impacts and risks caused by climate change. However, building resilience to risks not affected by climate change is required, and this is currently responded to through disaster risk management measures.

Social protection schemes, like public works programmes that focus on natural resource management (for example in Ethiopia, where the new watershed and rangeland development guidelines support afforestation, soil regeneration, and wetland conservation) have the potential to contribute to addressing the mitigation gap by creating/enhancing carbon sinks.

The IPCC also identifies a large adaptation gap, as the scope and scale of adaptation measures being implemented is insufficient compared to what is needed to adequately adapt to the consequences of climate change. Many countries have incipient adaptation measures designed to respond to current impacts and near-term risks (UNEP, 2021; IPCC, 2022b). Climate adaptation measures can build resilience to losses and damages. For example, in Nepal many of the local adaptation plans for action at district and municipal levels have focused on managing flood risks (Regmi et al., 2016).

In addition to the mitigation and adaptation gaps, the IPCC has observed gaps related to addressing observed losses and damages (impacts). Increasingly, those impacts have been attributed to anthropogenic climate change. For example, deaths during periods of extreme heat have been attributed with high confidence to human-induced heatwaves.

Without effective and inclusive risk-transfer mechanisms, vulnerable people face a climate protection gap with broad and deep social dimensions and implications. Settlements in coastal areas are subject to sea level rise, mountain villagers face glacial lake outburst floods, people in low-lying areas are affected by more severe cyclones, coastal fisheries are destroyed by ocean acidification, and homes and forests are destroyed by fires.

There are gaps related to addressing projected losses and damages (risks), where unavoidable increases in climate hazards present multiple risks to ecosystems and humans. Beyond 2040, depending on the degree of warming, climate change is projected to increase the impacts of key risks to levels many times higher than currently observed. In terms of the short term (up to 2040), there is a 50% chance of the 1.5°C average rise in global temperatures being exceeded.

There are gaps with regard to contingency funds for post-disaster recovery, upgrading of social safety nets through climate-adaptive social protection (including public works), and rendering health systems climate shock-proof. Response gaps exist where there is a lack of effectively providing relief, rehabilitation, and relocation support ex post. These gaps need to be resolved to address the now unavoidable increases in climate hazards.

These major gaps in mitigation and adaptation mean that the most climate-vulnerable people and the ecosystems upon which they depend will take the brunt of, and need to cope with, increasing climate impacts. One 'solution' is to transfer these risks through social or financial protection (e.g. social safety nets and insurance), but at the moment there are severe constraints to the rollout of these options where they are needed the most. For instance, active labour market policies, as one of the pillars of social protection systems, is crucial in bridging the response gap, particularly in relation to informal and migrant workers who will be affected by climate-related hazards and need support to reintegrate into the labour markets.

BOX 6: Climate gaps requiring attention

Mitigation gap: the gap between implemented measures to reduce greenhouse gases and greenhouse gas reduction efforts needed to keep global warming at maximum 1.5°C, as established at COP21 in the Paris Agreement (IPCC, 2022c).

Adaptation gap: the difference between actually implemented adaptation and a goal set by society, determined largely by preferences related to climate change impacts, and reflecting resource limitations and competing priorities (UNEP, 2021).

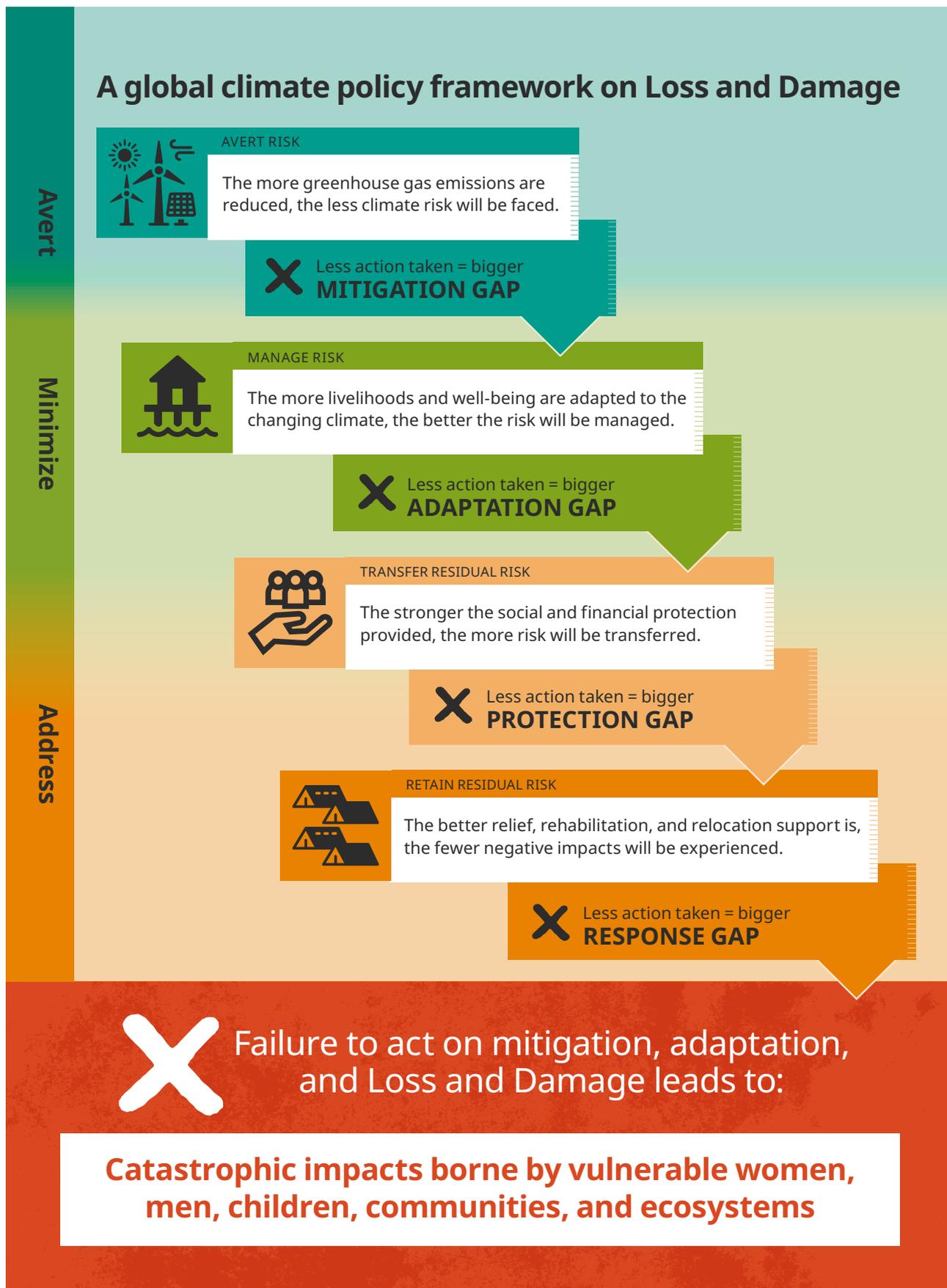
Protection gap: the losses and damages not covered by insurance and not addressed through other risk transfer and social protection mechanisms after a climate-related catastrophe event.

Response gap: lack of effectively providing relief, rehabilitation, and relocation support ex post.

2.2.2 Addressing the gaps

The mitigation, adaptation, protection, and response gaps were referred to in different ways during COP27. Also discussed were ways to help generate finance to fill these gaps, including new mechanisms such as the Loss and Damage Fund, the Global Shield, and innovative sources of finance. However, there is still a lack of conceptual clarity around the funding landscape and which mechanism would apply to which gaps. Filling these gaps and addressing losses and damages demands this conceptual clarity and the generation of relevant evidence to motivate action and support. A policy framework to assist with this is visualized in Figure 1.

FIGURE 1: A global climate policy framework on Loss and Damage



Coherence across the interlinked policy domains of climate adaptation, disaster risk reduction, and addressing losses and damages can be achieved if policy options are considered along a continuum of actions that recognize and attend to the gaps ex ante and ex post. The adaptation gap and required finance have been in the spotlight recently, as international pledges for delivering on adaptation have not been fully serviced. So far, developed countries have only delivered about \$20 billion of the \$50 billion per year proposed for adaptation in vulnerable developing countries (and \$80 billion of the pledged \$100 billion overall including mitigation); (Colenbrander et al., 2021). Currently, the retention of risks from losses and damages burdens the people, households, and local economies that directly endure the losses and damages. Our report brings this aspect to prominence. Addressing the response gap should constitute an important part of the policy space for responding to losses and damages, including through the important policy processes launched at COP27.

Current international climate risk policy has focused on the climate protection gap through offers of support for sovereign and household insurance, while the social dimensions are neither well understood nor discussed. This leads to large residual burdens being borne by households, communities, and countries. With little capacity to retain risks, vulnerable households respond by selling off livestock and productive assets, thus generating or perpetuating climate-induced poverty traps (Birkmann et al., 2022). In some cases, these residual risks are becoming existential.

As further international action and support are demanded for comprehensively tackling adaptation and addressing risk protection gaps, we suggest enhancing the coherence in climate policy by building upon a risk-layering framework. In disaster and climate risk management, risk layering is used to coordinate risk management investments (Mechler et al., 2014). This means reducing risk to a certain level of acceptability (risks avoided), providing risk finance and insurance to transfer unavoided risks, and engaging in ex ante or ex post risk retention for residual unavoided risks that are not reduced or transferred (see Box 7 for an explanation of the typology).

BOX 7: Avoided, unavoided, and unavoidable typology explained

Avoided risks: risks that can and will be avoided by mitigation and/or adaptation measures. They are managed through measures of prevention and preparedness, anticipating and absorbing shocks, and adapting in incremental and sometimes transformational ways.

Unavoided risks: risks where avoidance of further losses and damages is possible through mitigation and/or adaptation, but where measures are so far not implemented. These are highly differentiated risks and impacts, including economic and non-economic losses and damages. These risks could be avoided through adaptation and disaster risk reduction; however, costs of climate adaptation in developing countries are estimated to be five to ten times greater than current public adaptation finance flows. This, together with poor effectiveness of adaptation measures, leaves considerable residual unavoidable risks. Further, these risks could be transferred (through risk finance and social protection); however, financial and political factors limit the coverage of risk transfer measures. This, added to the limited efficacy of transfer mechanisms, means that some unavoidable risks are not transferred or otherwise addressed, leaving a protection gap.

Unavoidable increases in hazards resulting in losses and damages: risks that cannot be avoided and minimized through mitigation and/or adaptation measures. They need to be retained, as do the unavoidable risks that get through the protection gap. Measures include support to people facing recurrent unavoidable impacts through transformational risk management (managed retreat, livelihoods systems change) and rehabilitation. Yet, as will be evidenced in the next chapter of this report, not all these risks are retained, leaving a response gap that affects the most vulnerable and often most marginalized. We assert that curative finance is needed to address residual risks of unavoidable and unavoidable losses and damages.

The different gaps related to UNFCCC policy areas, responses to risks, and resilience outcomes are visualized in Figure 1. Failing to address avoidable losses and damages and unavoidable increases in climate hazards will imperil resilience outcomes.

2.3. Actions to manage risks and impacts

Growing public and political awareness of climate impacts and risks has resulted in at least 170 countries including adaptation in their climate policies, and many cities are integrating climate change into their planning processes. Investments in adaptation are expected to reduce risks and impacts, and to generate multiple benefits, including improved productivity, innovation, health and well-being, food security, livelihoods, and biodiversity conservation.

However, adaptation overall is fragmented, small in scale, sector-specific, only designed to respond to current impacts and near-term risks, focused on planning rather than implementation, and dominated by incremental and reactive responses. Adaptation progress is also unevenly distributed and not focused on the most vulnerable to climate change (IPCC, 2022b).

Many natural and human systems are near their hard (technical) and soft (socio-economic) adaptation limits. Additional limits will emerge with increasing global warming. Above 1.5°C of warming, adaptation limits will be reached for more ecosystems, such as tropical coral reefs, and some natural solutions may no longer work; lack of freshwater could mean that people living in small islands and those dependent on glacier and snowmelt can no longer adapt. By 2°C of warming, it will be especially challenging to farm staple crops in many current growing areas, particularly in tropical regions. These limits demonstrate where the unavoidable increases in hazards will hit hardest.

The largest adaptation gaps exist among lower-income population groups. Availability and access to finance for adaptation, particularly in the Global South, is a key limiting factor. Current global financial flows, especially into developing countries, are considered insufficient. The overwhelming majority of globally tracked climate finance was targeted at reducing emissions (i.e. mitigation), not adaptation. Transformative adaptation toward systemic change, such as planned retreat of populations and assets of coastal communities to avoid risks of sea level rise, are needed.

2.4. International policy progress to date on Loss and Damage

The space for action to address losses and damages has not been clearly defined. The UNFCCC refers to ‘averting, minimizing and addressing’ Loss and Damage. The emphasis has been on averting and minimizing through climate mitigation and adaptation. However, at the June 2022 meeting of the Glasgow Dialogue, there was a strong push towards having greater discussion and negotiation on addressing losses and damages in terms of risk retention and closing the protection gap. The subsequent agenda item on Loss and Damage finance at COP27 and agreement to establish a Loss and Damage Fund recognized the need for finance to address losses and damages and respond to the gaps. As Transitional Committee on Loss and Damage now starts its work, both on making recommendations to operationalize the fund and ensuring coordination and complementarity with existing funding arrangements.

On technical assistance, the SNLD was agreed at COP25 as a linking mechanism for developing countries to access technical assistance, knowledge, and resources. Network functions have been decided but details on delivery await agreement among parties to the UNFCCC. At COP26, six SNLD functions were drawn up including assistance to identify and communicate technical assistance needs and priorities, identify relevant technical assistance, and connect those seeking technical assistance with the best providers. Institutional arrangements for SNLD delivery were agreed at COP27, including guidance to establish an advisory board, to select the host institution, to establish the secretariat, and to agree the operating procedures by November 2024. The advisory body will be crucial to agree the operating principles and the membership criteria of bodies, networks, and experts that will constitute the network.

The Global Stocktake process under the UNFCCC will, among other things, assess collective progress towards achieving the Paris Agreement goals on adaptation. National adaptation communications and adaptation reporting using other channels have thus far only addressed some areas and information categories set out in UNFCCC decisions (Decision 9/CMA.1 Annex) and guidance. The information categories to be included in adaptation-related reporting (Decision 18/CMA.1 MPGs for TF Annex. Section IV) helpfully widen the lens to include information related to averting, minimizing, and addressing losses and damages associated with climate change impacts. It has been recommended that UNFCCC parties identify ways to use information on adaptation implementation and outcomes, plus the scale of losses and damages incurred to assess collective adaptation progress.

At COP26, the G77 and China block proposed a Loss and Damage finance facility 'to provide new financial support under Article 9 of the Paris Agreement, in addition to adaptation and mitigation finance, to developing countries to address loss and damage' (G77, 2021, paragraph 102). Parties could not reach agreement on this. The Glasgow Dialogue was established to continue discussion.

At COP27 in Sharm el-Sheikh, parties agreed to establish a Loss and Damage Fund, responding to years of pressure to put Loss and Damage finance on the agenda. Many questions around the fund remain to be resolved; key contentious issues are a) the contributor funding base and b) which countries receive funding – the current language on 'particularly vulnerable' avoids the perception that it is only for Least Developed Countries and Small Island Developing States, thus ensuring that countries like, for example, Pakistan are eligible based upon circumstances. It was agreed that this fund would ensure coordination and complementarity with existing funding arrangements and with other funding solutions, including initiatives like the Global Shield. At the moment, this remains a fund with no actual funding.

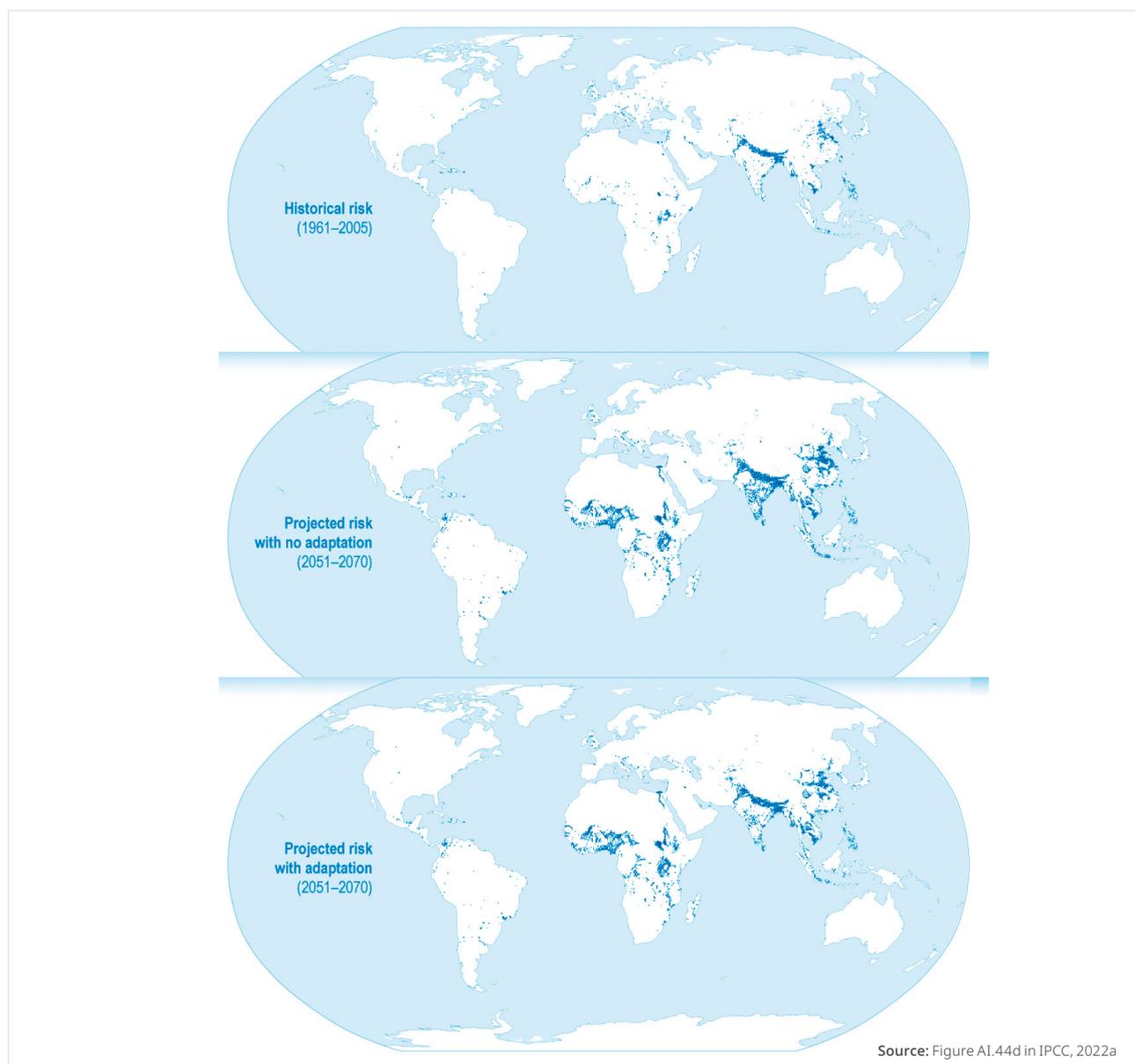


Community brigades in Tabasco, Mexico, conduct training on early warning systems. © Mexican Red Cross

2.5. The scale of the flood risk and impacts for communities

A rise in global warming will affect a range of impacts and risks, and this is strikingly clear in the example of flooding. The projected increases in intensity, frequency, and duration of precipitation in many regions mean that there will be many more people exposed to riverine flooding (see Figure 2). A recent study found that low- and middle-income countries are home to 89% of the world's flood-exposed people. Major exposure is in Africa, South Asia, and South-east Asia, where population density is high and poverty looms large (Rentschler et al., 2022).

FIGURE 2: Risk of historical and projected river flooding – with and without adaptation



Limits to adaptation efforts loom due to financial, governance, institutional, and policy factors, and even effective adaptation measures cannot prevent all losses and damages.

About 1.8 billion people (23% of the world population) are assessed as currently being directly exposed to 1-in-100-year floods (Rentschler et al., 2022). Flooding unevenly affects the most vulnerable, and an estimated 780 million flood-exposed people depend upon an income of less than \$5.50 per day. Furthermore, 170 million people at high flood risk are in extreme poverty (i.e. living on less than \$1.90 per day). Nearly half of these people are located in sub-Saharan Africa (Rentschler et al., 2022). Given the gaps and limits to flood risk adaptation, this means that a large brunt of the burden of flooding exacerbated by climate change falls on those with the least capacity to anticipate, absorb, and adapt to flood shocks. This constitutes a large-scale flood risk protection gap. Figure 3 shows where this protection gap is occurring.

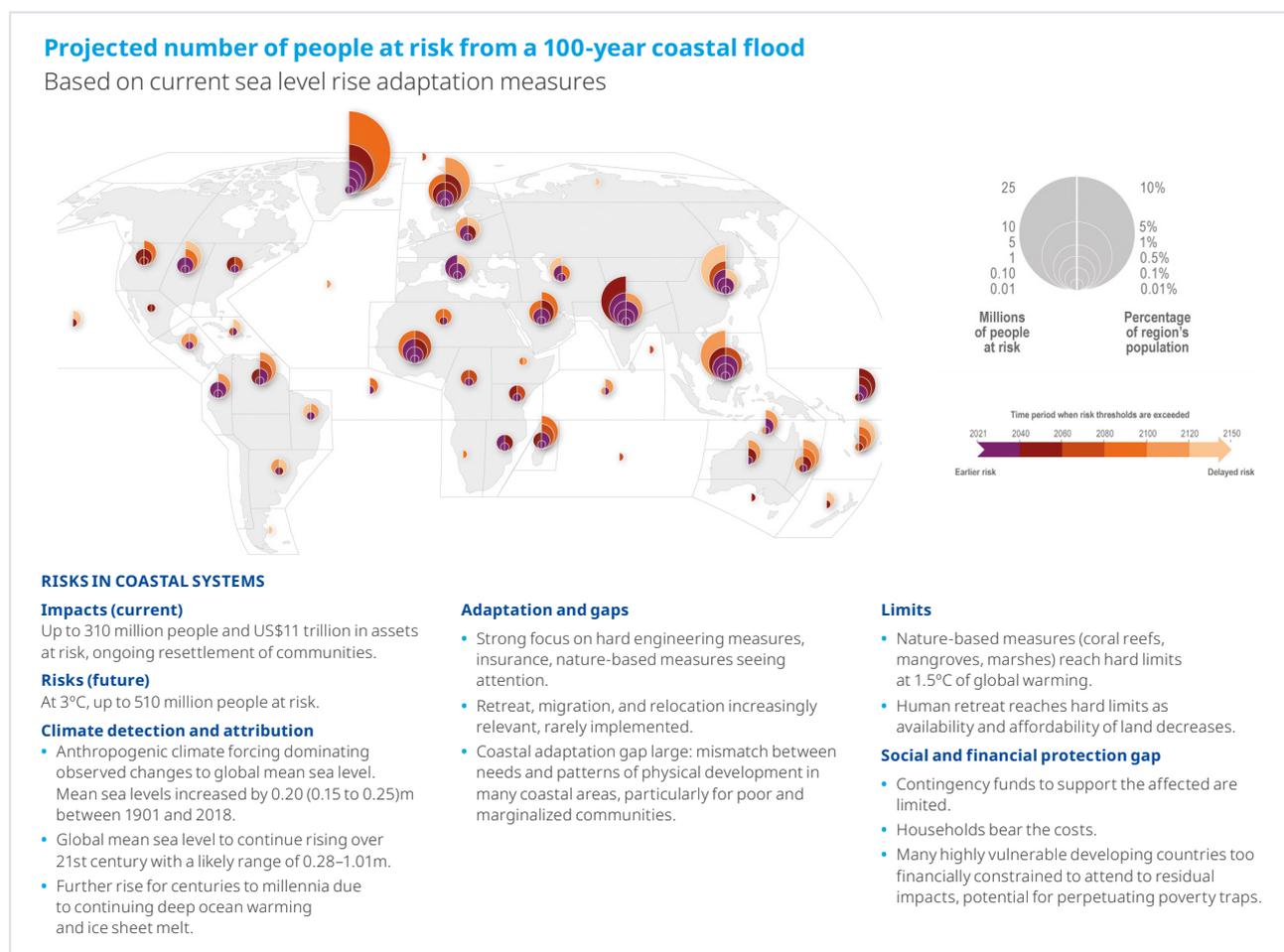


FIGURE 3: Global evidence on coastal flood risk, adaptation limits, and associated gaps in coastal socio-ecological systems. Source: Own synthesis building on IPCC, 2022b and Figure AI.42 in IPCC, 2022a.

2.6. Conclusion

We have laid out above a taxonomy of losses and damages and a global perspective for addressing them, framing the imperative of providing support to the most climate-vulnerable people by tackling the adaptation and protection gaps, and responding effectively to climate impacts by addressing residual losses and damages and relieving the burden that is currently being borne by communities.

Enhanced international policy formulation that leads to effective and comprehensive action and support on climate adaptation and addresses losses and damages is urgently needed, and requires coordinated and coherent climate risk management, transfer and response, and a step change in the level of financial resources provided. This should be reflected through the critical work of the Transitional Committee on Loss and Damage finance. This global perspective is complemented in the following chapter by local evidence from key countries and communities that are at the forefront of climate change risks and impacts.



The scale of the monsoon in July 2021, combined with poor drainage, left communities in Bangladesh inundated with floodwater for months. © Joe Cropp, IFRC

3. Case study evidence

3.1. Introduction

As discussed in the previous chapter, losses and damages are commonly considered to be observed **impacts** and projected **risks** of adverse effects of climate change (IPCC, 2022b).

A rapid and massive scale-up of investments in building resilience would avert, minimize, and address these losses and damages: avert through mitigation or adaptation; minimize through effective investment in disaster risk reduction and by strengthening resilience through adaptation; or address by protecting against them, for example through insurance. However, it is now well accepted that some losses and damages are ‘unavoided’ in the absence of adequate adaptation measures, or, as increases in some hazards such as sea level rise become unavoidable, further contributing to impacts and risks. Also, even where, theoretically, some losses and damages could be avoided or minimized, many will not be due to inadequate efforts and ineffective (or even mal-)adaptation. These unavoidable and unavaoided losses and damages will often fall hardest on people – individuals and households – who are the most vulnerable and least able to cope, and who are among those least responsible for climate change itself.

There have been fierce debates – mainly during and on the periphery of the UNFCCC COP – in recent decades over these issues, particularly about what should be done both to increase climate adaptation and to address those unavaoided and unavoidable losses and damages. One of the best ways to influence policy and investment is through demonstrating the benefits of building comprehensive and inclusive resilience in practice; however, there are political hurdles to overcome to move this debate forward, in addition to insufficient data and an incoherent framework on the losses and damages experienced.

This chapter examines evidence of losses and damages in Bangladesh, Indonesia, and Nepal with a focus on largely observed impacts rather than future risks. We set out evidence of the economic, human, and ecological costs associated with losses and damages, and the effectiveness of the policies, institutions, and practical measures in place to minimize and address them.

3.1.1 Methodology

Focus group discussions were held in flood-prone locations in Bangladesh and Nepal. These were guided by a checklist and included open-ended questions on the frequency and intensity of floods, the extent of losses and damages (both economic and non-economic), existing ex ante and ex post measures for addressing/offsetting losses and damages, post-disaster humanitarian support services, the role of insurance and microfinance institutions, and the scope of and arrangements for social safety nets. The case studies in Bangladesh and Nepal included key informant interviews with national-level officials to understand the roles and mandates of relevant agencies/departments, institutional arrangements and collaboration for any proposed national mechanism on losses and damages, and existing tools for assessment. Response measures were investigated in terms of existing capabilities and capacity gaps to address losses and damages, experiences in the implementation of insurance schemes as risk transfer mechanisms in the flood-prone communities, and the coherence of proposed losses and damages mechanisms with existing humanitarian relief mechanisms.

The case study for Indonesia was developed through a process of secondary information review and analysis, and interviews with key informants. The policy and institutional frameworks were reviewed at national and subnational levels and methods for assessment of, and responses to, climate risks and impacts, and losses and damages for different ecosystems were investigated.



A flood evacuation shelter in Nepal. © Practical Action

3.2. Climate change impacts across the three countries

3.2.1 Key messages

- Climate hazards vary across the high Himalayas of Nepal, the coastal zone of Bangladesh, and the Indonesian archipelago, but local evidence shows that many are already increasing. They are causing additional losses and damages and will continue to do so.
- Escalation in flooding due to climate change presents many different types of impacts and risks in these countries, including glacial lake outbursts and flash floods in Nepal, coastal, riverine, and pluvial floods in Bangladesh, and storm surges in coastal areas of Indonesia.



NEPAL

Nepal is located on the southern slopes of the central Himalayas; mountains and hills occupy nearly 90% of the country and the remaining area is low-lying Terai plains. Nepal is characterized by unique geographic regions, climatic characteristics, biodiversity, ecosystem, agriculture, and settlements. A fifth of the population lives below the poverty line.



The impacts of climate hazards in Nepal, such as increasingly frequent intensive rainstorms, longer drought spells, rising temperatures, retreating glaciers, and growing glacial lakes, are compounded by the country's poverty, a high dependency on natural resources, and its fragmented and complex geography. Climate hazards are increasing in severity and frequency, including glacial lake outburst and flash floods (SERVIR, n.d.).

Box 8 describes what happened during recent flooding in Nangapur, Rajapur-3, Bardiya.

BOX 8: Flooding in Nangapur, Rajapur-3, Bardiya in 2021

In October 2021, the community members of Nangapur were busy celebrating Dashain – a major Nepali festival celebrating the end of the monsoon. Traditionally, communities start harvesting their paddy immediately after the Dashain festival ends. However, in 2021, unseasonal October rain brought heavy floods that destroyed their ready-to-be harvested crops.

One member of the Nangapur community and treasurer of the local community disaster management committee (CDMC) said that all the paddies in her 15 katthas (about half a hectare) of land were washed away. ‘People rushed back to save what they could, as both our fields and homes were inundated up to five metres. We were torn if we should save our harvests/crops in the field or save our stored grains and valuable items at home. We lost at both ends.

Another community member, who also leads the early warning task force in her CDMC, echoed this sentiment. ‘We received warning, not from the government, but from a local NGO. The time was short. We were warned in the community using sirens. Many people didn’t believe the warning at first. Who would believe it would flood in late October, after the government had declared the monsoon season was over in Nepal? Many people were visibly depressed after losses incurred as they could do nothing about it’.

Some of the community received a small package of food after the flood and the municipal government ran a cafeteria serving cooked meals for a week, while community members were staying in safe shelters. But there was limited other assistance and certainly no assistance once they returned to their homes.



The interviewed community members shared that the early warning messages they received a day ahead had saved lives. However, if they had received clear messages at least three to five days ahead, they would have been able to save their harvests as well. The respondents demonstrated frustration at the response of the government and shared that they had not received any post-disaster finance so far, though it had been more than seven months.

The CDMC secretary shared that, ‘[i]n many ways, we felt isolated during the floods and after the floods. We don’t have good access to local government. We tried to put forth our demands and asked many times, but it’s too bureaucratic for us. Center for Social Development and Research (CSDR), a local civil society organization (CSO), tells us that, due to climate change, these kinds of uncertain events will occur more frequently and intensely. We still haven’t recovered from the shock and loss of the October floods. We are in no way prepared for other uncertain events. The government isn’t prepared either’.

The October rains affected a number of provinces. The Ministry of Home Affairs reported at least 120 deaths, 44 injuries, and 12 people missing across 26 districts of Nepal (AINTGDMCC, 2021).



BANGLADESH

Bangladesh is home to over 170 million people and is one of the most densely populated countries in the world with 1,200 people/km². The country is characterized by a complex of different agroecological zones on a delta, with most of its territory less than 10 metres above sea level. Over 200 rivers, including the Brahmaputra, the Ganges/Padma, and the Meghna, travel through Bangladesh from the Himalayas to the Bay of Bengal. The tropical, monsoon-like climate has hot and humid weather from March to June, cooler temperatures with monsoon rains from June to September, and a typically drier winter from October to March.



According to the 2021 Climate Risk Index, from 2000 to 2020, Bangladesh was the seventh most affected country in terms of losses and damages from extreme weather events (Eckstein et al., 2021). Weather data in Bangladesh shows increasing rainfall variability, greater exposure to floods, and earlier onset and later retreat of the Indian summer monsoon; continued Himalayan glacier retreat affecting the water flows in the river systems; rising sea levels and associated increase in the frequency of storm surges; increasing cyclone intensity; escalating salinity intrusion; higher mean annual temperatures; and increased occurrence of drought in the north-west and south-west regions.

Flooding is the most widespread climate-related hazard facing Bangladesh. Historically, riverine floods affect a fifth of the country yearly, a third of the country every decade, and two-thirds of the country once in 100 years (Department of Disaster Management, 2014). Up to two-thirds of the country experience some type of flood annually, with the coastlines also prone to storm surges and tidal flooding (Ministry of Environment and Forests (MoEF), 2012). In recent years, flooding has increased in both magnitude and frequency – a trend that is likely to continue (IPCC, 2014).

Bangladesh used to experience between three and seven cyclones each decade (MoEF, 2012). Recently, cyclones have made landfall with greater frequency. Losses and damages from slow-onset climatic processes, such as sea level rise and salinization,¹⁶ are increasing. Parts of north-west Bangladesh experience frequent drought, which affects agriculture and agriculture-based livelihoods (Zamudio and Parry, 2016).

Climate vulnerability is driven by many factors. A PERC analysis of 2020 shows how flooding is common in Bangladesh and overlaps with other shocks and vulnerability factors (Begum et al., 2021; see also Box 9).

¹⁶ It is important to note that salinization also has other drivers, which include upstream water use in neighbouring India, and as such is a politically sensitive issue (see Mirza, 1998). Recurrent cyclones and increasing saltwater intrusion hampered regular agriculture practices, so farmers were compelled to shift to more viable farming practices, like shrimp and crab cultivation. This is an adaptation mechanism, though it is damaging the local environment and slowly changing the ecosystem.

BOX 9: PERC 2020 of cyclone Amphan: forensic analysis to understand flood impacts in the context of multiple shocks

In 2020, cyclone Amphan hit Bangladesh in the middle of the COVID-19 pandemic and was followed by a relentless flooding and cyclone season. The intense rainfall from the cyclone filled rivers to overflowing, broke embankments, sent floodwaters into nearby communities, and waterlogged 200,000 hectares of agricultural fields and fish farms (CARE, 2021). As a result, when the monsoon season hit, rivers and land across Bangladesh were already saturated, limiting how quickly the rain from the monsoon could be absorbed.

The 2020 monsoon flooding affected 5.4 million people and 1,059,295 households were inundated (IFRC, 2021). Furthermore, \$42 million worth of crops, a total of 83,000 hectares of paddy fields, and 125,549 hectares of agricultural land were damaged across the country (ibid.). Furthermore, the floods caused moderate to severe damage to livestock and fisheries, as the sector lost \$74.5 million worth of livestock and 16,537 hectares of grassland (ibid.). And, according to the Department of Public Health and Engineering, 92,860 tube wells and 100,223 latrines were damaged across the country (ibid.). In the immediate aftermath of the floods, and without any better options, many of those affected had to resort to open defecation and to drinking water from open sources. These impacts negatively affected the health of a population already struggling because of COVID-19 (see Figure 4).

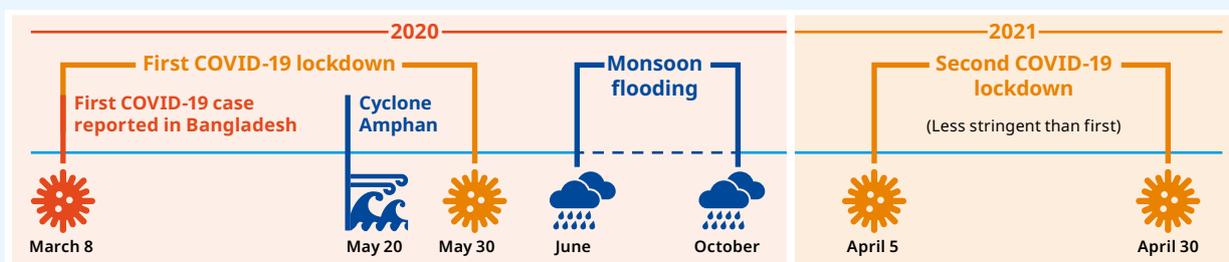


FIGURE 4: Monsoon flooding interacting with COVID-19 lockdowns in Bangladesh

A recent study conducted by Mercy Corps, Concern Worldwide, and Practical Action with 15 local government disaster management units revealed that 74% of the population was unemployed in 2020 due to movement, pandemic-related restrictions, and workplace closures (Okura et al., 2020). Daily wage workers, such as rickshaw and transport drivers, masons, garment workers, small-scale traders, and farmers, were especially impacted by lockdowns and by the damage to transportation systems from the floods. Additionally, many individuals who were working in Dhaka returned to their homes following factory and workplace closures, increasing the number of people impacted by the floods. Overall, this left many flood-impacted households unable to meet basic needs, such as accessing food and drinking water (Afsari et al., 2021).

BOX 9 CONTINUED....

In May 2022, Bangladesh was hit by one of the worst floods in years, rendering millions in the Sylhet and Sunamganj districts homeless and without their belongings. The region recorded the highest rainfall in 100 years. An estimated 7.2 million people were severely affected by the flash floods. According to the Directorate General of Health Services, the death toll from the floods was 112 (UNB, 2022) and approximately 266,137 hectares of croplands were damaged (Start Network, 2022). The Department of Fisheries reported that a total of 18,749 fisheries, including enclosures and fish farms, in 11 *upazilas* (sub-units of a district) of Sylhet were inundated by the flash floods, washing away ₳2.13 crore (approximately \$20,400) of fish fry and 2,305 tonnes of fish (The Business Standard, 2022). The government responded with ₳5 lakh (approximately \$4,800) for each *upazila*, 1,000 packets of dried food, and 500,000 water-purifying tablets. Sylhet district administration distributed 551 metric tonnes of rice, 11,800 packages of dried food, and cash support of ₳1,500,000. The Ministry of Food provided 1,215,000 metric tonnes of food grain. The Department of Agriculture Extension instigated a ₳880 million recovery programme to respond to agricultural losses. The National Disaster Management Authority allocated dry food, rice, and cash to the affected districts, but damaged road communications delayed the relief supply reaching the affected population. Army and navy personnel were deployed in Sylhet and Sunamganj districts to evacuate people to safer places. Rescue operations were coordinated with firefighters, civil administration, law enforcers, and local council representatives. The Bangladesh

army launched toll-free numbers to help the flood-affected people in Sunamganj and Sylhet districts.

Local disaster management committees in Sylhet and Sunamganj opened flood shelters at the schools on higher ground. Hygiene kits and WASH packages were provided through local NGOs, including provisions of items that meet the specific needs of women and girls.

A humanitarian coordination task team, co-led by the Ministry of Disaster Management and Relief (MoDMR) and the UN Resident Coordinator's Office together with the UN, liaised closely with their national technical government partners to analyse the situation and to identify possible areas where complementary support from the humanitarian community would add value to the government-led response.

The *haor* (unique seasonal wetlands) ecosystem was severely impacted due to the flooding. In the *haor* areas, early season rains typically refill the *haor* wetlands in late April, but in 2022, disastrous flooding occurred in May and again in June. Significant shifts in rainfall patterns in Cherrapunji, India, led to a shorter interval between flash floods in the *haor* region. Some of the drivers for the severe flooding include excessive and erratic rainfall in the upstream Cherrapunji region, massive destruction of the natural forests in the upper watershed, poorly planned construction of bridges and roads, and poor management of sluice gates and dams.



INDONESIA

Indonesia is made up of 13,466 islands and has a total coastline length of about 95,181 km. The number of people living in poverty is approximately 28 million – 10% of the population. Monsoon dominates Indonesia's climate, bringing strong squalls, heavy rainfall, and severe local thunderstorms.



Data from the Indonesian Ministry of National Development Planning (BAPPENAS) shows that most disasters are climate-induced. In 2021 alone, at least 2,841 disasters occurred in the form of floods, strong winds, landslides, and forest fires, resulting in loss of life and damaged homes and infrastructure (BNPB, n.d.).

Floods (most frequent), landslides, and storm winds/tornadoes are common hazards. A number of regions in Indonesia experience rainfall above 3,000 mm/year. Rainy seasons are becoming shorter, while daily rainfall amounts increase. Deforestation, land degradation, and high river sedimentation add to Indonesia's flood vulnerability. High tides and sea level rise increase the risk of flooding in coastal areas. Table 1 summarizes the climate-related hazards that cause losses and damages across the Indonesia archipelago.

TABLE 1: Climate-related hazards leading to losses and damages in Indonesia

| Climate hazards | Description |
|--|---|
| Rise in wave height | Wave heights are increasing in both the Pacific and Indian oceans, resulting in 483 Indonesian fishing boat accidents between 2018–21 caused 443 fatalities (Darilaut.id, 2022). |
| Tropical cyclones approaching land | In recent years, the cyclones that form in the Indian oceans have reached Indonesia’s coastal areas, resulting in losses and damages. |
| Decrease in water availability and food security | Rainy seasons are shortening, while dry seasons are lengthening. Water availability in Java is projected to decrease. Climate-driven changes in seasonal rainfall are projected to reduce rice harvests by a quarter this decade (BAPPENAS, 2021). |
| Coastal inundation | More than 20 cities and districts have experienced land subsidence, increasing vulnerability to the impacts of sea level rise (Ministry of Maritime Affairs and Investment, 2019). Coastal areas directly adjacent to peatlands are also highly vulnerable to land subsidence, for example Meranti Archipelago Regency, Riau Province. These areas will be inundated faster as a result of the combination of sea level rise and land subsidence. |
| Submerged small islands | Since 2005, more than 24 islands have been lost to sea level rise. It is estimated that as many as 115 smaller islands could disappear in the next decade (Wicaksono, 2021). Loss of the outermost islands could create tensions over national boundaries with neighbouring countries. |
| Coastal erosion and mangrove damage | High waves and sea level rise are starting to impact the mangrove ecosystems. Erosion of mangroves covers an area of 1,950 hectares along 400 km of coastline (Rahmanto, 2020). Damaged mangroves can be seen in many places on the north coast of Java island. |
| Forest and land fires | Several districts in central and eastern Sumatra and Kalimantan are peatlands that experience land and forest fires. These are triggered by accidental or intentional burning. Prolonged dry seasons increase the number of incidence and the intensity of such fires. |

BOX 10: Tropical cyclone Seroja in East Nusa Tenggara

On 4 April 2021, tropical cyclone Seroja emerged in the Sawu Sea, East Nusa Tenggara Province. Seroja was the strongest tropical cyclone to hit Indonesian since 2008, with a maximum wind speed of around 40 knots (75 km/hour). Cyclones of this intensity have rarely before travelled this far south; due to its proximity to the equator, Indonesia rarely experiences tropical cyclones.

Seroja caused flash flooding, landslides, coastal erosion, and damage to coral reefs. It destroyed hospitals, homes, roads, and bridges, cutting off access to many villages. It also created a new sand island. The national-level disaster management agency, BNPB, reported that 182 people were killed and 84,876 people were evacuated (BNPB, 2021).

One month after the incident, local disaster management agencies calculated the economic cost of the damage in 21 districts and cities in East Nusa Tenggara Province to be Rp3.4 trillion (equal to \$226 million) (Kompas, 2021). For one district alone – Kupang – the loss was estimated to be Rp1.3 trillion (Tempo, 2021). The estimate was based on data on the damage to 9,081 houses and to infrastructure, namely 304 km of roads and seven bridges. Damage also occurred to dams, piping networks, health services, as well as religious and school buildings (ibid.).

BNPB provided stimulant funds for the construction of temporary shelters for survivors. The Ministry of Public Works and Public Housing prepared plans for the construction of temporary shelters



Damage caused by tropical cyclone Seroja. © Mercy Corps

for affected communities, as well as plans for the rehabilitation and reconstruction of damaged houses and infrastructure. The Ministry of Health sent doctors and nurses from several provinces to treat victims.

The community had received early warning of the flooding but had not anticipated the magnitude of the cyclone's impact. The incident took place at night when people were sleeping. Getting the early warning information, fishermen decided not to go to sea. Boats and fishing gear were placed in a safe place on the beach. There were no fatalities in fishing communities.

The ability of local governments to act before a disaster occurs is limited by the human resource capacity of regional-level disaster management agencies (the BPBDs) and by obstacles to the use of regional finance due to regulations on the management of finances that prevent local governments from using their budgets prior to the disaster occurring.

3.3. Evidence on the economic costs of losses and damages

3.3.1 Key messages

- Losses and damages affect many sectors and associated livelihoods – health, education, transport infrastructure, coastal and marine sectors, forests and agriculture, and food systems. Such climate impacts can knock percentage points off annual GDPs: by 2050, economic losses in Nepal and Bangladesh are estimated to be up to 2.2% and 2% of annual GDP, respectively; by 2100, economic losses in Indonesia could be 2.5–7%. This erosion of GDP will limit domestic investment, ruin local economies, and bankrupt businesses and households.
- The poorest and most vulnerable are currently paying the costs of global climate inaction, which has led to escalating impacts and risks of losses and damages.
- In many countries, comprehensive and robust data on the economic costs of losses and damages does not exist at the national level.
- Bottom-up aggregation of costs evidence will be required if comprehensive statements of needs to address losses and damages are to be generated.

Losses and damages can be divided into economic and non-economic categories. The full scale of climate-related economic losses and damages is difficult to assess. There are international disaster recording systems and databases, such as EMDAT and Desinventar, but these are not comprehensive in addressing the full scope of impacts. There are also national systems, such as the Indonesian Disaster Information Data (DIBI; <https://dibi.bnpb.go.id>) platform that presents human casualties and damage from disasters by region, but more and better losses and damages observation and recording systems are needed. In Nepal, the National Disaster Risk Reduction and Management Authority is developing the Building Information Platform Against Disaster (BIPAD) to better collect information on disaster impacts in the country and is localizing the system (Global Platform for Disaster Risk Reduction, 2022).

To better understand the scale of the impact of losses and damages in vulnerable countries, this section reviews the types of economic costs occurring in flood events in the three assessed countries.



NEPAL

In the recently approved Nepal national framework for losses and damages, both economic and non-economic categories are recognized. Economic impacts include lost and damaged resources, goods, and services that have economic value and can be quantified in monetary terms. Non-economic impacts include goods and material services that are not traded in markets and can be understood as losses of, inter alia, life, health, displacement and human mobility, territory, cultural heritage, indigenous or local knowledge, biodiversity, and ecosystem services (MoEF, 2021).

The average annual economic loss from climate-induced disasters in Nepal has been estimated at about 0.1% of its GDP. However, in extreme years, this number rises significantly. For example, in 2017, floods in the lowlands of the Terai region occurred in several river basins simultaneously, and the economic losses and damages from this single disaster were around 2.1% of the country's GDP (MoEF, 2021). Yet, as in other contexts and locations, the hidden cost associated with losses and damages are likely to be much greater (Serdeczny, 2019).

At the district level, economic impacts of extreme flooding events have been estimated in some cases. To better understand the scale of single flood events, the impacts of the 2014 flood in Bardiya district reported by the district disaster relief committee are summarized in Table 2. It shows the large range of economic impacts associated with a single flood event that must be borne by the local society of a single district in Nepal with a population of approximately half a million people.

TABLE 2: Losses and damages during the 2014 floods in Bardiya district, Nepal. Source: DDRC Bardiya, 2014

| Loss of physical assets | | Cost US\$ |
|--------------------------------------|--|-----------------|
| Health | Loss of infrastructure, instruments, medicine, and furniture in district hospital (1), health post (1), and sub-health posts (2) | 6,400 |
| Livestock | Loss of 2,052 cattle and 19,853 birds (chickens, ducks, and others) | 540,800 |
| Roads | Damaged highways | 884,800 |
| Irrigation | Damaged irrigation canals | 2,160,000 |
| | 249 damaged shallow tube wells | 896,000 |
| Land erosion | 25 bigha (62,710 m ²) of land lost | 240,000 |
| Agriculture | Loss of paddies, maize, vegetable, and fisheries covering 5,653 hectares of land and loss of stored grains and seeds | 8,800,000 |
| Local infrastructure | Damages to infrastructure such as roads and culverts | 1,264,000 |
| Forests | Loss of 2,629 trees (1,910 m ³) and 76.4 hectares of forest land eroded | 208,000 |
| Education | 95 schools and 95 primary learning centres affected; 30,676 students affected; loss of textbooks, school uniforms, and education materials | 788,000 |
| Drinking water | Loss of water pipes and groundwater boring | 39,200 |
| Electricity | Loss of electric poles and other materials | 21,840 |
| Bridges | Replacement costs of two suspension bridges | 134,400 |
| Total loss of physical assets | | \$29.6 m |



BANGLADESH

The ways in which economic losses and damages are calculated vary according to the methods used by analysts. Eckstein et al. (2021) estimate that the direct damages incurred between 2000 and 2020, which included 185 extreme weather events in Bangladesh, totalled nearly \$1.9 billion (the annual GDP in Bangladesh in 2019 was approximately \$300 billion). Eskander and Steele (2019) estimate that cyclone Sidr in 2007 caused an estimated economic damage of \$2.3 billion and left nearly 4,000 people dead. Two years later, cyclone Aila hit coastal Bangladesh, caused nearly \$270 million in economic damage, and left 190 people dead (UNOCHA, 2009).

A study of losses and damages incurred from salinization was conducted in three communities in coastal Bangladesh (Rabbani et al., 2013). The research estimated that the economic cost of the loss of rice yields in the aftermath of cyclones Sidr and Aila (in 2007 and 2009, respectively) was \$2 million.

The national budget allocated to managing climate and disaster risks in 2018–19 was estimated at \$2.25 billion (Eskander and Steele, 2019). While this allocation has increased, it still does not come close to meeting the scope of the needs, particularly in years with severe flooding or cyclone events.



INDONESIA

Annual average costs to government of 6.21% GDP have been estimated (KLHK, 2020). Based on a study by BAPPENAS (2019), the estimated total economic loss in the four priority sectors (agriculture, coastal and marine, health and water) until 2023 in the 2020–24 National Medium Term Development Plan is \$36 billion. This number may increase if interventions are not carried out, though the government anticipates a reduction in the potential losses through implementation of its Climate Resilience Development Plan (KLHK, 2020).

The coastal and marine sector is estimated to have the highest level of economic losses. These losses are calculated from the impacts of shipping accidents and coastal inundation and are projected to amount to Rp408 trillion in the period 2020–24 (equal to \$27 billion). Losses in the agricultural sector are calculated from the decline in rice production, which reaches Rp78 trillion per annum. Losses in the health sector are calculated from the increase in dengue cases which reaches Rp31 trillion. Losses in the water resources sector are estimated at Rp28 trillion (BAPPENAS, 2021).

3.4. Human and ecological impacts associated with losses and damages

3.4.1 Key messages

- Human and ecological impacts are often referred to as ‘non-economic losses and damages’ and thought to be difficult to calibrate and monetize. This does not make these losses and damages any less real or significant. Indeed, human and ecological losses and damages should be highly valued because they impact severely on human and planetary well-being.
- Human casualties – rather than costs – of climate change impacts and risks have clear moral significance. Economic and risk transfer measures that do not address loss of life as outcomes of climate losses and damages tend to mask the issues of climate injustices.
- Losses and damages do not affect everyone equally. Inequality and marginality influence which people and communities are most exposed and vulnerable to the impacts of climate change.
- Support to address the residual human and ecological impacts and risks of losses and damages is needed. In particular, better support is needed for women, who suffer disproportionately from losses and damages and often have less income or savings to draw on.

Not all losses and damages are quantifiable in monetary terms. There are human and ecological ‘impacts of climate change that are hard to quantify and often go unnoticed by the outside world, such as the loss of traditional ways of living, cultural heritage, and biodiversity. It also encapsulates losses whose valuation raises ethical concerns – loss of life and human health’ (Serdeczny et al., 2016: iv).¹⁷ An approach akin to total economic valuation¹⁸ to assess non-economic losses and damages would generate a more holistic/realistic appreciation of the scale of these impacts (OECD, 2006).

The evidence discussed below shows in largely qualitative terms the extent of human and ecological losses and damages due to flooding seen in the case study countries. It is important to understand that, apart from casualties, human and ecological costs are seldom the result of a single climate event. Rather, they result from compounded impacts arising from a combination of climate and non-climate factors.

¹⁷ See *Non-Economic Loss and Damage in the Context of Climate Change: Understanding the Challenges/Climate Analytics* <https://climateanalytics.org/publications/2016/non-economic-loss-and-damage-in-the-context-of-climate-change-understanding-the-challenges/>

¹⁸ See OECD (2006), ‘Total economic value’, in *Cost-Benefit Analysis and the Environment: Recent Developments*, OECD Publishing, Paris, <https://doi.org/10.1787/9789264010055-7-en>.



NEPAL

Climate-related disasters cause around 65% of all disaster-related annual deaths in Nepal. Here, recent evidence from the flood-prone area of Nepal is considered.

When land is lost or rendered unsuitable for agriculture, land ownership, regardless of the land size, often becomes the determining factor between a life with dignity and security, and exposure to different vulnerabilities and uncertainties. Interviewees in the Nepal case study region stated that, following the loss of land, men from flood-affected households were forced to migrate, for example to India and other countries, in search of jobs and wages. The women were left behind to take care of the children and elderly, and cope with the situation as it unfolded.

The Karnali river catchment has a long history of recurrent flooding. Table 3 presents a summary of the human (individual and societal) losses and damages encountered in the Karnali 2014 flood. From data collated by the government, losses and damages across four districts in the region included 222 people dead, 84 injured, 5,167 houses fully damaged, 14,913 partially damaged, and 6,859 households displaced (DCA, 2021).

TABLE 3: Examples of non-economic losses and damages from flooding in Nepal¹⁹

| | |
|-----------------------------------|--|
| Life | <ul style="list-style-type: none"> • Disruption to education • Children affected mentally, physically, and socially • Stress and anxiety • Deep sense of despondency • Loss of life • Fear and pain • Increased vulnerability • Exposure to different vulnerabilities and uncertainties • Increase in child labour and child marriage |
| Health | <ul style="list-style-type: none"> • Illness due to water-borne diseases • Increased morbidity • Effects on infants' growth and development |
| Human mobility | <ul style="list-style-type: none"> • Out-migration • Increased male migration to India (at times including children) • Men working in India constantly worried about their families • Women left feeling helpless and haunted by unpredictability of the situation |
| Cultural heritage | <ul style="list-style-type: none"> • Rituals and practices lost due to coping in new locations |
| Indigenous knowledge | <ul style="list-style-type: none"> • Loss of traditional weather and flood-prediction practices |
| Societal/cultural identity | <ul style="list-style-type: none"> • Loss of a sense of belonging • Loss of dignity, identity, and security • Loss of networks |

¹⁹ This was from research done for the 2014 Karnali flood, but it can be extrapolated to other flooding situations.



BANGLADESH

The evidence on human and ecological losses and damages presented here was gathered in three districts – Faridpur and Satkhira – in 2021. Several focus group discussions were held with members of three disaster-affected communities, local government representatives, women leaders, community volunteers, and representatives of local CSOs.

Flooding has increased erosion and caused knock-on effects for those living along riverbanks. River erosion can result in the permanent loss of land and displacement of households and communities. Salinization of water sources is also reported. Concurrently, seasonal droughts have become more severe, so households and communities are grappling with multiple climate-related hazards simultaneously.

In addition to economic and ecological losses and damages, Bangladeshis also face social and cultural damages. The most vulnerable are women and children. The participants in the focus group discussions indicated that time spent collecting water has increased for women. Respondents have seen increased unemployment and concomitant increases in child labour as households cannot pay for schooling and children are needed to contribute to the household income. The reported rise in the incidence of early marriage is another indirect impact of losses and damages identified in Satkhira. The increase in economic migration, often by male household members, to seek employment has many repercussions as women and children are left behind in precarious situations.

In Bangladesh, gender inequality resulting from patriarchal norms renders women and girls more vulnerable to the impacts of climate change than men and boys in the same locations. The increased vulnerability of women and girls manifests in reduced mobility, limited access to resources and ownership of land and other assets, and gender-differentiated roles, both within households and in society at large (Tanny et al., 2017). Recent research (Ayeb-Karlsson, 2020) has found that women are less likely to evacuate to emergency shelters when extreme weather events hit, as they are less likely to know how to swim, tend to wear clothing that makes it difficult to move, and are often carrying children. A fear of physical and sexual violence also makes women less likely to evacuate to emergency shelters.



INDONESIA

In 2020, BNPB noted that 6.1 million people were affected by climate-related disasters and were displaced. A total of 360 people died, 42 people were missing, 532 people were injured, and 41,903 houses were damaged (BeritaSatu, 2020).

Ecological costs are significant in Indonesia. Small islands are being inundated by sea water, coasts are being eroded, changes are happening in marine fisheries due to migration of fish stocks, and certain species are being lost.

Mangrove ecosystems are very sensitive to changes in sea level, so sea level rise combined with higher waves is eroding mangrove ecosystems in areas covering an estimated 1,950 hectares along 400 km of coastline.

Indonesian peatlands repeatedly experience land and forest fires. Prolonged dry seasons add to the vulnerability of forest and land to fires. The largest forest and land fires in the last two decades occurred during the El Niño years, namely 1997–98, 2015, and 2019. From 2016 to 2018, cases of forest and land fires in several places in Indonesia declined. However, in 2019, instances of forest and land fires increased again.

Climate change will cause the frequency of El Niño and positive Indian Ocean Dipole (IOD) periods to increase. This damages coral reefs, which experience bleaching. Polyp animals leave the coral reef structure due to increasing water temperatures. From 1983 to 2016, there have been five coral bleaching events in Indonesia: in 1983, 1987, 1997, 2010, and 2016.²⁰ Climate change is associated with foreshortened periods between El Niño events.

²⁰ Bleaching events that coincided with El Niño in Indonesia in 1982–83 caused mass coral death in the South China Sea, Java Sea, and Sunda Strait. Coral mortality in the Thousand Islands and the Karimunjawa Islands reached 90%. El Niño events in 1997–98 resulted in mass coral mortality in the South China Sea and Java Sea of up to 60–70%. At the same time, in the western part of southern Sumatra, mass coral mortality also occurred, but the cause was not due to an increase in temperature but a decrease to below 26°C. Coral mortality in the western part of Sumatra reached 90%. The El Niño event at that time coincided with the IOD event. In 2016, coral bleaching occurred in the western part of Sumatra, the southern coast of Java, Bali, and Lombok to the south of Nusa Tenggara. Coral mortality that year also occurred in Australia's Great Barrier Reef and coral mortality was reported to have reached 90% (Wouthuyzen et al., 2018).

3.5. National measures for dealing with losses and damages

3.5.1 Key messages

- Nepal, Bangladesh, and Indonesia have policies and institutions in place to address climate action and disaster risk management. However, in each country, better coordination between the government agencies responsible for climate adaptation and disaster preparedness and responses could result in more effective ways to address losses and damages. Resourcing action remains problematic.
- While there are measures in place related to disaster risk preparedness, reduction, and management, they often do not fully cover the response to losses and damages after a disaster occurs, for example in terms of rehabilitation or post-disaster finance.
- Nepal has recently approved a national loss and damage framework; Bangladesh is deliberating how best to establish a national mechanism; and Indonesia has focused upon the institutional architecture for observing, reporting, and responding to climate-related disasters.

Each country has submitted nationally determined contributions (NDCs) to the UNFCCC, containing national plans for climate mitigation actions, which avert losses and damages by reducing greenhouse gas emissions (see Government of Indonesia, 2016; Government of Nepal, 2020; and Bangladesh Ministry of Environment, Forest, and Climate Change, 2021).

To operationalize support, countries require the foresight to establish how they will respond and seek to generate and draw down Loss and Damage finance. To better understand the particular challenges related to the policy frameworks adopted at national level, this section summarizes some of the key institutional arrangements in the three assessed countries.



NEPAL

In 2021, the Nepali government commissioned and approved a national framework on climate-induced loss and damage. The framework document implies that addressing Loss and Damage, i.e. financial transfers to those bearing the costs of climate impacts, is contingent upon developed countries providing new and additional climate finance through a global finance facility, so that vulnerable developing countries like Nepal can implement actions on losses and damages. The framework demonstrates how the government, through the Ministry of Forests and Environment, prioritizes and champions this agenda at UNFCCC level.

The government also wants to raise and ensure domestic commitments and financial leverage to be able to act quickly to tackle losses and damages from climate change. This is to avoid the adaptation and DRR budgetary deficits, and, most importantly, to use as a vehicle for integration of climate change in core national development principles and priorities. The Ministry of Finance is the focal agency. It is in the process of finalizing the national climate change strategy and action plan. This outlines a roadmap to channel climate financing into climate action, including addressing losses and damages.

As Nepal lacks adequate data on non-economic losses and damages, the national framework proposes ways to assess these. A clearer understanding of how to address losses and damages is needed by government stakeholders at provincial and local level and by CSOs. Further, integration of climate action and DRR actors and methodologies for effective loss and damage assessment and response is needed.



BANGLADESH

The Bangladeshi government has formed an inter-ministerial committee headed by the MoDMR to develop a two-year pilot phase to explore options for a national mechanism on losses and damages. Under the Bangladesh Climate Change Strategy and Action Plan, two funds were created to finance climate change-related activities and the government is considering the use of reserve funds to develop the national mechanism, while highlighting the need for international investment. In 2010, the Policy and Strategy for Public-Private Partnership was issued and, subsequently, the Public Private Partnership Authority (PPPA) was set up under the prime minister's office. Any project undertaken through the PPPA should internalize the cost of climate change-induced losses and damages. For a number of reasons, progress on the national mechanism has effectively been delayed and the mechanism lacks a champion within the MoDMR to push it forward (Practical Action, 2021).



INDONESIA

The Indonesian government is not developing a separate mechanism for addressing losses and damages. The assessment methodology, institutional arrangements, and financial mechanisms for addressing losses and damages are part of the current climate change and disaster management framework. Climate impact assessments are carried out by several ministries and government agencies, but weaknesses and gaps exist. Rapid-onset climate-induced disasters are assessed more frequently than slow-onset ones.

The Ministry of Environment and Forestry has the responsibility to develop the necessary climate change assessment instruments, to report on the achievement of Indonesia's climate change targets, and to be the focal point for the UNFCCC dialogue. The ministry has requested that the National Disaster Management Agency act as the contact point for the discussion of Loss and Damage mechanisms under the UNFCCC. The contact point is expected to identify and to capture the needs for technical assistance and other support (including support to access finance) related to losses and damages. The agency should take advantage of its role in existing structures at national and subnational level to establish ways of addressing losses and damages.

3.6. Minimizing losses and damages through risk management and adaptation

3.6.1 Key messages

- National strategies have implicit emphasis on minimizing losses and damages with adaptive actions.
- Community-based adaptation with support from CSOs and NGOs, and driven by local authorities, has a broad and long history in all countries and seeks to address extreme weather events.
- Better understanding is needed of the extent to which the adaptive strategies have succeeded in reducing risks, and the scale of residual risks that still need to be addressed.

Minimizing losses and damages refers mainly to climate adaptation and risk management measures that are intended to avoid and/or reduce the risks from climate hazards that have not been averted. This includes flood control infrastructure, early warning systems, insurance schemes, local community preparedness, and so on. Nepal and Bangladesh have been early movers in delivering climate adaptation at different governance and administrative levels.



NEPAL

Different methods for vulnerability and risk assessment related to disaster preparedness and climate change adaptation planning have been tried and tested. There are local adaptation plans of action, a vulnerability and risk assessment framework, CVCA, and the FRMC (see Box 11). Climate hazards and risks have been studied, providing a broad picture of where and how future impacts may materialize.

BOX 11: FRMC: an example from Nepal

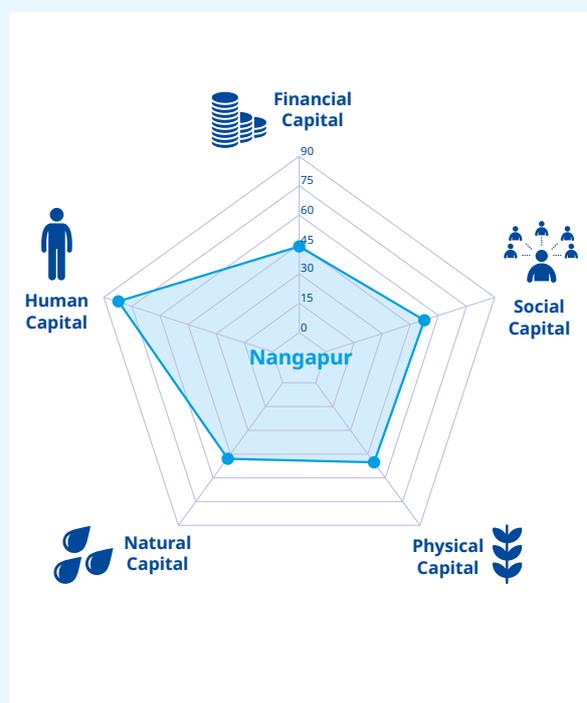
The FRMC tool was created by the Zurich Flood Resilience Alliance in 2013 and is an innovation in flood resilience theory and practice. It allows users to generate evidence about the ways in which a given area or community is already resilient to floods, as well as providing guidance to further develop this resilience given identified gaps. It has so far been applied to more than 300 communities across about 30 countries globally. The FRMC tool is based on the 5C-4R framework, combining 44 indicators called 'sources of resilience' across five complementary 'capitals' (5Cs: human, financial, physical, environmental, financial) with the sources aligned to the four properties of resilience systems, derived from resilient system-thinking (4Rs: robustness, redundancy, resourcefulness, rapidity). The FRMC tool applied at community level can help people explore their development pathway and identify capacities to withstand and respond to shocks. Assessors grade each of the 44 sources of resilience on a scale from A–D (where A is best practice and D is poor). The FRMC tool is currently being revised to explore other climate threats in the form of a climate resilience measurement tool to also cover heat and wildfire hazards. We provide exemplary evidence for Nepal and Bangladesh, where the FRMC has been applied (Keating et al., 2017).

FRMC assessment in Nangapur, Bardiya district

The FRMC resilience capacity assessment conducted in 2019 in Nangapur identified opportunities and challenges for systematically building resilience to riverine floods.

It reported high levels of human capital (measured on a scale of 0 to 100), determined by source indicators reporting considerable flood exposure awareness, asset protection expertise, as well as safety and evacuation knowledge (see Figure 5). Other capitals received lower self-assessment grades. They included natural capital, driven by relatively little attention to nature conservation, and social capacity, which was graded lower due to the anticipation of little support post-floods, although information and services before and during events were being provided by state agencies. Physical capital was also considered relatively low as large-scale flood protection is limited. Financial capital was graded low as available funds for risk reduction and post-event recovery were assessed as low.

FIGURE 5: FRMC assessment in Nangapur, Nepal



Local adaptive measures identified in the districts where evidence was gathered for the case study include a flood and extreme weather event early warning system and the construction of embankments, safe shelters, and elevated drinking water taps. In Rajapur, local populations receive text messages about water levels in the Karnali river and can prepare for floods. Safe places and safe shelters, elevated water pumps, and toilets in safe shelters also exist in the community. From 2016 onwards, the Ministry of Information and Communications has directed the national telecoms service providers to automatically provide flood warnings to everyone in the danger area of rivers with flood monitoring systems (Practical Action, 2017).

Construction of embankments has been preventing large-scale flooding since 2014. The early warning system is playing a vital role in alerting people in time, thus minimizing loss of life and protecting moveable assets. People in vulnerable areas have been able to safeguard their important belongings from floods by keeping them in the upper parts of their houses or in neighbours' houses, if safer.

Some mechanisms to collect data on losses and damages exist at ward level. The community disaster management committees, search and rescue committees, and first aid committees are part of this process.

Local people have responded to floods by shifting cropping patterns to move vulnerable crops away from riverbanks, employing seasonal riverbed crop farming, and cultivating sugar cane and banana as an alternative, more flood-tolerant crop. Where floods have destroyed community forest areas, local people have started growing and conserving rattan cane and bamboo plants to check the flow of floodwaters, conserve soil, and utilize as a source of income. Crop seed security is a priority and people keep seed grains at neighbours' houses or other safe places to avoid losses due to flooding.



BANGLADESH

Efforts to minimize the impacts and risks of losses and damages are broad-based in Bangladesh and include disaster risk management and locally led climate adaptation. The ex ante disaster risk management measures to minimize losses and damages adopted by households and communities in Faridpur include early warnings received as voice messages via mobile phones, weather forecasts and warnings through digital weather boards, warnings and preparatory information received from the local resilience agents, building houses on raised land, raised platforms to keep livestock safe during flooding, as well as raised tube wells and toilets, among others. The early warning system has been crucial in making timely, risk-informed decisions to limit losses and damages. Community-based initiatives, such as sharing seeds and agricultural equipment, and the provision of short-term credit are also important. As a long-term adaptation measure, farmers are also trying to make changes in the cropping pattern, for instance cultivating short-maturing varieties to reduce the chance of flood damage.



INDONESIA

Efforts to minimize and address losses and damages in Indonesia cover broad and diverse aspects. They include reducing exposure and vulnerability, and increasing adaptive capacity. Reducing exposure to various hazards is being undertaken through improvement of environmental and natural resource management, integration of climate and disaster risk studies into spatial plans, and the development of infrastructure and ecosystem rehabilitation. There are initiatives to increase the community's adaptive capacity through increased public knowledge on climate change, better access to weather forecast information, and the promotion of insurance.

3.7. Addressing losses and damages

3.7.1 Key messages

- While disaster management interventions exist in all the countries, proper recognition of the residual risks of unavoided and unavoidable losses and damages is a necessary first step in addressing them.
- A review is needed of how best to deploy actions that address unavoided losses and damages and the losses and damages associated with unavoidable increases in hazards.
- Addressing unavoided and unavoidable losses and damages is seen as being contingent upon access to global finance.

Measures to address losses and damages include post-disaster financial payment and rehabilitation, and different forms of risk transfer, including social security programmes. In some cases, governments are planning and supporting migration out of climate-vulnerable areas and resettlement. However, there is also the need for reskilling and alternative livelihoods provision to rebuild household economies, recognition and repair of loss to people and families, counselling, and active remembrance (Shawoo et al., 2021).



NEPAL

Several approaches and methods are in use in Nepal for post-disaster losses and damages assessment and the design of response and recovery programmes. In addition to the local adaptation plans of action, vulnerability and risk assessment framework, and CVCA, districts and municipalities have developed local disaster and climate resilience plans. For post-disaster responses in Nepal, initial rapid assessment, multi-cluster initial rapid assessment, cluster-specified detailed assessment, and the PDNA are used.

Municipalities and districts, including the Rajapur municipality, have set up disaster management funds. Some rescue materials are kept in communities and volunteers have been trained for mobilization in rescue work at times of floods.

The Nepal government has introduced both indemnity insurance schemes as well as index-based parametric insurance schemes to provide post-disaster payments for losses and damages. The majority currently in use are the indemnity type. In these schemes, risks of multiple types of pre-agreed hazards are covered. Hazards covered can be both climatic and non-climatic. Risk of major climate hazards affecting agriculture and livestock are covered by these schemes.

Agriculture and livestock insurance is a priority programme of the government. A programme was introduced in January 2013 and since then there has been a steady increase in the number of farmers joining the programme. In 2017–18, 67,843 farmers insured their crops and livestock for a total of \$1.3 billion. Different types of cereal crops, spices, oilseeds, pulses, vegetables, mushrooms, fruits, livestock, fisheries, and bee-keeping are insured. Twenty companies are now providing agriculture and livestock insurance services.

In the Karnali river basin, local people have heard about crop and livestock insurance, but so far there is little uptake in these schemes. A trial of livestock insurance began in 2019 but it struggled with affordability and suffered with a weak, poorly designed administrative process. For example, farmers who suffered losses need to contact the local insurance agent within a specific time frame and provide detailed evidence of the losses. Further exacerbated by access problems, this resulted in many farmers not receiving any payments for the losses they incurred (see Vavadaki, 2021). Based on this experience, Practical Action, along with partners, is piloting an index-based flood insurance product as a risk transfer mechanism targeting climate-vulnerable smallholder farmers in western Nepal. The product is being mobilized via local cooperatives and is designed to protect paddy rice crops grown during the monsoon season, which are especially vulnerable to flood damage.



BANGLADESH

Bangladesh has a plethora of social protection programmes that some of the most climate-vulnerable households have access to. Few of these address climate disasters directly. There are also insurance-related initiatives and support programmes for internally displaced people.

Common coping practices include affected households taking high-interest loans from informal sources, sending children to work in other households and informal sector works, and adult household members undertaking temporary economic migration.

Ex post disaster risk management measures include repairing infrastructure and informal support (neighbours helping each other) to plough land or harvest the crops affected by floods. Emergency food and medicine and emergency loans are provided to some households by CSOs. Loans are also provided by local money lenders, though with much higher interest rates.

Current practices for addressing post-disaster damages are short-term and highly uncertain. Sudden onsets like floods, cyclones, and so on are usually considered as time-bound disasters, which means the responses are time-bound. For instance, flood is perceived by the duration of inundation. Usual responses continue until the

floodwater recedes and the cyclone damages (usually physical damage like damage to homes, community infrastructure, and so on) are repaired. The response measures ignore residual impacts resulting from the sudden onsets, for instance persistent impacts of waterlogging, crop loss, and the cost and time to get the next crop. In the case of long-lasting residual impacts (resulting from early flood, cyclones, etc.) and in absence of long-term responses, the affected households can fall into poverty traps.

Assessments of local needs following extreme weather events are coordinated by local authorities, but the case evidence indicates that there has been insufficient consultation with local people. While registration cards to access relief goods and services are distributed to households, not all households receive the promised support. Personal and political interests can intervene, but local people report that, generally, aid is distributed according to those who need it most.

Given the way in which climate change impacts are driving migration, support to migrants is critical. In recent years there has been support for migrants who move to cities in search of economic opportunities when their livelihoods become unviable due to climate change impacts. The Climate Bridge Fund (CBF) was established in 2018 with funding from the German government and is hosted by the Bangladesh Rural Advancement Committee. The CBF provides direct finance to initiatives that support those displaced or at risk of being displaced by climate change. Support is provided to ensure that climate-related migrants have access to basic services as well as economic opportunities in the cities in which they land. The aim is to bridge the gap between short-term project funding and the provision of services and infrastructure over the long term for climate-induced migrants. The work of the CBF is important, but larger-scale and longer-term support is needed to ensure that migrants have economic opportunities and safe places to live, and that those left behind are supported as well.



INDONESIA

Institutions, methods, and instruments for disaster frameworks were developed early in Indonesia. However, the institutions, monitoring, documentation, and assessment of losses and damages are still at an early stage. In fact, some of the long-term adverse impacts of climate change are not yet understood and need to be studied and validated.

3.8. The effectiveness of minimizing and addressing losses and damages

3.8.1 Key messages

- To date, adaptation and risk management has been unable to fully reduce losses and damages. Also, recent assessments of adaptation effectiveness show that adaptation will not minimize residual risks of losses and damages to anywhere near zero. Therefore, countries will need to address both avoidable losses and damages as well as those that are linked to unavoidable increases in climate hazards (such as sea level rise and glacial retreat).
- Research has shown that spending by households on preparing for and recovering from climate-related disasters by far outweighs like expenditure by the state and multilateral agencies.
- There are limits to the effectiveness of insurance measures to address residual risks. They cannot provide appropriate financial response to address the full range of losses and damages experienced. Insurance does not cover the non-economic losses and damages that affect the poorest.
- The focus of state interventions has been on addressing losses and damages once they have happened. Minimizing losses and damages ex ante requires innovation and investment.

The case studies from Nepal, Bangladesh, and Indonesia synthesized here provide assessments of different measures to minimize and address losses and damages – insurance in Nepal, social protection and insurance in Bangladesh, and ecosystems conservation management in Indonesia. Regarding insurance, the evidence shows that, while taking out insurance to safeguard agricultural livelihoods is increasing, the costs are prohibitive for those most at risk of climate losses and damages. Furthermore, insurance does not cover the non-economic losses and damages that affect the poorest significantly.



NEPAL

There is progress towards more comprehensive losses and damages assessments, but further efforts are needed to identify adaptive capacity and to ensure that current measures work along the entire continuum of impacts and risks. While the recently approved national framework on losses and damages (MoEF, 2021) does refer to the limits of climate adaptation, this ‘beyond adaptation’ concept is not addressed by any of the approaches currently used in Nepal. The tools and methods for minimizing and addressing losses and damages reviewed in the case study do not consider how to address residual impacts and risks – those that could be avoided but have not been, as well as those that cannot be avoided. Further consideration is required to make these approaches appropriate as risk transfer mechanisms for poor and vulnerable people in the Nepali context.



BANGLADESH

Recent research found that the cost of preparing for and responding to climate-related losses and damages is largely borne by households (Eskander and Steele, 2019). In 2015, households in Bangladesh spent an estimated \$2 billion on climate and disaster risk management – double what was spent by the government and more than 12 times what was received from multilateral institutions in absolute terms. As a share of income, female-headed households spent three times more to minimize and address climate-related losses and damages than male-headed households.

While there has been significant focus on responding to losses and damages ex post, the potential for scaling up approaches to minimize losses and damages before they occur is significant. This could be through disaster risk management measures and targeted tools, such as social protection.

According to the social security policy support programme under the Planning Commission, 75 million people in Bangladesh are in need of social protection (SSPS, 2018). Of the over 100 different social protection programmes being implemented, 10 are being implemented by the MoDMR with a focus on disaster relief and rehabilitation (SSPS, 2019). However, governance issues, such as corruption and inefficient bureaucracy, have made targeting the poorest and most vulnerable challenging. It is estimated that only 13% of the poorest households actually receive the full scope of benefits available from social protection programmes (General Economics Division and Planning Commission, 2013). Many households remain unaware of social protection mechanisms through which they could receive support after having incurred losses and damages. In addition, corruption and a lack of transparency remain an issue in the disbursement of social protection benefits. Clearly, there remain gaps in channelling support to where it is

needed ex post. There are also opportunities for scaling up social protection mechanisms to minimize losses and damages before the onset of climate-related hazards culminate in disasters.

In interviews for the case study, respondents reported that there are currently no safety net schemes to support them in the aftermath of disasters, nor are there micro-insurance schemes to compensate for the loss of income due to crop and livestock losses. The social safety net schemes operating in Faridpur are not oriented towards providing short-term, immediate support in the wake of climate-related disasters.

More robust safety nets are needed to help those affected by disasters, in particular women who are unable to move as easily as men in the wake of disasters for a number of reasons, including social norms.

Minimizing losses and damages from flooding will also require stronger and more sustainable dams and embankments, particularly to reduce soil erosion, and improved access networks by the construction of more robust roads.

Participants in focus group discussions expressed dissatisfaction with existing systems of support to minimize losses and damages ex ante and support to address loss and damage ex post. Better warnings are needed before the onset of floods, and roads and infrastructure need to be constructed to avoid and reduce waterlogging. Local recommendations to better support communities affected by disasters arising from flooding include more accountability in the implementation of development projects in areas exposed to climate-related hazards and prone to disasters; long-term rehabilitation programmes, such as cash-for-work schemes; interest-free loans for farmers; and better employment opportunities in post-disaster situations, which could include work to repair infrastructure and roads.

Although the potential for climate risk insurance in Bangladesh would appear high, the take-up is problematic and remains underdeveloped. The products that do exist do not cover flood risks nor livelihood losses comprehensively. Over the past decade, several pilot programmes have been implemented to test various risk transfer tools.

The International Research Institute for Climate and Society has been working on index-based insurance in Bangladesh over the past few years. It has found three main challenges: first, there is a lack of capacity to implement insurance-based mechanisms. Second, there is a lack of data, and the data that is available can only be accessed for a fee. An impact and science and advisory board has been established among several flood and insurance stakeholders to share the results of the insurance provision research. Third, the government has pushed back on the concept of insurance, in part because it is unpopular with many climate actors in Bangladesh. Although solutions may exist for technical issues, greater hurdles remain on people's ability to pay for insurance and the injustice inherent in insurance as an approach to address losses and damages impacting the people least responsible for climate change.



INDONESIA

Indonesia has a comprehensive strategy and action plan to address the impacts of climate change on affected sectors. Some climate hazards are monitored and their impacts understood. However, several other impacts, namely those affecting various ecosystems, are still relatively unknown.

Challenges in minimizing losses and damages to sectors and ecosystems include the lack of an institutional framework, incomplete response plans, incoherent governance, and issues of territorial status. Institutional mandates for monitoring and managing impacts data are patchy. For example, it is unclear which institution is responsible for monitoring the rate of shoreline change/erosion, the rate of loss of/inundated small islands, and the impact on fisheries and ecosystems.

The Climate Resilience Development Plan 2020–45 considers some but not all of the hazards and impacts of climate change. The agricultural sector focuses on rice production only, while the coastal and marine sectors do not include the impact of climate change on coastal and marine ecosystems.

The central government has the authority to carry out restoration of ecosystems in conservation areas, while provincial governments address the ecosystems outside of conservation areas. River basin management plans are one of the many that need spatial integration for effective implementation. This process requires time, resources, and huge financial investment for the local governments.

Addressing losses and damages to small islands requires clear understanding of their status. The United Nations Convention on the Law of the Sea does not provide clarity on the status of reclaimed islands. The definition of ‘an island’ according to Convention Article 121 is a ‘naturally formed area of land’ (UN General Assembly, 1982). Artificial islands have no territorial rights over the sea around them. Government ministries are yet to engage in this issue.

3.9. Evidence and knowledge gaps

3.9.1 Key messages

- While the Losses and Damages concept is getting traction, there is a so far incomplete realization that unavoided and unavoidable risks exist and will be increasingly important.
- Governments (including in Bangladesh, Indonesia, and Nepal) have yet to invest sufficiently in generating adequate evidence and knowledge bases to drive policy and response strategies.
- Significant knowledge gaps persist because, as remarked recently by the chair of the IPCC, diverse forms of knowledge, such as indigenous and local, need to be synthesized (IPCC, 2022e).
- Evidence and knowledge on climate-related disasters tend to focus on sudden-onset events, while slow-onset risks and impacts are far less well understood.
- Conceptualization of losses and damages as individual disasters – rather than cycles with accumulative and residuals effects – limits how comprehensive the knowledge base is.
- Significant gaps exist in terms of the differentiated impacts of losses and damages, particularly from gender and intersectional perspectives.



NEPAL

Most measures undertaken (directly or indirectly, explicitly or implicitly) to minimize and address losses damages collect data using participatory rural appraisal methods, based largely on the information gathered directly from communities. Some of these methods and tools collect information using predefined indicators and target specific sectors, whereas others, such as the local adaptation plans of action and the Local disaster risk management planning (LDCRMP), are open-ended. These methods and tools do not quantify risks in monetary terms.

Few methods and tools quantify sectorial losses and damages or the monetary value of related costs. For example, the PDNA only assesses recovery and reconstruction needs and financing requirements. These methods and tools do not assess secondary and tertiary impacts caused by disasters. Hence, they do not estimate a total and real value of the losses and damages caused by each disaster.

Gender-disaggregated data on human casualties and injuries is reported and some psychosocial aspects are covered in the protection cluster approach. Displacement and migration is a very important but so far poorly appreciated category of non-economic losses and damages, especially in the Terai region of Nepal on the border with India (TDI, 2021).



BANGLADESH

Local people interviewed for the case study believe that climate change is triggering the prevalence of new/unusual and localized disasters that are unavoidable. This local knowledge needs to be collated and systematized.

Addressing post-disaster losses and damages starts with government resources, for example from the National Disaster Management Fund and the District Disaster Management Fund. The local government agencies (union parishads) make a quick assessment on the disaster losses, and accordingly seek funds from the District Disaster Management Fund. The union parishads apply the damage and loss assessment tool and fill out a form with details of the losses and damages, converting them into monetary value. The union parishads are supposed to visit the disaster-affected households and follow a participatory process while assessing and accounting the disaster damages. However, assessment of disaster damages is entirely top-down, non-participatory, and often driven by personal and/or political interests.



INDONESIA

Knowledge gaps are particularly visible in slow-onset impacts. For example, the ways in which increases in sea temperature affect coral reefs, marine fisheries, and other marine ecosystems are not well understood. Data availability to assess losses and damages is inadequate. For example, national coastal erosion/aberration data produced by the Ministry of Maritime Affairs and Fisheries in 2009 as a coastal vulnerability index map has not been updated and is not based on the latest and downscaled sea level rise models (see Ministry of Marine Affairs and Fisheries, 2009).

Climate-related losses and damages at the national level for several key sectors (coastal and marine, agriculture, health, water resources) are presented in the NDC Roadmap (KLHK, 2020) and national development plans, but in other sectors this data has not been calculated. Potential loss assessment only covers part of the overall potential climate impact on the sector. For example, potential losses in the agricultural sector consider only rice production. The NDC Roadmap presents a methodology for assessing losses and damages across a number of sectors and the data sources used, and identifies current data limitations. It uses data sourced from DIBI to assess losses from climate-related disasters, such as floods, landslides, cyclones, and droughts. DIBI data is sourced from incident, damage and loss reports collected by regional disaster management agencies. Because this data originates from extreme weather events, slow-onset and long-term impacts of climate change are not assessed.

4



A member of Mercy Corps' response team in Indonesia surveys the damage caused by the Seroja tropical cyclone in 2021. © Mercy Corps

4. Findings

4.1. Key messages

- Local-level evidence increasingly shows how the most vulnerable people and communities are being affected by climate change, resulting in casualties, costs, and other impacts.
- There are national and subnational adaptation policies, strategies, programmes, and projects, but these are mainly incremental in character. Hence, they are often less effective than planned because they are behind the curve of escalating climate impacts.
- Many vulnerable locations and ecosystems are not covered by current adaptation strategies. This adaptation gap means that some adaptation costs are borne by individuals and households.
- Information to fully assess the effectiveness of adaptation is lacking in many cases, hence local planners and national governments are unaware of their contribution towards overall resilience.
- The information on insurance take-up shows limited insurance coverage and lack of alternatives for local people.
- Other than conventional and often short-term disaster risk management approaches, there is little or no remedy and/or rehabilitation mechanisms for losses and damages in place. As a result, individuals and households are paying the costs of unavoids and unavoidable losses and damages, and people who can are moving out of flood zones.
- Finance and transfer mechanisms are needed to support recovery, protect human rights and development gains, and prepare for future displacement and livelihood losses.
- International and national authorities need to recognize now the scale and urgency of the response gap.

The evidence from the case study countries clearly shows that, while losses and damages are happening and people and households are having to cope with impacts, other than disaster risk response measures with aligned humanitarian responses and some weather-indexed insurance, state-run mechanisms to address the impacts and risks of losses and damages are yet to start.

As Table 4 summarizes, the evidence indicates that, in the case study countries, some losses and damages risks are being avoided, or at least reduced and minimized, through adaptive and other risk management actions. However, these actions are not comprehensive in terms of coverage nor are they fully effective.

TABLE 4: Evidence from the case study countries on measures and gaps in addressing losses and damages

| Measures and gaps | Bangladesh | Indonesia | Nepal |
|--|---|---|--|
| Adaptation gap | <ul style="list-style-type: none"> Minimizing losses and damages from flooding will require stronger and more sustainable dams and embankments, particularly to reduce soil erosion, and networks of more robust roads. Information to fully assess the effectiveness of adaptation is lacking in many cases. | <ul style="list-style-type: none"> Slow-onset climate-induced disasters are not prioritized; rapid-onset disasters are. Institutions and mandates as well as monitoring, documentation, and assessment of losses and damages are still at an early stage. Long-term adverse impacts of climate change are not yet understood and need to be studied and validated. | <ul style="list-style-type: none"> Tools and methods for minimizing losses and damages do not consider how to address residual impacts and risks. Quantification of sectorial losses and damages or the monetary value of related costs are missing. |
| Risks managed (reduction through adaptation and other measures) | <ul style="list-style-type: none"> The Ministry of Environment, Forest, and Climate Change and the MoDMR are involved in risk management, with support from the Ministry of Finance and the Ministry of Planning. The National Plan for Disaster Management (MoDMR, 2020) has recognized the need to increase both leadership and technical capacity. The government has formed an inter-ministerial committee headed by the MoDMR to develop a two-year pilot phase to explore options for a national mechanism on losses and damages. Emphasis is on sudden-onset impacts (flooding, cyclones) and relief responses. Widespread local-level project and autonomous actions reduce exposure and vulnerability. | <ul style="list-style-type: none"> Climate impact assessments are carried out by several ministries and government agencies. Initiatives for climate and disaster risk assessment and to mainstream climate and disaster risks in spatial planning exist. Exposure to various hazards is reduced through improvement of environmental and natural resource management. Adaptive measures to reduce climate risks in key economic sectors are being taken. Other measures include public awareness on climate change, better access to weather forecast information, and promoting insurance. The government is not developing a separate mechanism for addressing losses and damages. | <ul style="list-style-type: none"> The government recently approved a policy framework on losses and damages Methods for vulnerability and risk assessment related to disaster preparedness and climate change adaptation planning have been tried and tested. Early warning system is playing a vital role in alerting people on time and helping to minimize loss of life. Local adaptation planning and implementation happens at district and municipality levels. Disaster funds have also been established at this level. |
| Protection gap | <ul style="list-style-type: none"> Only 13% of the poorest households actually receive the full scope of benefits available from social protection programmes. The insurance products that do exist do not cover flood risks nor livelihood losses comprehensively. | <ul style="list-style-type: none"> Addressing losses and damages to small islands requires clear understanding of their status. Knowledge gaps exist on slow-onset impacts, e.g. how increases in sea temperature affect coral reefs, marine fisheries, etc. Data availability to assess losses and damages is inadequate, e.g. national coastal erosion or aberration data. | <ul style="list-style-type: none"> Local people have heard about crop and livestock insurance but so far there is little interest to invest in these schemes. Climate-related displacement and migration are very important but poorly appreciated, especially in the Terai region of Nepal on the border with India. |
| Risks transferred (social and financial protection) | <ul style="list-style-type: none"> Various social protection programmes are in operation, but none are disaster-specific. Insurance-related initiatives, including weather index-based insurance, exist. | <ul style="list-style-type: none"> In 2019, the Ministry of Finance decided to implement the first country-level pooled-fund mechanism for disaster insurance. Protection of government buildings is prioritized. | <ul style="list-style-type: none"> Indemnity as well as index-based parametric insurance schemes are being developed to provide ex post payments for losses and damages. The government uses humanitarian cluster systems to respond to climate-related disasters (11 clusters co-led by government and international agencies). Gender-disaggregated data on human casualties and injuries is reported and some psychosocial aspects are covered in the protection cluster approach. |
| Response gap | <ul style="list-style-type: none"> The costs of preparing for and responding to climate-related losses and damages are largely borne by households. Long-term rehabilitation programmes (e.g. cash-for-work schemes, interest-free loans for farmers) are needed. Better employment opportunities in post-disaster recovery situations are needed. | <ul style="list-style-type: none"> Populations and their livelihoods and assets, particularly on the smaller islands of the Indonesia archipelago, are well beyond the reach of measures to address current and future losses and damages. | <ul style="list-style-type: none"> Various forms of flooding (e.g. glacial lake outbursts, flash flooding) and landslides are causing losses and damages well beyond the scope of measures to respond. |
| Risk retained (rehabilitation, post-disaster finance) | <ul style="list-style-type: none"> Support for internally displaced people exists – the CBF was established in 2018. | <ul style="list-style-type: none"> The NDC Roadmap presents a methodology for assessing losses and damages across a number of sectors and the data sources used, and identifies current data limitations. | <ul style="list-style-type: none"> People in vulnerable areas have been able to safeguard their important belongings from floods by keeping them in the upper parts of their houses or in neighbours' houses that are safer. |

Lissner et al. (2022) have found that a continuous rise in climate impacts means that adaptation costs and the costs of residual losses and damages will invariably continue to rise as the century progresses. Annual financing for climate adaptation in 2019 was estimated to be about \$20 billion, while the IPCC estimates that adaptation needs will rise to \$127 billion by 2030 and \$295 billion by 2050 (Levin et al., 2022).

Some of the residual risks left by the adaptation gap – unavoided risks – are addressed using risk transfer processes, including insurance. In Nepal and Bangladesh, there is evidence that some risks of economic losses and damages are being addressed in this way. However, the evidence also points to financial, technical, political, socio-economic, and cultural factors that limit the coverage of risk transfer measures. Added to the low efficacy of transfer mechanisms to comprehensively address risks for the poorest people, many unavoided risks are not transferred. This is apparent in the case of economic losses and damages, is likely to be more significant for non-economic losses and damages, and results in the risk protection gap.

Added to the non-transferred unavoided risks, there are unavoidable risks. There is evidence of people moving and being moved out of flood zones and of sea level rise displacing people to new locations. However, sparse evidence of support and rehabilitation schemes was found. Indeed, research evidence from Bangladesh shows that it is individuals and households that are paying the costs of these types of losses and damages. This large and growing response gap is due to unavoided and unavoidable risks of losses and damages not being retained other than by those directly affected by the risks.

To address the protection and the response gaps of losses and damages, there needs to be upscaling and increased accessibility of effective weather-indexed and other asset protection insurance. Also, we need investigation into the scale and significance of the protection gap and how to address it using risk finance, social protection, support for rebuilding livelihoods, and other measures. Finance and transfer mechanisms are needed to support recovery, protect human rights and development gains, and prepare for future displacement and livelihood losses. And, finally, international and national authorities need to recognize now the scale and urgency of the response gap.

Table 5 presents a summary of evidence from the case study countries on the measures identified to manage/adapt, transfer, and respond to losses and damages. Actions to resolve the gaps are also summarized.

TABLE 5: Main findings from the country case studies

| Gaps | Description | Case study evidence | Advocated actions |
|--------------------------|---|--|--|
| Adaptation gap | <ul style="list-style-type: none"> Costs of climate adaptation in developing countries are estimated to be five to ten times greater than current public adaptation finance flows Poor effectiveness of adaptation measures leaves residual risks | <ul style="list-style-type: none"> Many vulnerable locations and ecosystems not covered by adaptation strategies Information to fully assess the effectiveness of adaptation is lacking in many cases | Step change in adaptation ambition for funding and implementation to significantly reduce damages and losses from climate change |
| Risks managed | <ul style="list-style-type: none"> Prevention and preparedness; anticipate, absorb, adapt Incremental and transformational management of risks | <ul style="list-style-type: none"> National and subnational adaptation policies, strategies, programmes, and projects exist Mainly incremental adaptation strategies have been implemented so far Autonomous adaptation costs are largely borne by individuals and households | Urgent need to scale up and further increase public adaptation finance, both for direct investment and for overcoming barriers to private-sector adaptation |
| Protection gap | Financial, technical, and political factors limiting the coverage of risk transfer measures, added to low efficacy of transfer mechanisms, mean that unavoided risks are not transferred | There is limited insurance coverage and lack of alternatives for local people | Investigate and address the scale and significance of the protection gap using compensation, social protection, support for rebuilding livelihoods, and other measures |
| Risks transferred | Insurance, catastrophe funds, contingent credit, social protection and safety nets | Information available on insurance take-up and coverage of other protection schemes | Upscale and increase the accessibility of effective weather-indexed and other asset protection insurance |
| Response gap | Additional finance is needed to address residual risks of unavoided and unavoidable losses and damages | <ul style="list-style-type: none"> No comprehensive rehabilitation schemes exist Individuals and households are paying the costs of these losses and damages | International and national authorities need to recognize now the scale and urgency of the response gap |
| Risk retained | Measures to support people facing recurrent unavoidable impacts through compensation, rehabilitation, and so on | <ul style="list-style-type: none"> People are moving out of flood zones Sea level rise is displacing people | Finance and transfer mechanisms are needed to support recovery, protect human rights and development gains, and prepare for future displacement and livelihood losses |

5



Engaging with flood-prone communities in Bangladesh. © Practical Action

5. Discussion

The agreement on a Loss and Damage Fund will be what COP27 is remembered for, but with stalled progress on adaptation as well as backward steps on mitigation, the event as a whole fell short of what is needed to close the gaps that are leading to climate disasters of the kind experienced by Pakistan in 2022.

Progress on closing these gaps will be critical, including through the policy processes set in motion by COP27, such as the work of the Transitional Committee.

In this context, the findings of this report are offered for discussion.

Key issues include:

- The scale of the different types of losses and damages is under-appreciated.
- Losses and damages are diverse and highly differentiated – addressing them effectively requires a range of approaches and instruments.
- National mechanisms for financing and responding to losses and damages coordinated by national platforms²¹ for climate action are needed (coherent with the nationally designated authorities that interface with the Green Climate Fund (GCF))
- More information and wider and holistic knowledge will be needed to drive the foresight of how best to address losses and damages.

5.1. Scale and differentiation of impacts and risks

Previous chapters of this report have argued and evidenced the existence of gaps across the sets of measures – from management and transfer of risks to rehabilitation and risk retention – to address losses and damages, leading to residual risks. The scale of residual impacts and risks is currently under-appreciated, in part because individuals and households bear the brunt of the costs of retention (Eskander and Steele, 2019).

Unavoided and unavoidable risks are not being addressed to any scale. This leads to a large and growing response gap, because unavoidable and unavoidable risks of losses and damages are not being retained by authorities or organizations, but by the people directly affected by the risks. In addition, the most vulnerable are facing cycles of losses and damages. Post-disaster relief, rehabilitation, and

²¹ See <https://ukcop26.org/climate-and-development-ministerial-2-towards-transformational-change/>

reconstruction greatly affect how the same people will cope with the next disaster. Disaster risk management tends to include short-term relief and does little to reduce exposure and vulnerability to future risks.

Disaster risk management systems have sought to be more anticipatory in nature, recognizing that individuals and households bear the brunt of the casualties and costs of losses and damages. There is still much to be done to link short-term humanitarian responses with financing for long-term risk reduction.

5.2. Instruments and approaches

Climate adaptation can be a key mechanism in managing and minimizing impacts and risks of losses and damages. However, recent assessments of the effectiveness of internationally funded adaptation interventions (Eriksen et al., 2021) and analytical review of maladaptation (Schipper, 2020) show that this expectation of effectiveness should be questioned. We know that adaptation is inadequately financed, that private sector investment in adaptation is limited, and that the current, largely incremental approach to climate adaptation is behind the curve of escalating risks. To start to address this, far greater support is needed for women, girls, and others who suffer disproportionately from losses and damages (Von Ritter Figueres, 2013; Anderson, 2022).

In international policy discourse, insurance is considered an important mechanism to manage climate risks. However, critics of expanding insurance schemes to address losses and damages point to the limitations of these mechanisms, especially in relation to the principles of common but differentiated responsibilities and respective capabilities, and intergenerational equity, as well as economic and gender inequalities. There are limits to insurance as it cannot provide an appropriate financial response to address the full range of losses and damages experienced (Nordlander et al., 2019). Risk transfer is likely to be effective and appropriate for specific slices of risk. In many developing countries, risk markets are not sufficiently developed at scale to provide insurance solutions; the V20 Group of Ministers of Finance²² of climate-vulnerable countries is looking into domestic and regional market development (through the private and public sectors, promoting direct community access, developing subsidies, etc.) to deal with losses and damages, but this is not yet in place. Even where a risk transfer market does exist, too often the poorest and most vulnerable cannot afford the premiums and are excluded; in such situations, protection via social safety nets is critical. It is important that adaptation, pre-positioned funds, strengthened climate action capacity, and tools for slow-onset risks are all part of the solution to close the protection gap.

²² The Vulnerable Twenty (V20) Group of Ministers of Finance is a cooperation initiative of countries systematically vulnerable to climate change.

5.3. National mechanisms and financial capacity

How to deploy actions that address unavowed and unavoidable losses and damages is crucially important. These include rehabilitation and post-disaster finance; planned and supported migration and resettlement; reskilling and alternative livelihoods provision for rebuilding household economies; recognition and repair of loss; counselling; and active remembrance (Shawoo et al. 2021). Deployment will need to be specific to the circumstances of the countries where the losses and damages occur. Climate-vulnerable countries in particular will need nationally designed and established mechanisms for addressing losses and damages. The national framework in Nepal is a good step in this direction. But, even here, moves toward national mechanisms are contingent on availability of global finance.

The economic crises in part due to the COVID-19 pandemic mean that countries facing the worst levels of losses and damages have the least fiscal flexibility to address them. Climate change is already increasing the cost of borrowing to these countries (Asian Development Bank, 2020). As losses and damages accumulate, climate change's impediment to achieve sustainable development will become more severe.

5.4. Foresight and evidence

Countries require the foresight to establish how they will generate and draw down Loss and Damage finance. But there is an absence of robust data on the economic costs of losses and damages at the national level.

In addition, human and ecological losses and damages need to be better appreciated (and valued), because they are intrinsic to human well-being and planetary health. To do this, persistent knowledge gaps need to be addressed through the synthesis of diverse forms of knowledge and experiential learning, such as indigenous and local knowledge.

Various tools and methods have been used to assess risks (pre-event) and impacts (post-event). Yet, gaps exist in terms of providing comprehensive evidence at local scales (see, for example, the description of the FRMC and PERC in Chapter 3 of this report). Information and knowledge that can be systematically retrieved at the country and community level are required in order to provide comprehensive insight into losses and damages at the level where people are affected, and decisions are being made.



A family in Jonuta, Mexico, using a boat as transportation during a flood. © Michael Szönyi, Zurich Insurance

6. Recommendations

Resilience to losses and damages is needed: people are being exposed to a growing number of avoidable risks and impacts and to unavoidable increases in climate hazards. These impacts and risks are reaching existential scales. To address this, the following actions are needed.

Cover the adaptation gap: massive investment is needed now to prevent and manage avoidable losses and damages for the most vulnerable people. Adaptation investments reduce the irreversible harm that otherwise cannot be recovered through risk transfer or response mechanisms.

- At a minimum, developed nations should make good on the commitment to provide \$100 billion of climate finance per year, with 50% for adaptation, and a focus on grants, not loans.
- Adaptation investment needs to reach the local level and be locally led in order to enhance the resilience of climate-vulnerable communities.
- Losses and damages should be included in the Global Stocktake as evidence of the limits to adaptation and the failure to mitigate.

Close the protection gap: major investments are needed in all climate-vulnerable countries to increase protection and boost adaptation to unavoidable risk.

- The lessons from shock-responsive social protection, weather-indexed insurance, and similar schemes should be assimilated and used by national and international agencies to create or strengthen comprehensive and shock-responsive social protection programmes and, where appropriate, well-designed insurance schemes.
- Support for comprehensive protection schemes should be provided through global climate funds.

Address the response gap: new approaches are urgently required, including the establishment and operationalization of the Loss and Damage Fund, to ensure that the most vulnerable women, men, and children do not suffer the costs of the climate crisis where the means to adaptation are exhausted.

- New and additional finance for addressing losses and damages, such as financial and social protection, relief, and rehabilitation, alongside effective tracking and accountability mechanisms should be generated urgently.
- The Transitional Committee, the Glasgow Dialogue, and other related processes should advance effective tracking and accountability mechanisms for Loss and

Damage funding, ensuring coordination and complementarity between new and existing funding arrangements. This needs to go together with the development of harmonized and comprehensive ways to assess losses and damages ex post and ex ante.

- Loss and Damage should be included in discussions on the New Collective Quantified Goal in addition to mitigation and adaptation finance.

Enhance policymaking and implementation capacity: systems need to be strengthened at all levels so that increased funding can be delivered effectively.

- Vulnerable countries should establish comprehensive and effective national and subnational policies, institutional frameworks, strategies, mechanisms, and programmes that support adaptation and avert, minimize, and address losses and damages in a way that is holistic rather than incremental, focuses on vulnerable locations and ecosystems, and meets the needs of the most vulnerable people and communities.
- The SNLD needs to become fully operationalized and needs to be underpinned by sustainable funding in order to provide the extensive technical assistance to climate-vulnerable countries and communities that is required.
- More and better data: investment is required to build evidence on the scope of risks and impacts – economic, human, ecological – and on the effectiveness of the policies and programmes designed to minimize and address them.
- National agencies for disaster risk management, climate adaptation, social protection, and so on need to be helped to coordinate better and to share data and tools, with national Loss and Damage contact points established across sectoral mandates.
- More data and evidence are needed, developed in collaboration with local communities, to better prepare communities against climate change-related hazards.

Scale up successful locally led response mechanisms

- Global and national funds should finance the expansion of measures to avert, minimize, and address losses and damages that have proven to be effective, are locally led, and meet the specific needs of the communities they support.
- The work of the Transitional Committee on Loss and Damage should consider how locally led approaches could be scaled up in order to meet the specific needs of communities experiencing losses and damages.

6.1. Conclusion

In conclusion, the need for greater public and political awareness of the large and increasing scale of climate losses and damages is clear. They encompass existential economic, human, cultural, and ecological consequences of climate-related disasters, as well as the displacement of those living in areas prone to climate change.

The post-disaster finance and rehabilitation in place for people at the climate frontline are woefully insufficient. As a result, individuals and households are having to cope with unavowed and unavoidable losses and damages. Some do this by reducing their spending on essentials or selling precious assets. This has long-term adverse consequences on livelihoods and human well-being, and it erodes the local economy, with implications for national GDP. Addressing the losses and damages of climate change by minimizing the adaptation, protection, and response gaps requires significant investment.

The global climate negotiations provide the opportunity to right this wrong and continue to rebuild trust between those countries that bear the most responsibility for causing climate change and those that are struggling to withstand its burden. This requires action to resolve open questions around the recently agreed Loss and Damage Fund, including determining the scope of the fund and the principles of how it works, where it is situated, which countries receive funding and on what basis/trigger, whether funding is given as grants or loans, and where the funding will come from (including innovative sources). This will no doubt be extremely challenging.

At the same time, the operationalization of the SNLD will require steady progress towards establishment of the advisory board, the secretariat, the operating procedures, and the selection of the host institution by November 2024.



A man navigates his boat on a river in Nepal. © Michael Szönyi, Zurich Insurance

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