Report

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Financial arrangements for addressing losses and damages

A disaster risk reduction primer

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Acronyms

ADB	Asian Development Bank
ADC	Aggregate Deductible Cover
ARC	African Risk Capacity
CAT DDO	Catastrophe Deferred Drawdown Option
CCA	climate change adaptation
CCRIF SPC	Caribbean Catastrophe Risk Insurance Facility Segregated Portfolio Company
COP	Conference of the Parties
DaLA	Disaster Damage and Loss Assessment
DRF	disaster risk financing
DRM	disaster risk management
DRR	disaster risk reduction
GDP	gross domestic product
GEF	Global Environment Facility
MAR	Mesoamerican Reef
IMF	International Monetary Fund
MDB	multilateral development bank
NDRF	National Disaster Response Fund
ODA	Official Development Assistance
PCRIC	Pacific Catastrophe Risk Insurance Company
PCRIF	Pacific Catastrophe Risk Insurance Foundation
PDNA	Post-Disaster Needs Assessment
PMFBY	Pradhan Mantri Fasal Bima Yojana
SDG	Sustainable Development Goal
SDRF	State Disaster Response Fund
SOE	slow-onset event
UNDRR	United Nations Office for Disaster Risk Reduction
UNFCCC	United Nations Framework Convention on Climate Change
WFP	World Food Programme

Executive summary

The decision by countries to establish loss and damage funding arrangements and a fund was a welcome one.[1] It is important that existing funding arrangements, including those used and applied for disaster risk management (DRM), inform the ongoing deliberations on operationalising the decision. The United Nations Office for Disaster Risk Reduction and ODI have therefore worked in partnership to produce this primer to highlight some existing good practices. The report follows a risk management approach to addressing losses and damages, building on in-depth case studies of a selection of countries, and offers a framework for further discussion.

One of the key messages from the primer is that there are streams of resources related to disaster risk reduction (DRR) that have direct relevance to addressing loss and damage. Importantly, it also recognises that there are gaps in coverage, using examples from low- and middle-income countries, and the need to strengthen and scale-up support.

The framework for funding for loss and damage in this context is based around the following selected framings:

- loss and damage can be avoided or unavoided and may, in certain circumstances, be unavoidable
- loss and damage can result from extreme weather events such as cyclones, floods, drought and heatwaves; and slow-onset events (SOEs) or processes, like sea-level rise, desertification, and biodiversity loss
- loss and damage can be economic or non-economic
- loss and damage can be direct (immediate) or indirect (knock-on effects).

This primer draws on a layered approach to risk management, whereby financing follows the best suited risk management decision in a given context, depending on the intended purpose and the priorities of governments and affected populations. Within this approach, DRR finance is considered to be applicable for reducing risk in ex ante (pre-event) and ex post (post-event) contexts, in relation to extreme events as well as SOEs, despite the fact that SOEs events follow a long gestation period and do not have the conventional risk management phases.[2]

Following an extreme weather event, finance can be deployed across three phases: (1) emergency response, (2) short-term recovery and rehabilitation, and (3) long-term recovery and reconstruction. There is also a growing focus on anticipatory action and pre-arranged finance which is triggered by forecasts of extreme events with the aim of reducing losses and damages that would occur and/or speeding up response in the aftermath of an event. Unmet funding needs in

1 27th session of the Conference of the Parties (COP 27) to the United Nations Framework Convention on Climate Change (UNFCCC) and the 4th session of the Conference of the Parties serving as meeting of the Parties to the Paris Agreement (CMA 4).

2 The Sendai Framework for Disaster Risk Reduction provides a basis for action in reducing risks due to rapid-onset and slow-onset disasters, thereby expanding the traditional conceptualisation of DRR that focused on rapid and extreme events.

any of these phases can exacerbate climate-related loss and damage and adversely affect people's well-being in the long term.

Timing is critical. Governments do not necessarily require reconstruction funding immediately after an extreme weather event, but immediate liquidity is needed to fund emergency response and early recovery operations to avoid indirect impacts and further welfare losses.

For SOEs, where impacts are experienced gradually and over a longer period, addressing loss and damage is more complex. Tipping points – where human and biophysical systems can and do experience irreversible loss and damage – become critical, as do long-term responses to deal with the growing scale of impact and the cascading risks linked to extreme events.

Countries are already making use of some of these risk financing mechanisms to address loss and damage, but there are significant gaps:

- Some unavoided climate-related loss and damage is already being addressed through risk retention and risk transfer, but many unavoidable and some unavoided loss and damage remains unaddressed.
- Slow-onset and non-economic loss and damage remains largely unaddressed vis-à-vis the likely scale of the impact. Some countries are beginning to provide assistance for populations affected by slow-onset events – like India's assistance to populations displaced by coastal and river erosion under its National Disaster Risk Management Fund.
- The funds required are much greater over the long term than for emergency response. Borrowing is a common strategy for countries to finance recovery and reconstruction, but some affected countries have very restricted access to concessional finance due to their income or existing debt levels. Belize's debt-for-nature swap and Fiji's efforts to develop parametric insurance instruments for government, tourism and the environment are examples in which countries with high levels of debt have sought alternatives for responding to loss and damage.
- Relatively large sums may also be required to address non-economic losses, and this is most likely to be required or requested for more severe but less frequent climate events, and/or slow-onset events. Non-economic losses and what is needed to address them are often not captured or quantified in post-disaster needs assessments and loss and damage estimations.
- In fragile and conflict-affected settings, governments and local communities have very restricted access to finance for climate-related loss and damage, and high dependency on unpredictable humanitarian assistance. Capacity to deliver interventions is also limited, so alternatives are needed: the African Risk Capacity (ARC) and ARC Replica drought coverage in Mali and the World Food Programme's rapid liquidity for humanitarian response operations are examples of early recovery and emergency response finance in such contexts.

There are many good practices and lessons for DRR funding that are directly relevant to the operationalisation of loss and damage funding arrangements. This primer and the synopsis of the information in the brief aim to provide a basis for these considerations to inform and positively influence the ongoing discussions on loss and damage funding arrangements, and ultimately enhance coherence at all levels for the benefit of vulnerable communities and countries.

1 Introduction

The historic decision at COP27 to establish a loss and damage fund and funding arrangements was widely welcomed 3,4, as was the agreement one year later, on the first day of COP28, to operationalise the fund. [3, 4, 5]

However, with no specific or precise universally adopted definition of loss(es) and damage(s) it is difficult to standardise estimates for the costs of loss and damage, the appropriateness and availability of finance to meet those costs, and loss and damage funding gaps.[6] Addressing loss and damage could include a variety of pre- and post-event climate actions that potentially overlap with mitigation and adaptation measures, as well as with existing humanitarian assistance, DRR and disaster risk financing (DRF) mechanismsand other compensation schemes for post-disaster losses (Mechler et al., 2019; Panwar and Wilkinson, 2022).[7] A normative framework for loss and damage finance is needed and should be based on existing mechanisms of national, bilateral, multilateral and private sector finance that are currently – or could be – used in relation to climate-related loss and damage. This framework can inform the design of an international loss and damage fund and further financing arrangements. Clear boundaries need to be defined between mechanisms for addressing loss and damage and those that can help avert and minimise loss and damage, while appreciating that countries may already be using financing mechanisms and instruments that are not explicitly for climate-related loss and damage but could be.

In this report, a preliminary framework is offered for understanding existing loss and damage finance arrangements from a DRR perspective and identifying gaps in coverage at the national level, using examples from low- and middle-income countries to show where these need to be strengthened and scaled up. The DRR lens is used

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3 Extract from the IPCC Glossary based on the Sixth Assessment Report: 'Research has taken Loss and Damage (capitalised letters) to refer to political debate under the United Nations Framework Convention on Climate Change (UNFCCC) following the establishment of the Warsaw International Mechanism for Loss and Damage in 2013, which is to "address loss and damage associated with impacts of climate change, including extreme events and slow onset events, in developing countries that are particularly vulnerable to the adverse effects of climate change." Lowercase letters (losses and damages) have been taken to refer broadly to harm from (observed) impacts and (projected) risks and can be economic or non-economic.' (See www.ipcc.ch/report/ar6/wg2/chapter/annex-ii). This report is developed in the context of losses and damages but to inform the ongoing discussion on Loss and Damage fund and funding arrangements.

4 27th session of the Conference of the Parties (COP 27) to the United Nations Framework Convention on Climate Change (UNFCCC). The decision was also adopted by the 4th session of the Conference of Parties serving as meeting of the Parties to the Paris Agreement (CMA 4).

5 COP 28 and CMA 5

6 Decision 2/CP.19 *acknowledges* 'that loss and damage associated with the adverse effects of climate change includes, and in some cases involves more than, that which can be reduced by adaptation.'.

7 DRF is defined by the InsuResilience Global Partnership as 'all instruments aimed at strengthening financial resilience or providing financial protection against disasters and extreme weather events for vulnerable countries and communities. This encompasses both insurances as well as risk financing elements. Usually implemented on a sovereign level, the central goal of disaster risk finance is to assist more rapidly and reliably to those in need when a disaster strikes by using tools like insurance and contingent credit to finance rapid and reliable response to emergencies' (see www.insuresilience.org/knowledge/glossary).

to explore loss and damage funding arrangements, including selected case studies to enhance understanding of national circumstances.

Parties to the United Nations Framework Convention on Climate Change (UNFCCC) and the Paris Agreement recognise the importance of averting, minimising and addressing loss and damage associated with the adverse effects of climate change. The UNFCCC adopted decisions that acknowledge that 'loss and damage associated with the adverse effects of climate change includes, and in some cases involves more than, that which can be reduced by adaptation.'[8]

Outside of the UNFCCC, a number of complementary classifications and typologies of climate-related loss and damage have been developed. These include climate-related loss and damage that can be avoided or unavoided and that may, in certain circumstances, be unavoidable (see Box 1). Other ways of classifying loss and damage include those that result from impact of (rapid-onset) extreme weather events, such as cyclones, floods, drought and heatwaves, and those produced by slow-onset events or processes, like sea-level rise, desertification and biodiversity loss (UNFCCC, 2021).[9]

Box 1 Avoided, unavoided and unavoidable loss and damage

Avoided loss and damages refers to impacts that have or could be averted or minimised through climate change mitigation, adaption and/or DRR measures (for example, building a sea wall or planting disaster-resilient crop varieties).

Unavoided loss and damages are those impacts that could not or have not been avoided due to resource and capacity constraints but for which avoidance options do exist (for example, lack of finance limits the ability of a Small Island Developing State to build sea walls to protect all property from sea-level rise and coastal flooding).

Unavoidable loss and damages refers to those impacts that go beyond existing adaptation and mitigation measures – for example, the irreversible impacts of glacier melt and sea-level rise that are beginning to materialise as the limits of adaptation are reached (Mechler and Deubelli, 2021; Bhandari et al., 2022). Unavoidable losses remain central to the discourse on climate-induced loss and damage.

8 Decision 2/CP.19

9 Droughts may have characteristics of both sudden and slow onset events. UNFCCC considers droughts as extreme weather events (see UNFCCC, 2021), while they are largely being considered as slow-onset disasters in the DRR context (see UNDRR terminology at www.undrr.org/terminology/disaster).

In addition, the UNFCCC (2021) distinguishes between loss and damage that is economic and non-economic:

- Economic loss and damage can be understood as loss of physical assets, goods and services that are commonly traded in markets; for example, loss of income, damage to infrastructure and property.
- Non-economic loss and damage can be considered as remainder of items that are not commonly traded in markets; for example, human losses (loss of life and health), societal losses and damages (loss of cultural heritage, territorial loss and loss of indigenous knowledge) and environmental losses (loss of biodiversity and ecosystem services).[10]

Some frameworks have been developed to organise these various dimensions and categories of loss and damage. Mechler and Deubelli (2021), for example, adopt a layered risk management approach to explain how risks can be avoided, unavoided and unavoidable, with increasingly transformational risk management and curative finance needed to address unavoidable loss and damage as the hard and soft limits to adaptation are reached and risks become intolerable.[11] The framework considers three types of finance:

- risk management finance (including DRR and climate change adaptation – CCA – finance) for avoided risks
- risk finance for unavoided risks
- curative finance for unavoidable risks.

CCA and DRR finance includes national and international finance for adaptation and risk reduction measures, while risk finance (or DRF) is often used to refer to risk financing measures that transfer or retain the unavoided residual risk. Curative finance deals with unavoidable, residual risks (Mechler and Deubelli, 2021).

Four different framings of loss and damage have been identified (Boyd et al., 2016): (1) adaptation and mitigation, (2) risk management, (3) limits to adaptation, and (4) existential.[12] Comprehensive risk management approaches cover all complementary actions that are needed to address climate change: from those that minimise or avert loss and damage, to those that address these when or after they occur. Stakeholders who prefer a 'limits to adaptation' framing focus on 'residual loss and damage', which goes beyond the adaptation and mitigation limits. These framings are useful in developing a loss and damage finance framework that builds on existing DRR expertise and financing arrangements.

In DRR policy and practice, the concept of loss and damage is not new. A rich body of research exists on understanding and assessing loss and damage from extreme weather events and other natural hazards (see for example, ECLAC, 2014; GFDRR, 2014; UNDRR, 2015; 2017). One of the key distinctions made between different types of loss and damage is the distinction between direct damage and indirect loss, as well as quantifiable (or tangible) and non-quantifiable (or intangible) loss and damage (see Box 2).[13] A quantitative assessment of loss and damage in a DRR context

10 UNFCC (2021)
11 In practice, it may be difficult to differentiate between risks that are unavoided and those that are unavoidable.
12 These framings should be seen as a spectrum of typologies and not separate groupings (see Boyd et al., 2016).
13 The concept of 'tangible' (can be bought and sold in market) and 'intangible' (not traded in market) losses and damages in the context of DRR is similar to that of the 'economic' and 'non-economic' losses and damages in the climate change context.

typically involves assessment of direct damage and indirect loss through a Post-Disaster Needs Assessment (PDNA), also known as a Disaster Damage and Loss Assessment (DaLA).[14]

Box 2 Direct damage and indirect losses

Direct damage is the monetary value of the partially destroyed physical asset, assuming the destroyed asset will be replaced in pre-disaster conditions (in quantity and quality). This damage is usually quantifiable in economic terms and includes damage to buildings, infrastructure and natural resources. However, there can be many losses that are direct but difficult to quantify. For example, in case of a destruction of a culturally significant sites, assigning monetary value for the replacement of the site cannot account for the lost social and cultural significance for a community.

Indirect losses refer to the secondary effect of direct damage that arises from the disruption in the flow of goods and services until the destroyed assets are rebuilt, i.e., until the post-disaster recovery period. Indirect losses can also be quantifiable and non-quantifiable or difficult to quantify.

Source: ECLAC (2014), UNDRR (2015; 2017)

Chapter 2 of this report discusses why additional finance is needed to address loss and damage. Chapter 3 provides an introduction to how disaster risk finance works and what it can offer towards addressing loss and damage. Chapter 4 then proposes a framework for understanding existing loss and damage finance and identifying gaps in current coverage at the national level for extreme weather events and slow-onset events (SOEs), informed by DRR finance experience.

The appendices present four case studies from Belize, Fiji, India and Mali that identify and discuss specific gaps in loss and damage finance. They also explore context-specific challenges countries face in addressing loss and damage finance, and provide examples for how the gaps are being addressed.

For Belize, the focus is on nature-based solutions combined with parametric insurance to address loss and damage. For Fiji, it is risk retention to address non-economic losses, driven in part by slow-onset events. For India, it is risk retention at the national and subnational levels for multiple hazards. Finally, for Mali the focus is on challenges of addressing loss and damage in fragile and conflict-affected settings.

The case study countries were selected purposively to reflect a variety of risk profiles and contexts, especially along the dimensions of geography, size, income level and predominant types of risk. Furthermore, the case studies aim to provide interesting insights into different types of finance for addressing loss and damage, based on the countries' experience with relevant innovative financial instruments.

14 Multilateral development banks and organisations (e.g., UNDRR, World Bank, among others) have issued guidelines to conduct PDNAs and/or DaLAs (see for example, GFDRR, 2010).

2 Why finance is needed to address loss and damage

Unavoided and unavoidable loss and damage can be addressed in different ways after rapid-onset/extreme events and during slow-onset events, depending on the intended outcome: a quick response to avoid some impacts; recovery and restoration of critical services and the economy; or building back better to avoid impacts in the future.

Climate-related extreme events can cause widespread direct and indirect economic and non-economic losses and damages that could also lead to economy-wide impact. According to official statistics reported by governments through the Sendai Framework Monitor and the Sustainable Development Goals (SDGs), average global mortality stood at around 42,000 per year due to disasters that also affected 130 million people each year from 2015–2022. During this period, direct economic losses, on average, accounted for 0.37% of global GDP.

The impact of climate extreme events is often more than just asset losses. Left unaddressed, these can have secondary or indirect impacts, affecting the well-being of people, especially the poor and those who are on the edge of falling into a poverty trap (Hallegatte and Vogt-Schilb, 2019). For instance, lack of adequate and timely finance to address direct and immediate impacts (e.g., loss of life, injury) of climate shocks could result in more pronounced secondary impacts (e.g., loss of livelihoods) which not only increase funding requirements and put fiscal pressure on government, but also generate well-being losses.[15]

Unavoided or unavoidable losses due to extreme and rapid-onset events can be addressed in different ways, depending on the outcome sought, and not all will require specific financial mechanisms to be extended or established (depending on the type of loss and damage experienced):

1. response, including providing substitute resources to make up for lost well-being and to avoid negative coping strategies (e.g., taking children out of school to work and supplement household income)
2. recovery, including reconstruction where buildings have been affected, but also recovery measures designed to restore services and economic activities to a previous state or level (and therefore avoid decline in these sectors/communities and out-migration)

building back – or forward – better, meaning forward-looking and often structural changes to avoid impacts in the future (see Klinsky, 2016).[16]

These measures correspond to the three post-disaster phases: disaster response, recovery and reconstruction. Figure 1 shows a hypothetical

15 Decrease in the economic and social status of people due to climate/disaster impact.

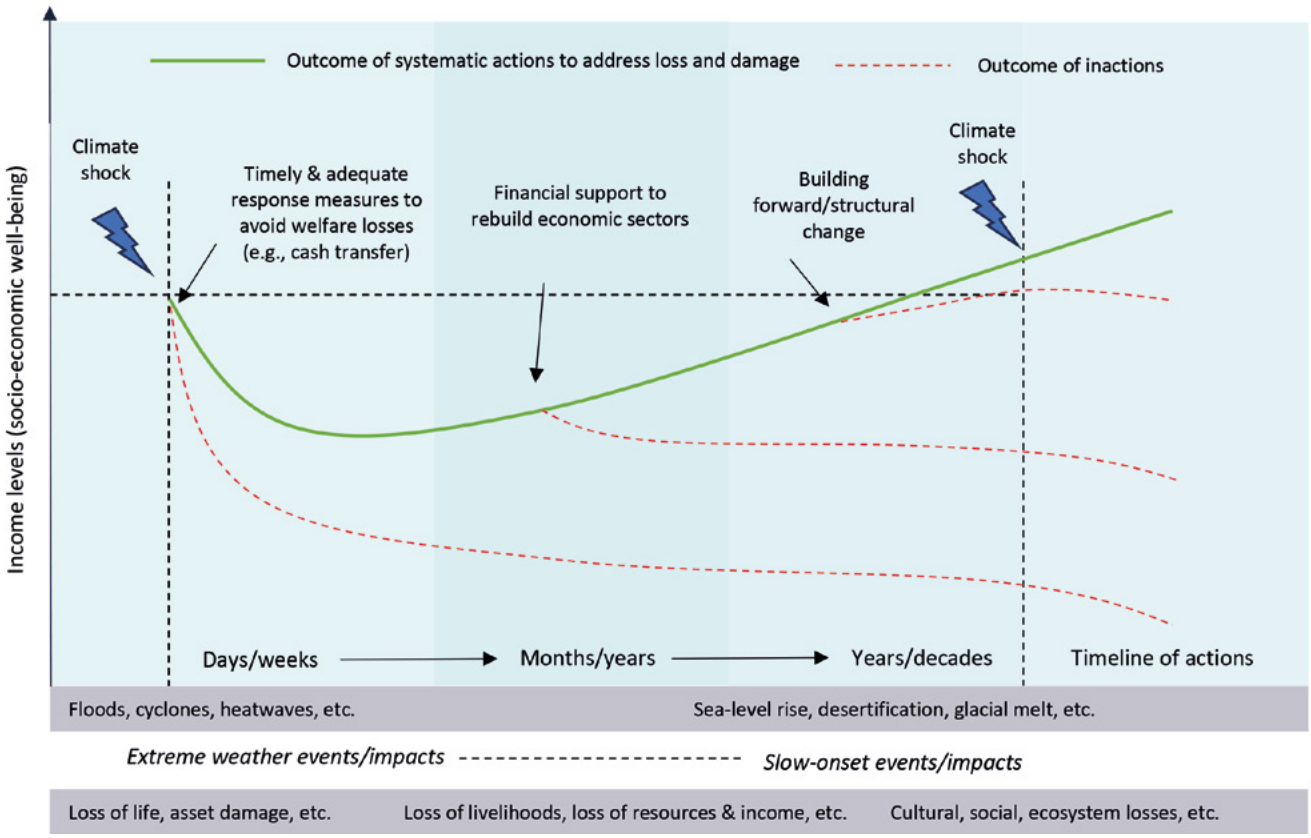
16 In addition to the three measures described here, there are compensation mechanisms – measures that are not about managing risk but which can have important psychological and wellbeing effects. Implementing these measures may require finance, but action is unlikely to be needed immediately or urgently when impacts are experienced. Rather, it needs to be carefully considered and negotiated (see Klinsky, 2016).

example of how income and well-being loss can be avoided through systematic actions to address loss and damage. Here, 'addressing' loss and damage means limiting or otherwise avoiding the welfare losses that may occur due to a climate shock – or in relation to future shocks – through appropriate and timely action. They are about managing the risks associated with climate-related shocks after they happen to ensure a quick and resilient recovery, with sustained resilience to withstand future climate shocks as climate events often don't happen in isolation. Failure to do so might result in more pronounced impacts of future climate shocks and significant reduction in people's well-being. All these measures are likely to require some degree of financial support.

The existing gap in international and national funding to support the three types of response identified above limits the ability of national governments and communities to address climate-related loss and damage. Requirements for humanitarian assistance linked to climate extremes, for example, fell short by an estimated US$28–33 billion during 2017–2022 as funding requirements for such events have risen nearly eight times higher today than they were 20 years ago (Oxfam, 2023).[17] Despite increased adaptation finance in recent years, international finance flows to developing countries are five to ten times below the estimated annual needs of US$160–340 billion by 2030 (UNFCCC, 2023). The unmet funding needs can exacerbate climate-related loss and damage and adversely affect people's well-being in the long term.

17 The gaps in funding for long-term recovery and reconstruction of infrastructure could be several times higher than emergency humanitarian assistance (GFDRR and ODI, 2013; ADB, 2021).

Figure 1 A hypothetical example of avoiding well-being losses through action on addressing loss and damage



Source: Authors

3 How disaster risk finance works

Risk retention and risk transfer instruments can and are being used to address unavoided and unavoidable loss and damage associated with climate change. These can be layered – used in combination depending on the type, scale and frequency of impacts. Risk financing instruments are usually built into the system or set up before impacts are realised, and then triggered or mobilised afterwards.

A wide range of financial mechanisms and instruments have been developed for use by individuals, governments and business to help in managing disaster impact and risks, including after disasters, when financial resources are needed for disaster response, recovery and reconstruction.

The supply of and demand for these disaster risk financing mechanisms is shaped by knowledge and understanding of the different potential impacts of disasters, and how these manifest across geographic and temporal timescales, and for different social groups. Risk assessments (deterministic or probabilistic) and impact assessments or PDNAs are different methods for understanding these impacts. [18, 19]

Purpose of risk financing instruments

Risk finance can be classified according to three different types of instrument for managing risk: (1) risk reduction, (2) risk retention, and (3) risk transfer (see for example, World Bank, 2021; GIZ and ACRI+, 2019; GFDRR, 2014).

Risk reduction instruments are those that aim to reduce the severity of impact of a disaster or climate extreme.[20] These instruments are usually grants or lines of credit used to fund DRR actions such as building flood protection, building new, resilient infrastructure (or retrofitting existing infrastructure), or establishing irrigation and other agricultural extension programmes to reduce drought risk, as well as capacity development projects. Financial instruments intended for risk reduction include, for example, national budget schemes dedicated to risk reduction, international development finance through Official Development Assistance (ODA) including grants and concessional and non-concessional loans, other grants and subsidies, bonds (e.g., resilience bonds) and micro-credit.

Risk retention instruments are used by risk holders (e.g., governments, farmers, businesses and households) to directly finance the costs associated with a disaster using readily available funds. Where the risk holder is a government, these instruments could include, for example, national budget contingencies, reserve funds and contingent loans including access to contingent credit facilities offered by multilateral development banks (MDBs).[21] Many low- and

18 In the context of disaster risk assessment, deterministic risk assessments rely on past data while probabilistic assessments rely on modelled risk data.

19 For more information about the PDNA methodology see UNDP guidelines on PDNAs available here and GFDRR's collection of PDNAs available here.

20 Instruments used for risk retention can also be included in this definition.

21 For example, World Bank's Pandemic Emergency Financing Facility and Catastrophe Deferred Drawdown Option (CAT DDO).

middle-income countries rely on risk retention measures where a majority of the disaster-related funding comes from national budgetary resources. India, for example, has relied heavily on reserve funds (National Disaster Management Fund and State Disaster Management Funds)[22] and other budgetary support to finance post-disaster funding requirements (see Appendix 3: India).

Risk transfer instruments enable the risk holder to share or transfer a part of their risk to the market by paying a premium. These are generally more useful in case of low frequency high severity disasters where risk retention is not economical. Catastrophe insurance (both micro and macro), including parametric insurance and reinsurance,[23] and catastrophe bonds[24] are common examples of such risk transfer instruments. The Caribbean Catastrophe Risk Insurance Facility (CCRIF), the African Risk Capacity (ARC) and the Pacific Catastrophe Risk Insurance Company (PCRIC) are examples of regional risk pooling facilities offering disaster insurance to member countries.

Ex ante or *ex post* financing instruments

Another classification of DRF instruments relates to the timing of their access or application (although DRF is usually used after a disaster). Different financial instruments, or variants thereof, can be used to finance post-disaster funding needs (World Bank, 2021) including those that are procured *ex ante* and *ex post*.

***Ex ante* financing instruments** are pre-arranged before the disaster and typically have a swifter resource mobilisation timeframe once a disaster strikes or hazard parameters are triggered, but they can be expensive to arrange.

These instruments could include budget contingencies, reserves, (re)insurance and risk pools and CAT-bonds.

***Ex post* financing instruments**, on the other hand, are not pre-arranged before a disaster and resources take longer to be mobilised after a disaster strikes. These instruments rely on *ad hoc* provisions of finance and include financing through budgetary reallocations, donor support and domestic and external credit.

22 FONDEN, the national contingency fund for disasters in Mexico, is among other examples of such budgetary arrangements of risk retention.

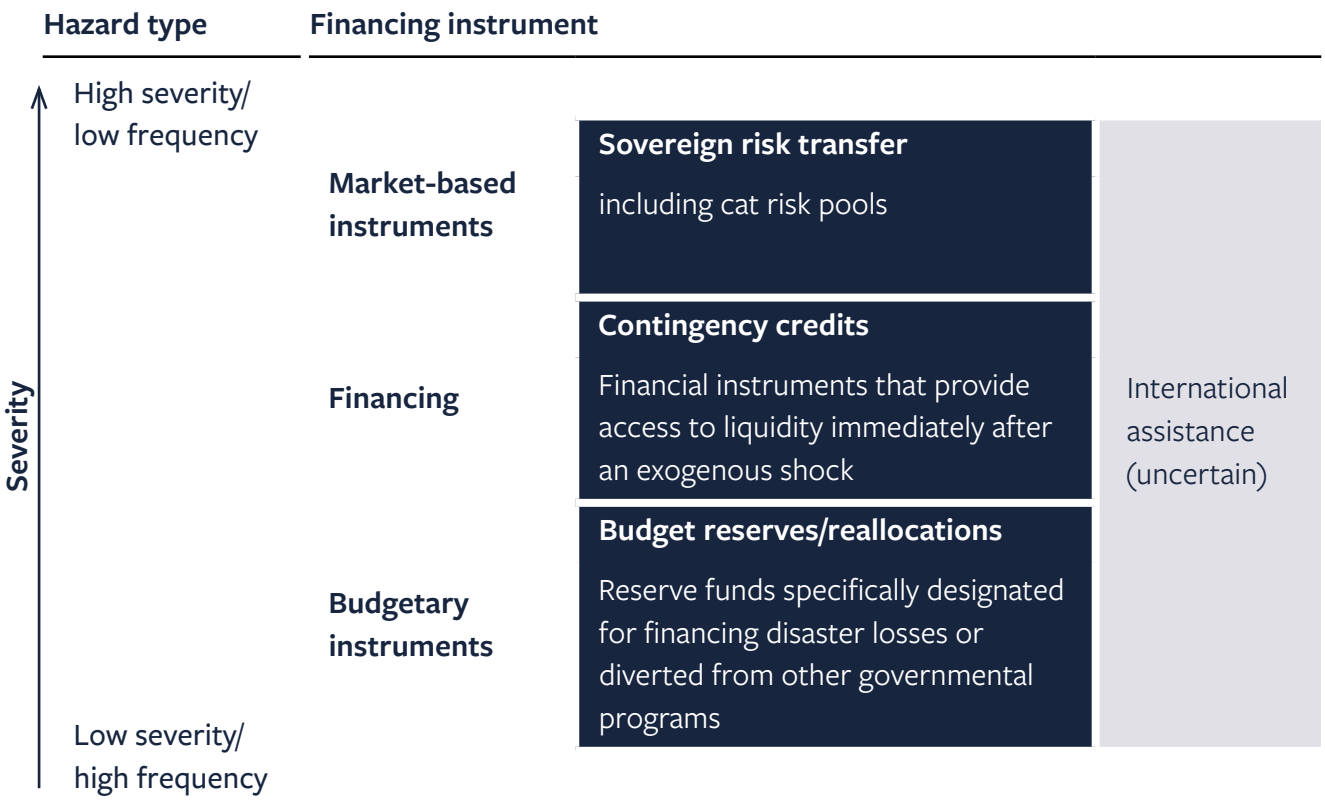
23 Non-parametric insurance, like that used by FONDEN and more recently, the IFRC Disaster Response Emergency Fund (DREF) indemnity policy, is also common. See www.ifrc.org/happening-now/emergency-appeals/disaster-response-emergency-fund-dref.

24 CAT bonds are short-term bonds issued by a sponsor to investors in the capital markets. However, in contrast to normal bonds, they are 'triggered' by a catastrophe. Once triggered, the bond sponsor maintains a portion of the principal and consequently investors lose a portion of principal and interest payments. In this way, they transfer natural catastrophe risk to investors (Meenan et al., 2019).

Relevant DRR finance mechanisms for addressing loss and damage

Disaster risk finance mechanisms that are designed to retain or transfer residual risks have the most relevance for addressing unavoided and unavoidable loss and damage associated with climate change. Such instruments can deliver finance *ex ante* and/or *ex post*. The framework described in the next section draws heavily on these mechanisms and adopts what is commonly referred to as a 'risk layering' approach (see Figure 2), whereby a range of financial mechanisms (e.g., risk retention and risk transfer) and instruments (e.g., reserve funds, contingent credit, insurance) are used by governments to manage risks. Governments may take these risk management decisions, based on the frequency and severity of disasters, the amount and timing of finance needs as well as costs and opportunity costs of using one instrument instead of another (e.g. for risk retention).

Figure 2 A layered approach to disaster risk financing



Source: Adapted from World Bank Disaster Risk Financing and Insurance Program.

4 A national loss and damage finance framework

The national loss and damage finance framework presented in this section can help to identify where finance already exists to address loss and damage, and where the gaps are. Because rapid/extreme and slow-onset events evolve differently (they have different phases), different financing mechanisms are needed to address unavoided and unavoidable impacts. Curative finance through new and additional financial instruments would be needed for 'unaddressed' losses and damages, to complement existing risk financing mechanisms.

This framework is designed to enhance the understanding of DRF in the loss and damage funding arrangements discourse but also to help national governments and their partners understand how existing finance mechanisms can be used to address climate-related loss and damage and identify where the gaps are at the sovereign level.[25] It can likewise add value as relevant actors engage in the design of international loss and damage finance mechanism(s), including bilateral and multilateral finance channelled through national financing structures.

The framework recognises the growing consensus among policy-makers, academics and practitioners that loss and damage finance should be focused on the negative impacts of climate change that are already occurring and will occur – that is, those that are unavoided or unavoidable (in DRM terms, the residual risks) that are beyond the limits of adaptation (Mechler and Deubelli, 2021; Mustapha, 2022; Bhandari et al., 2022; Nand et al., 2023).

Distinctions are made between CCA and DRR finance (for risk prevention and resilience building), risk finance (for unavoided residual risks) and curative finance (for unavoidable and partly unavoided risks).[26] The framework specifically focuses on the phase after a climate shock (or during the shock for slow-onset events), when loss and damage is experienced that is 'unavoided' or 'unavoidable'. The framework therefore deals with measures (and their financing) aimed at responding to, or addressing, the residual risks that haven't been avoided or reduced – those that result in loss and damage (Serdeczny et al., 2016).

25 Examples from four case studies (in Appendices) from Belize, Fiji, India and Mali highlight these gaps and the related challenges and provide examples for how the gaps are being addressed. Globally, the predominant gaps in finance for addressing loss and damage are identified and summarised by UNFCCC (2023); Wenger and Johnson (2023); and Bakhtaoui and Shawoo (2022).

26 This distinction in different risks is based on the building blocks of loss and damage finance as presented in Mechler and Deuballi (2021).

Addressed and unaddressed loss and damage

The framework builds on existing DRM frameworks and risk-layering approaches that are used to understand financing needs, in what are referred to as emergency response, short-term/early recovery and longer-term recovery and reconstruction phases.[27]

This pre- and post-event demarcation is relatively well established in case of extreme weather events; however, the boundaries are more blurred for slow-onset events. Therefore, the framework is bifurcated between finance needed for loss and damage from extreme weather events (Figure 3) and for slow-onset events (Figure 4).

As highlighted in Figure 3, some unavoided climate-related loss and damage are already being addressed using existing risk financing mechanisms (depicted in orange), even where these mechanisms were not explicitly set up to address climate-related loss and damage. These mechanisms focus on emergency response, short-term recovery and longer-term reconstruction and recovery phases. However, a sizeable component of unavoidable loss and damage, and some of the unavoided loss and damage, remain unaddressed (depicted in red).

This unaddressed loss and damage can be economic or non-economic, as well as direct (e.g., infrastructure damage) or indirect (e.g., loss of revenue or economic output).

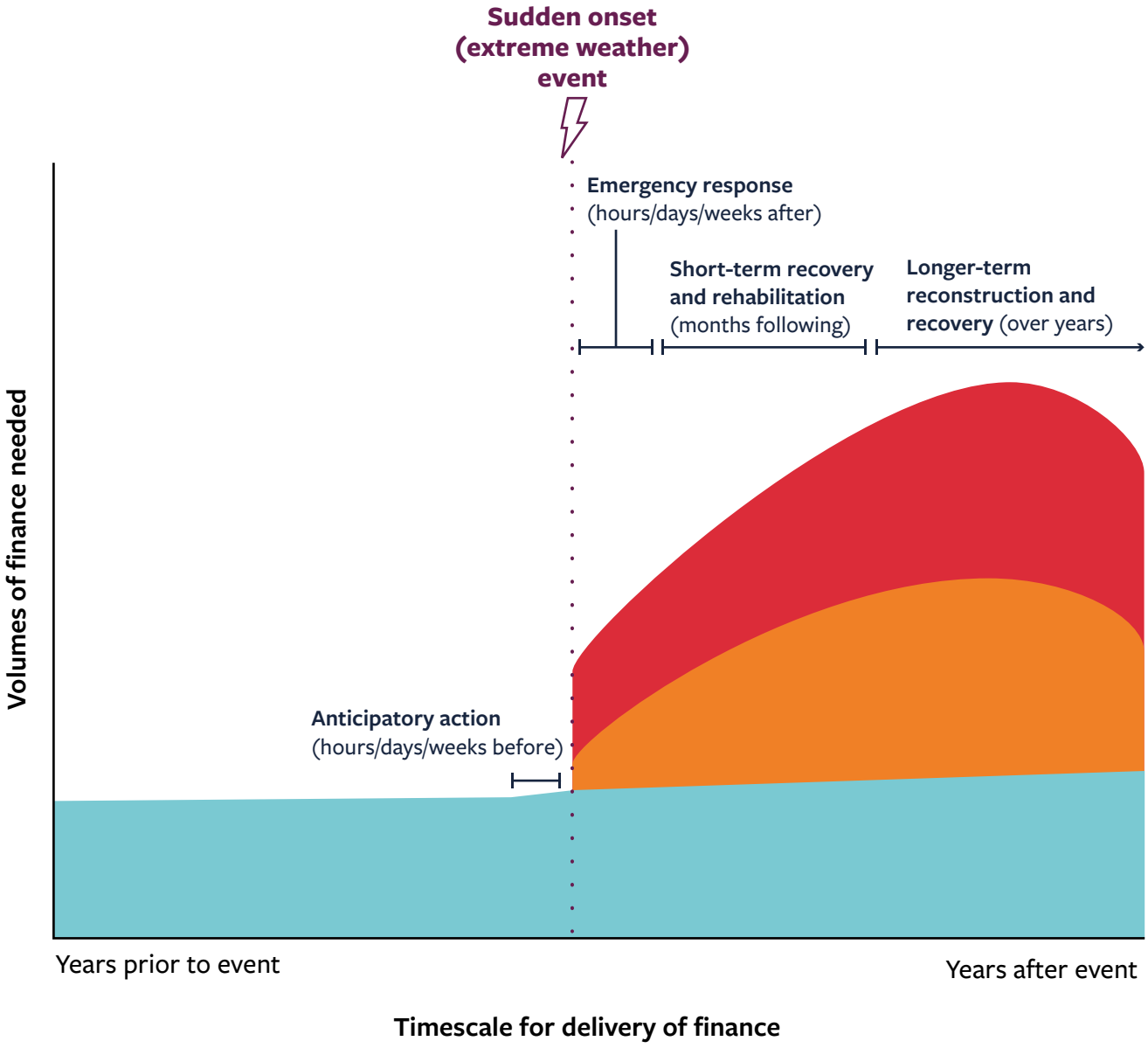
The unaddressed loss and damage – and subsequent finance needs – could be significantly larger for slow-onset events (see Figure 4). Limited finance is currently available for addressing the impacts of slow and gradual climate and environmental processes (e.g., sea-level rise, desertification), which usually become more pronounced and impactful (threatening) when a 'tipping point' is reached (Robinson et al., 2021; Schafer et al., 2021b).[28] CCA and DRR finance (for risk prevention and resilience building) is required continuously for slow-onset events to complement loss and damage finance for manifested impacts. Risk finance and curative finance is required to address unavoidable (and partly unavoided) loss and damage even before a tipping point is reached. There are, however, significant data gaps and uncertainties in relation to whether and when tipping points for SOEs are reached, and these limit understanding of the extent to which finance can be effectively layered to manage the impacts.

27 In general, there can be five phases in a DRM approach: (1) prevention and mitigation, (2) preparedness, (3) post-disaster emergency response, (4) short-term recovery and rehabilitation and (5) long-term recovery and reconstruction (UNDRR n.d.). A comprehensive DRM approach also recognises 'financial protection against disasters' as a critical preparedness measure (GFDRR, 2014).

28 This could be due to the fact that DRR research has mainly focused on sudden onset events in the past (IPCC, 2012; Schafer et al., 2021a).

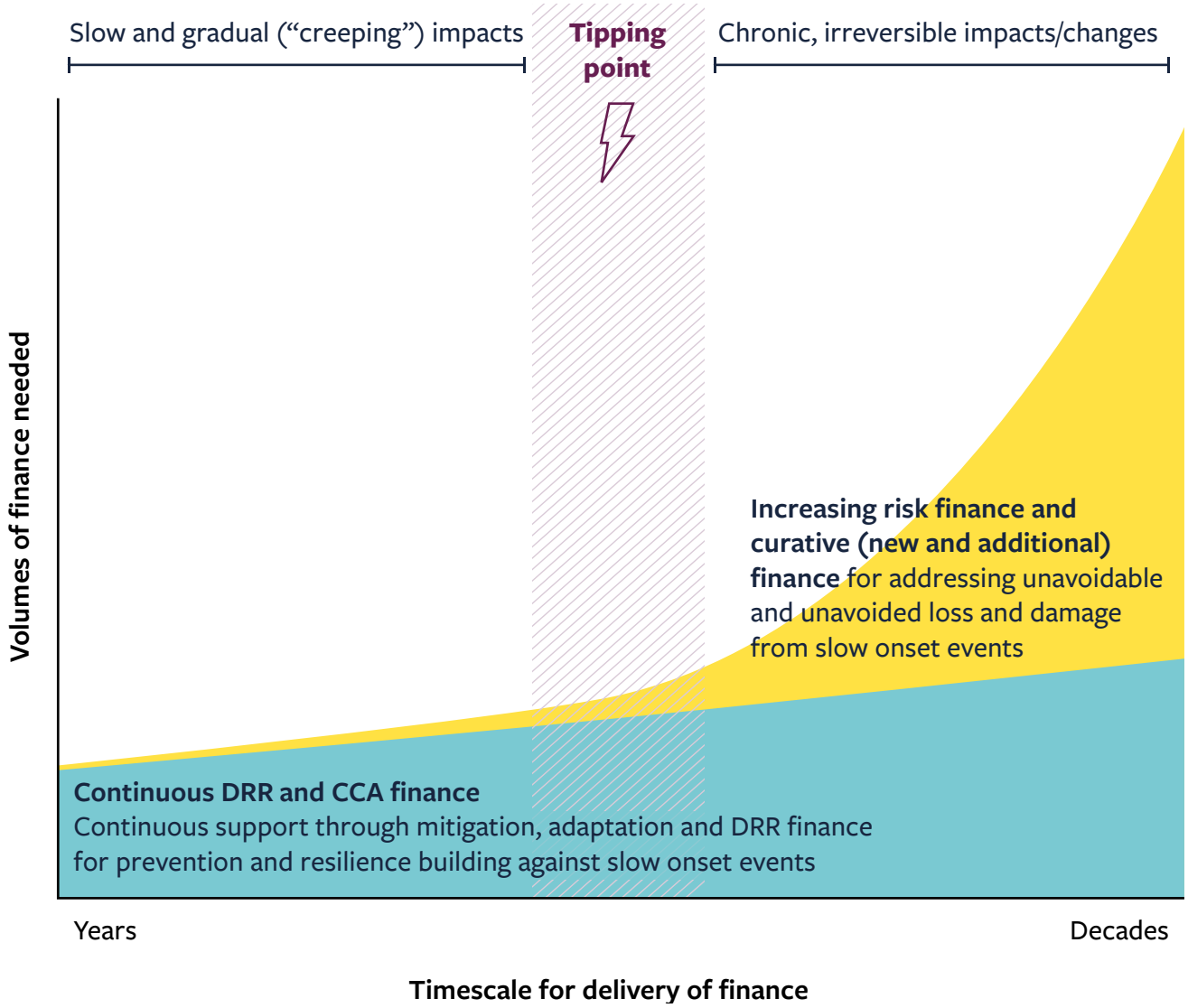
Figure 3 Finance required at the national level to address loss and damage from extreme weather events

- **Curative (new and additional) Loss and Damage finance** for unavoidable and partly unavoided losses and damages
- **Existing risk finance** available to address anavoided losses and damages
- **Continuous DRR and CCA finance** for preventing and building resilience to (anticipated) extreme weather events



Source: Authors

Figure 4 Finance to address loss and damage from slow onset events



Source: Authors

Loss and damage finance to close the funding gap

There are gaps in existing risk financing sources in terms of event coverage (not all climate events are covered), volumes of available finance, and the types of impacts covered. Impact may be both economic and non-economic and caused by sudden onset and extreme events (floods, tropical cyclones, heatwaves and drought) and SOEs (such as coastal erosion, loss of coral reefs, desertification and salinisation); existing DRF instruments are not set up to cover either non-economic loss and damage or SOEs. Overall, existing finance for loss and damage is not sufficient to meet needs, and the institutional arrangements for climate, development and humanitarian finance are inadequate for addressing loss and damage (Bakhtaoui and Shawoo, 2022; UNFCCC, 2023; V20, 2022).

With the current and anticipated increases in climate-related events, the gaps will widen and therefore require increased volumes of finance and more finance mechanisms and instruments for unaddressed loss and damage. New and additional loss and damage finance could be used to address funding gaps based on the priorities of the user.

The loss and damage funding gap, and opportunities to close it, differ according to countries' economic and political contexts. In fragile and conflict-affected settings, for instance, countries and local communities are facing limited access to loss and damage finance, high dependency on often unpredictable and unreliable external humanitarian assistance, and challenges related to lack of impact data and capacity to deliver interventions even when resources are available. In part, this is being tackled through the integration of risk retention and risk transfer instruments within humanitarian institutions, and in efforts to align these with how governments finance response and early recovery. For example, Mali has taken out drought insurance from the ARC, and the World Food Programme has matched this through the ARC Replica product to provide rapid liquidity for humanitarian response operations (see Appendix 4: Mali).

Addressing non-economic losses

Addressing the (unaddressed) non-economic losses (such as loss of cultural heritage, loss of home/displacement and biodiversity loss) is as important as addressing economic losses. In general, economic loss and damage is to some degree addressed through risk financing instruments, but non-economic loss and damage generated by both sudden and slow-onset events remains largely unaddressed[29] as countries lack dedicated assessment and financing mechanisms to do so (van der Geest and Warner, 2020; Mechler and Deubelli, 2021).

There are several examples of countries improving documentation of non-economic losses and putting in place risk retention instruments to address losses and damages from slow-onset events. For instance, the government of Fiji established a trust fund in 2019 to resource planned relocation, which is a strategy of last resort in areas of the country that are highly exposed to extreme weather and slow-onset events. Support from the fund is available to communities who are particularly vulnerable to such events, and who cannot sufficiently address the ongoing challenges through other adaptation options.

Although how to best address non-economic losses is still a matter of debate, it is certainly a gap in the existing finance architecture for loss and damage (Page and Heyward, 2017; Mechler et al., 2019; Panwar and Wilkinson, 2022).

Timescale and amount of financing

The timing and amount of loss and damage finance needed will depend on its intended purpose and the priorities of governments and affected populations. For example, governments do not necessarily require reconstruction funding immediately after a climate event; rather, immediate liquidity is needed to fund emergency response and early recovery operations. The

29 Many countries finance human losses through existing risk financing mechanisms. For example, India has compensation provisions for human deaths and injuries, funded through their national and state disaster management funds.

amount of money required increases significantly however, in the transition from emergency response and early recovery to long-term recovery and reconstruction. Similarly, relatively large sums may be required to address non-economic losses compared with funds needed to address economic losses, and this is most likely to be required or requested in the case of severe but less frequent climate events and/or slow-onset processes happening over multiple years/decades.

Even though recovery and reconstruction finance needs are much greater than those for immediate emergency response, finance for this purpose is often insufficient. It is also not explicitly tracked in many cases, thus complicating assessments. For example, databases of development and humanitarian funding tend to cover immediate post-emergency reconstruction and rehabilitation as separate sectors, whereas longer-term reconstruction is reportable across relevant sectors. It also tends to be multi-year and can thus be 'hidden' in budget allocations towards different sectors.

Some countries are improving provisions for longer-term recovery and reconstruction to close existing gaps. For instance, the Government of India is reforming its national and state disaster management funds to include dedicated recovery and reconstruction funding windows within its risk retention instruments for multiple hazards. Borrowing is another common strategy used by low – and middle-income countries to finance longer-term recovery and reconstruction. However, many countries are not eligible for IMF and MDB concessional instruments due to their income levels; and external borrowing can undermine debt sustainability, especially in countries already in debt crisis. Belize's experience with high indebtedness and a debt-for-nature swap combined with parametric insurance, as well as Fiji's efforts to develop parametric insurance instruments (see Appendices) are examples of countries with high levels of debt seeking innovative solutions to address loss and damage, especially to support recovery.

Mosaic of finance instruments

Where new curative finance is needed for any 'unaddressed' loss and damage, this should align with existing risk finance using a risk layering approach. This is becoming more common in low – and middle-income countries – for example, in Fiji, where the government has been working towards a more strategic approach to risk finance through an integrated national climate and disaster risk financing framework that is based on the idea of risk layering (Government of Fiji, 2020). In practice, Fiji has expanded its disaster risk finance portfolio across different risk layers over the past five years, from an initial reliance on risk retention and ex-post resource mobilisation towards establishing contingent credit arrangements and risk transfer instruments. It has also started putting in place financial instruments to address longer-term climate impacts, particularly climate-induced displacement and relocation (see Appendix 2: Fiji).

Other considerations

There are other important considerations for a national loss and damage finance framework (not highlighted in Figures 3 and 4 to avoid overcomplicating the diagrams). These could include:

- How finance will be delivered – the delivery channels used; how particularly vulnerable groups can be targeted; whether allocation should be needs-based; and the extent of accountability mechanisms required (all of which can draw on experiences with adaptive social protection progammes).
- How non-economic losses can be estimated – including potential use of monetisation methods used in DRR (for example to quantify health impacts of disasters).
- Whether loss and damage finance should prioritise slow-onset events (and related losses and damages).

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Appendix 1 Belize

Belize is particularly vulnerable to the impacts of climate-related risks. The country is prone to storms, floods and droughts (IMF, 2018). Estimated annual average losses from hurricanes in Belize are US$7.7 million (about 0.45% of GDP, as of 2016). However, impacts from individual events can be much higher and can wipe out a significant share of the national economy, with probably maximum hurricane loss (250-year return period) estimated at US$383 million (or 22.6% of GDP in 2016) (World Bank, 2016). The most recent severe storm event demonstrated this destructive potential. Hurricane Lisa made landfall along the coast on 2 November 2022. It was estimated to have affected 172,000 people (about 43% of the population) and to have caused losses exceeding US$120 million (IFRC, 2023; PAHO, 2022), equal to over 4% of the country's 2022 GDP. Previous severe storm events include Hurricane Earl in 2016, with losses amounting to 11% of GDP, and Hurricane Keith in 2000, which caused losses equal to 22% of GDP (World Bank, 2017).

Slow-onset impacts of climate change in Belize include coastal erosion and coral bleaching, driven in part by sea-level rise and increased sea surface temperatures. Coral reefs and mangroves are under serious threat from climate change, as is the protection they offer against the impacts from tropical cyclones, in particular coastal erosion and coastal flooding (Martínez et al., 2022). Overall, climate change is projected to have significant negative impacts on Belize and its economy (IMF, 2018).

Overview of finance for addressing loss and damage in Belize

Belize has strong emergency response plans in place, but the country receives relatively small amounts of aid for disaster response (IMF, 2018) (Table A1.1). Long-term recovery and reconstruction tend to be financed through bilateral loans, but bilateral and multilateral aid flows have been insufficient to support these efforts (World Bank, 2017).

Table A1 ODA grant and loan disbursements for 'emergency response' and 'reconstruction relief and rehabilitation' in Belize (totals in million, constant 2021 US$)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Emergency response	—	—	0.007	0.004	1.276	1.361	—	0.371	0.783	0.347
Reconstruction relief and rehabilitation	—	—	0.936	—	0.278	0.005	—	—	—	0.500
Total	—	—	0.944	0.004	1.553	1.366	—	0.371	0.783	0.847
Total as share of GDP	0.00%	0.00%	0.04%	0.00%	0.06%	0.06%	0.00%	0.01%	0.03%	0.03%
Total as share of total ODA	0.0%	0.0%	2.5%	0.0%	3.0%	2.9%	0.0%	0.7%	1.0%	1.0%

Source: Authors, based on data from the OECD DAC CRS (https://stats.oecd.org/Index.aspx?DataSetCode=crs1#)
Note: The OECD DAC CRS data includes finance towards addressing disasters that are not directly climate related.

Belize has limited contingent budgetary mechanisms or contingent credit lines with development partners to access finance reliably and on guaranteed terms for post-disaster response, recovery and reconstruction (IMF, 2018; World Bank, 2017). In 2018, the IMF recommended that risk finance instruments should be established in Belize to collectively deliver resources of up to 7% of GDP to address disaster risk. This includes a contingency fund at about 1% of GDP to cover immediate post-disaster government contingent liabilities in a cost-effective way. The IMF assessment also suggested that Belize should establish contingent financing arrangements with development partners, deepen engagement with CCRIF and other insurance providers in the region, and explore options to increase the accessibility and affordability of catastrophe insurance for private and public assets (IMF, 2018). This aligns with a World Bank proposal to establish a layered DRF strategy, including a contingency fund or reserves (targeted at events with a five-year return period), contingent credit through development partners (targeting events with a ten-year return period) and insurance for private and public assets and parastatals (World Bank, 2017). Over recent years, the government of Belize has started addressing these gaps. It now has a contingent credit line in place with the Inter-American Development Bank, though this is still considered insufficient to cover losses from more severe events (IMF, 2023). In addition, the government established and capitalised a national contingency fund for the first time in 2022, allocating US$2.5 million (about 0.1% of Belize's 2022 GDP) to the Contingencies Fund for public emergencies under the 2022/2023 budget (Amandala, 2022; Government of Belize, 2022).

Belize has been taking out parametric insurance coverage through CCRIF Segregated Portfolio Company (SPC) intermittently since 2007. The government of Belize received a total payout of US$508,570 following Hurricane Lisa in November 2022. This included US$53,570 released

through the facility's aggregate deductible cover[30] (CCRIF SPC, n.d.). For the 2022/23 and 2023/24 policy periods, WFP (with financial support from European Civil Protection and Humanitarian Aid Operations – ECHO) committed to providing a US$100,000 top-up to Belize's CCRIF tropical cyclone and excess rainfall policy premium payments. The arrangement earmarks a share of any payout from these policies to the government of Belize for cash assistance to be delivered via national social protection programmes to vulnerable people affected by a storm or excess rainfall (Joint SDG Fund, 2023). Hurricane Lisa also triggered the first payout of US$175,000 from the Mesoamerican Reef (MAR) Insurance Programme to finance immediate recovery and restoration of the reef to address damage from the hurricane (ICRI, 2022).

Belize struggled to secure longer-term financial provisioning to address some of the impacts of slow-onset climate risks (IMF, 2018). At the same time, high levels of public debt limited the country's capacity to mobilise resources for disaster response, recovery and reconstruction in the past (IMF, 2018). However, the debt-to-GDP ratio fell considerably in recent years, from 133% in 2020 to 64% in 2022, strengthening Belize's fiscal capacity. A debt-for-nature swap in 2021 contributed nine percentage points to this steep decline (IMF, 2023).[31]

Belize's 2021 debt-for-nature swap

In 2021, the world's largest debt-for-nature swap to date restructured Belize's entire external commercial debt of about US$550 million, equal to 30% of GDP. The swap involved the Belize Blue Investment Company – a subsidiary of The Nature Conservancy – to repurchase debt and Credit Suisse to issue bonds, as well as the US International Development Finance Corporation and private (re-)insurance companies and brokers to de-risk the transactions through political risk insurance and parametric catastrophe insurance (Padín-Dujon, 2023; The Nature Conservancy, n.d.). Of the savings that will result from the swap over the coming two decades, the government of Belize committed US$180 million to marine ecosystem conversation and the protection of 30% of its ocean territory, among other conservation measures (The Nature Conservancy, 2021).

The debt-for-nature swap in 2021 was not specific to loss and damage, but one of its driving factors was the loss of coastal ecosystems and services, which are in part induced by climate change. The swap also helped free up fiscal space and lending capacity that could be used, among other priorities, to mobilise resources for addressing loss and damage from sudden-

30 The Aggregate Deductible Cover (ADC) 'is a special feature of CCRIF's tropical cyclone (TC) and earthquake (EQ) parametric insurance policies. The ADC was designed to potentially provide a payment for TC and EQ events that are objectively not sufficient to trigger the country's main policy because the modelled loss is below the policy attachment point (which is similar to a deductible). The ADC also helps to address the issue of basis risk which is an inherent feature of parametric insurance in which some hazard events are missed by the models underpinning the policies. In this case, the ADC is able to reduce the probability of a missed payment when there may be losses on the ground but the country's parametric insurance policy is not triggered' (www.ccrif.org/aboutus/ccrif-spc-payouts).

31 Other factors included a GDP rebasing that lowered the ratio by 32 percentage points, narrowing of the primary fiscal deficit, economic growth, high inflation and a debt discount from Venezuela (IMF, 2023).

and slow-onset climate risks. The IMF estimates that achieving a debt-to-GDP ratio of below 50% of GDP by 2028 would offer sufficient buffers against more severe and frequent climate-related disasters, and the debt-for-nature swap is contributing towards achieving this target (IMF, 2023).

However, at US$85 million instead of an originally disclosed US$10 million, the transaction costs of the swap ended up being significantly larger than expected (Padín-Dujon, 2023). Debt-for-nature swaps in Belize and elsewhere have also been criticised as lacking transparency, as contradicting international debt restructuring and debt justice principles, and as shifting power over the management of public funds and marine resources away from developing country governments (CFFA, 2022). Overall, the IMF argues that the scope for debt-for-nature and debt-for-climate swaps that involve a limited set of creditors is narrow compared to comprehensive debt restructuring or conditional grants, which may be more effective in achieving debt sustainability and conservation or climate objectives in many contexts.

Nonetheless, there can be an economic rationale for debt-for-nature or debt-for-climate swaps in specific scenarios when '(1) climate adaptation is efficient; and (2) fiscal risks are high, but debt is not necessarily unsustainable', as swaps can create additional fiscal space beyond what climate conditional grants would be able to achieve (IMF, 2022: 5). Swaps may also be preferred in cases where comprehensive debt restructuring involves high reputational or economic costs, and when other options such as concessional climate finance or comprehensive debt relief are simply not available or sufficient (IMF, 2022). In the case of Belize, the 2021 debt-for-nature swap covered all external commercial debt, and thus a relatively large debt share in a country with a high level of debt relative to GDP. Therefore, the swap's impact on the country's debt-to-GDP ratio was significant, but this may not be the case in other countries (Owen, 2022).

Gaps and challenges in disaster risk finance in Belize

Belize's experience highlights potential pathways and challenges for small, highly indebted countries to strengthen fiscal risk management. The country's 2021 debt-for-nature swap freed up resources to invest in conservation, contributed to debt sustainability and a positive macroeconomic outlook (Landers and Lee, 2021), and helped build a buffer to address climate-related loss and damage when they arise, though it did so at relatively high transaction cost (Padín-Dujon, 2023) and with a mechanism that will only make economic sense in some cases (IMF, 2022; Bolton et al., 2022; Owen, 2022). In recent years, Belize has expanded its capacity to provide immediate disaster response and recovery through a contingency fund, a contingent credit line and insurance policies, but the fund is capitalised at 0.1% of GDP and total payouts from CCRIF SPC and the MAR Insurance Programme in 2022 only amounted to 0.024% of GDP – this in the year when Hurricane Lisa caused direct losses exceeding 4% of GDP. The IMF meanwhile recommends establishing insurance, risk retention and contingent credit instruments that could jointly deliver resources of up to 7% of GDP. Gaps also remain with regard to financing low- and medium-severity events and longer-term recovery and reconstruction (World Bank, 2017), as well as in finance for addressing losses and damages from slow-onset climate risks.

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Appendix 2 Fiji

Fiji is among the countries with the highest estimated average annual losses from disasters relative to GDP in the Asia Pacific Region (UNESCAP, 2023). This is largely driven by tropical cyclones and droughts, which have been estimated at US$237 million (5.4% of GDP) and US$104 million (2.4% of GDP) of average annual loss respectively under current climate scenarios (UNESCAP, n.d.). In addition, the government of Fiji has estimated that fluvial floods cause losses of about 2.6% of GDP and pluvial floods about 1.6% of GDP each year, but that both are largely underreported in historical events databases due to the relatively small scale of individual events (World Bank, 2021). The most devastating tropical cyclone event that impacted Fiji in recent history was Tropical Cyclone Winston in 2016. The cyclone was estimated to have caused F$1.99 billion (about US$900 million) in loss and damage across different sectors. The Fijian Ministry of Economy suggested that about F$216 million (US$100 million) would be required for recovery and F$1.71 billion (about US$800 million) for reconstruction after the event (Government of
Fiji, 2016).

Projections of future trends in precipitation and extreme climate events are relatively uncertain for Fiji. While tropical cyclones are projected to affect Fiji less frequently, it is unclear how large this decrease will be, and it is possible that cyclones increase in intensity (measured as wind speed) at the same time (World Bank, 2021, citing Walsh et al., 2015). Climate change will negatively affect Fiji in the longer term through the degradation of natural resources, coral reefs and fisheries. Severe coral bleaching, declines in coral abundance, declines in seagrass communities and mangrove seaward edge retreat are already documented (Mycoo et al., 2022). It is also likely that expected sea-level rise will increase a range of climate-related risks, including inundation, coastal erosion, saline intrusion, storm surges and king tides (World Bank, 2021a; Government of Fiji et al., 2017).

Overview of finance for addressing loss and damage in Fiji

Until recently, the government of Fiji relied almost entirely on risk retention through contingency funds and budgetary instruments, along with *ex post* budget reallocations, external assistance, borrowing and private donations to address losses and damage from disasters (ADB, 2019; World Bank, 2015). The government's ongoing contingency fund for disaster risk, which is intended to fund short-term humanitarian response, relief and rehabilitation efforts, was allocated F$1 million in the 2022/23 and 2023/24 budgets (about US$451,000 as per the August 2023 exchange rate). In addition, the 2023/24 national budget includes contingencies for immediate recovery and restoration of services within key sectors, such as F$3.9 million (US$1.8 million) in water and F$7 million (US$3.2 million) in roads (Government of Fiji, 2023).

External assistance has offered relatively small contributions towards immediate emergency response, reconstruction relief and rehabilitation of about 0.2% of GDP on average per year between 2012 and 2021 – though the sector makes up a relatively large share of overall ODA allocations to Fiji, at an average of 6.7%, reaching as high as 25% following Tropical Cyclone Winston in 2016 (Table A2).

Table A2 ODA grant and loan disbursements for 'emergency response' and 'reconstruction relief and rehabilitation' sectors in Fiji (totals in million, constant 2021 US$)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Emergency response	4.7	2.4	0.9	0.7	26.3	2.4	0.8	1.6	6.2	13.5
Reconstruction relief and Rehabilitation	5.5	1.0	0.1	1.0	7.0	20.9	2.2	0.3	—	11.1
Total	10.2	3.5	1.1	1.6	33.3	23.3	3.0	1.9	6.2	24.7
Total as share of GDP	0.22%	0.07%	0.02%	0.03%	0.61%	0.40%	0.05%	0.03%	0.13%	0.53%
Total as share of total ODA	10.64%	3.91%	1.13%	1.34%	24.50%	14.43%	2.29%	1.31%	2.99%	4.04%

Source: Authors, based on data from the OECD DAC CRS (https://stats.oecd.org/Index.aspx?DataSetCode=crs1#)
Note: The OECD DAC CRS data includes finance towards addressing disasters that are not directly climate related.

Concessional borrowing, especially through the Asian Development Bank (ADB) and the World Bank, has been an important instrument to enable rehabilitation work and longer-term post-disaster reconstruction (ADB, 2019). This was the case in the aftermath of Tropical Cyclone Winston, as well as in 2021, when the World Bank provided US$110 million from the International Development Association (IDA) Crisis Response Window to the government of Fiji to address impacts from Covid-19 and several tropical cyclones (World Bank, 2021b).[32] However, Fiji's debt level has increased in recent years, reached 90% of GDP in 2022, where impacts from the Covid-19 pandemic and coinciding severe tropical cyclones in 2020 and 2021 exacerbated previous trends, threatening debt sustainability and fiscal resilience (World Bank, 2023).

To complement its risk retention provisions, Fiji has been establishing disaster contingent credit and risk transfer mechanisms over the past two years. This is despite earlier scepticism about available insurance attachment points, as well as the upfront minimal cost and loan access implications of contingent credit arrangements (ADB, 2019). The country currently maintains

32 Fiji has been eligible for concessional finance through IDA under the small island exception since 2019, recognising the country's level of vulnerability despite its upper–middle-income country status (UN DESA, 2022).

a Catastrophe Deferred Drawdown Option (CAT-DDO) with the World Bank, which can immediately make available financing of up to US$10 million if Cabinet declares a natural disaster (Government of Fiji, 2023).

Fiji is a member of the Pacific Catastrophe Risk Insurance Foundation (PCRIF), but as of July 2023, it had not purchased any insurance coverage through the associated insurance entity, the Pacific Catastrophe Risk Insurance Company (PCRIC). In its 2023/24 budget, the government for the first time allocated F$2.5 million (about US$1.1 million) towards parametric insurance (Government of Fiji, 2023). The government is now considering PCRIC tropical cyclone and excess rainfall coverage and is 'in discussion with development partners on the possibilities of premium subsidy' (BDO, 2023: 17). Public and private assets in Fiji are largely uninsured against climate risks, and many houses and businesses have been uninsurable under the common underwriting standards and practices in the country (ADB, 2019).[33] Tackling the need for reform, the country has generated innovation in the insurance sector in recent years with the development of new property insurance products with adapted underwriting approaches (ADB, 2019), parametric insurance products targeted at farmers, fishers and small business owners (UNCDF, 2023; WTW, 2022) and coral reef insurance (ADB, 2022).

Coral reef insurance in Fiji

In 2022, the ADB approved US$3.8 million to support the development of coral reef insurance and other financial instruments to enable coral reef restoration, conservation and management in Fiji, Indonesia, the Philippines and Solomon Islands. The project is financed jointly through the Asia-Pacific Climate Finance Fund (ACliFF), which provides US$2.5 million, and the Global Environment Facility (GEF), which makes US$1.3 million available through its Challenge Program for Adaptation Innovation (though Fiji is not receiving GEF support under the project) (ADB, 2022; GEF, n.d.).

In Fiji and elsewhere, tropical cyclones can severely damage coral reefs, with knock-on effects for societies depending on ecosystem services for their livelihoods. At the same time, coral reefs provide protection, reducing risk of flooding and coastal erosion from sea level rise and storms (GEF, n.d. citing Beck et al., 2018 and Spalding et al., 2016). After Tropical Cyclone Winston, the government estimated F$232.5 million (about US$105 million) of damage to native forests, mangroves and coral reefs, and F$629.8 million (US$285 million) in environmental losses, including expected three-year losses from services of these ecosystems. In addition, losses to the fisheries sector from damage to fisheries assets alongside the losses in production capacity of fish habitats that include coral reef ecosystems were estimated at an additional F$165.9 million (US$75 million) (Government of Fiji, 2016).

To address some of these losses and damages, the GEF, the ADB and the governments of Fiji, Indonesia, the Philippines and Solomon Islands established a 'Partnerships for Coral Reef Finance

33 While non-life insurance penetration in Fiji has been high compared to other Pacific countries, this is largely driven by the tourism sector, with very low penetration at the household level (World Bank, 2015).

and Insurance in Asia and the Pacific'. This builds on a previous scoping study and initial steps towards product development for coral reef insurance under different initiatives, which have been progressing since 2019 (GEF, n.d.; UNDP, 2023; Young and Wharton, 2020). As of 2022, three use case concepts were under discussion for further development: (1) interruption of marine protected area management, (2) tourism sector protection, and (3) marine heatwaves. Potential target buyers of these products include tourism businesses such as hotels, resorts and tour operators, philanthropic organisations, civil society organisations and local cooperatives, government agencies and blue finance stakeholders. Next steps towards product development consist of reef modelling exercises in priority areas and continued engagement with stakeholders in Fiji to design the most promising concepts from the initial use cases, followed by piloting the reef insurance product (UNDP, 2023).

Box A1.1 Climate and disaster displacement and non-economic losses in Fiji

Between 2010 and 2021, 189,000 people (about 20% of the 2021 total population) were internally displaced by disasters in Fiji (IDMC, 2022). Such displacement, as well as planned relocation as a way to address direct climate-related losses and damages, can result in significant non-economic losses for people affected. Non-economic losses associated with climate-related displacement in Fiji include psychological trauma and exacerbation of inequalities, cultural erosion, lost development gains, damage to public health, loss of adjacency, forced behavioural shifts, ability to live on ancestral lands, guardianship of sacred sites and loss of cultural heritage sites (Lund, n.d.; Climate Tok, SEEP, n.d.; Government of Fiji, 2016).

In 2023, the government of Fiji issued standard operating procedures (SOPs) to guide planned relocation, which is considered as a strategy of last resort to adapt to disasters and slow onset climate change related events in highly exposed areas of the country (Office of the Prime Minister – Fiji, 2023a). The SOPs are complemented by financial management policy guidelines endorsed in 2023 that govern a Trust Fund set up by the government of Fiji to resource the relocation of people displaced by climate change (Office of the Prime Minister – Fiji, 2023b). The government of Fiji contributes 3% of the revenue it raises from VAT on prescribed services, a plastic levy, a superyacht levy and income tax to the fund; and intends to fundraise for bilateral and multilateral contributions to scale up the Trust Fund over time. Support from the fund is available to communities who are particularly vulnerable to sudden and/or slow-onset events, and who cannot sufficiently address the ongoing challenges through other adaptation options (Office of the Prime Minister – Fiji, 2023c). The government of Fiji's efforts around planned relocation point to a number of gaps in financing for loss and damage:

1. Human mobility issues are sensitive and context specific and therefore difficult to align with safeguards of existing multi-lateral funds.
2. 100% of funds received by Fiji's trust fund to date have been through domestic sources while previous relocations were funded by a mixture of bilateral partnerships.

3. Climate change driven loss and damage arises from a confluence of factors limiting the potential to pre-determine a trigger or set of scenarios from which to design and apply traditional insurance products.
4. Humanitarian aid and disaster risk financing operates within a very specific part of the impact continuum.

Non-economic loss and damage is not addressed within current normative financing arrangements. (Lund, 2023: slide 9).

Gaps and challenges in disaster risk finance in Fiji

Fiji has been expanding its disaster risk finance portfolio over the past five years, from an initial reliance on risk retention and ex-post resource mobilisation towards establishing contingent credit arrangements and risk transfer instruments. The development of a suite of new parametric insurance products against tropical cyclones and excess rainfall, in particular, aims to make resources available quickly to government, businesses and households, as well as to those with an interest in restoring and protecting ecosystems, to address direct loss and damage in a timely manner and avoid indirect ones, e.g. in the case of business continuity coverage. Fiji has been using budget allocations and borrowing from MDBs to finance longer-term recovery and reconstruction, but it has recently been grappling with a spike in debt – a challenge that many Small Island Developing States face and that has been stifling capacity to effectively address climate related losses and damages in those countries. Projected longer-term climate impacts and non-economic losses are relatively well documented in Fiji and the government has been a global forerunner in establishing a financial mechanism to address climate-induced displacement and planned relocation. This experience highlights the importance of understanding connections between sudden and slow-onset processes, as well as economic and non-economic losses. It also recognises the non-linearity of climate change impacts and the limitations of the traditional disaster management cycle in such complex contexts. Lastly, it highlights the important role of national governments and local communities in shaping strategies and finance requirements (Lund, 2023). For example, experience with community relocation as a strategy of last resort in Fiji highlights the importance of including all social groups in the relocation planning process to foster positive outcomes (Mycoo et al., 2022 citing Piggott-McKellar et al., 2019).

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Appendix 3 India

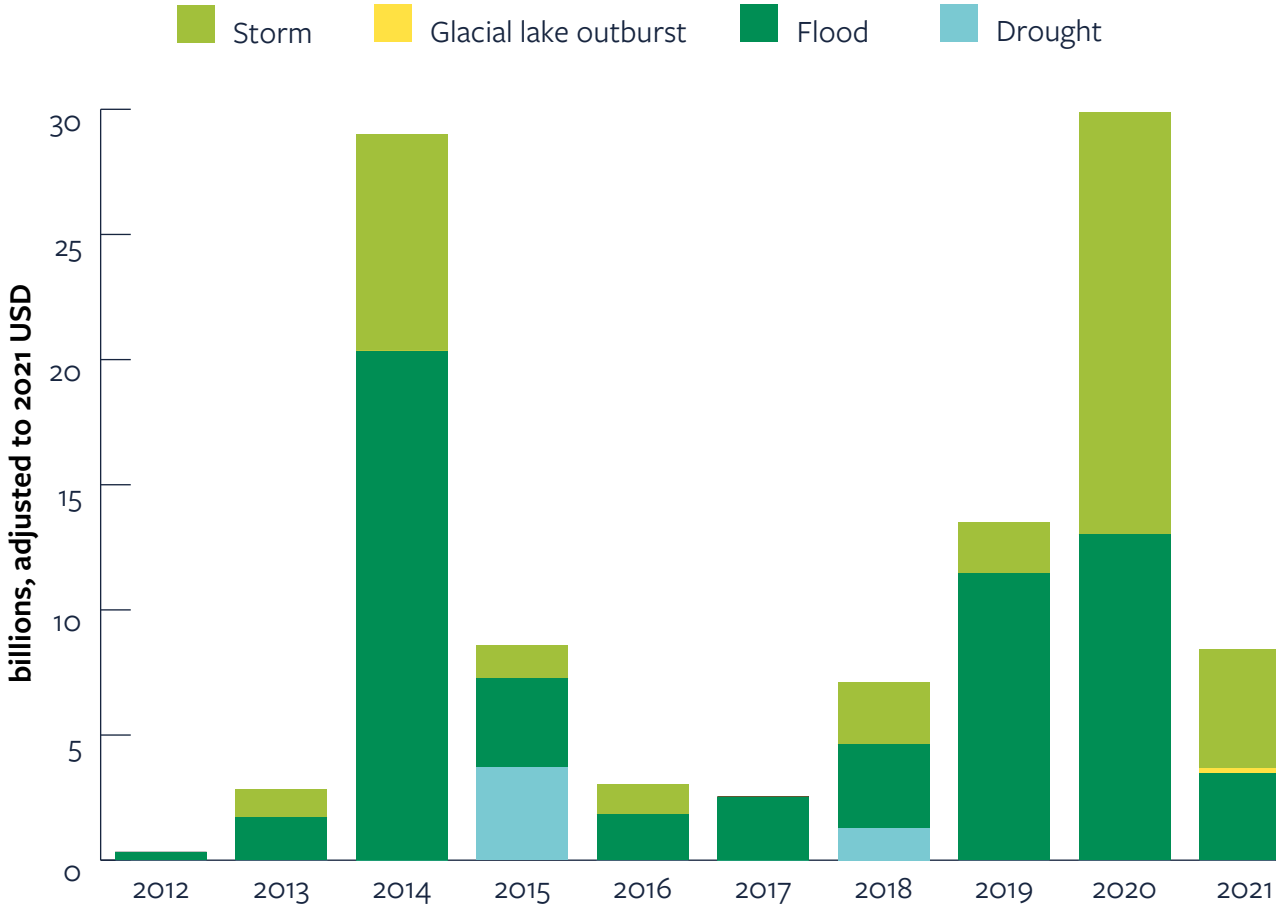
India is particularly prone to floods, storms and heatwaves. The country is also at risk from other climate and weather-related hazards, including drought, wildfire and glacial lake outbursts. Between 2012 and 2021, India accumulated a recorded average of US$10.5 billion per year in damages and economic losses directly or indirectly related to such events (Figure A3.1). Probabilistic estimates indicate that the available historical records of climate-related losses and damages in India may still drastically understate actual impacts, especially for drought. Average annual losses from drought in India are estimated at about US$72 billion (about 2.8% of GDP), from floods around US$11.3 billion (0.4% of GDP) and from tropical cyclones US$3.4 billion (0.1% of GDP) under current climate scenarios, and even higher under a scenario with 2°C warming (UNESCAP, 2023; UNESCAP, n.d.).

The probability of drought events that are caused by combined hot and dry conditions in India – such as that of 2015, which resulted in significant loss of lives and crop loss insurance claims of an estimated US$594.5 million in Maharashtra State – has already increased as a result of climate change and is expected to triple from its current level in a 2°C warming scenario (Zachariah et al., 2023a). Similarly, severe heatwaves – such as those of 2022 and 2023 – have already become more probable. In the future they will become hotter and a further 2 to 20 times more likely if the global mean temperature increases by 2°C (Zachariah et al., 2022; Zachariah et al., 2023b). Other impact from slow-onset processes include environmental degradation, coastal and river erosion, and declining coral reefs along the coastline (UNESCAP, 2023; Panda, 2020).

Overview of finance for addressing loss and damage in India

A central component of disaster risk finance in India are the National Disaster Response Fund (NDRF) and State Disaster Response Funds (SDRFs), discussed in more detail below. Complementing government dedicated funds, state governments have been allocating budgetary resources to facilitate response and relief (Finance Commission, 2020). Table AIII-1 shows the aggregate state expenditure on disaster response and relief between 2011/12 and 2018/19.

Figure A3.1 Recorded damages from climate and weather-related hazards in India 2012–2021 (billion, constant 2021 US$)



Source: Authors, based on data from EM-DAT (https://public.emdat.be/)

Note: The EM-DAT database includes records of extreme temperature and wildfire events for the 2012-2021 period, but does not provide damage estimates for these events. Thus, those hazard categories are not included in the above figure.

Table A3.1 Aggregate expenditure of 28 states on disasters (totals in million, constant 2021 US$)

	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19
Aggregate states' expenditure on disasters	3,098.1	2,264.6	3,161.5	3,240.6	5,481.1	4,670.0	2,475.5	4,401.0
Expenditure as share of 2012–2021 annual average recorded climate and weather-related damage	29%	22%	30%	31%	52%	44%	24%	42%

Source: Authors, based on Table 8.1 in Finance Commission (2020) and EM-DAT (https://public.emdat.be/).
Note: See also Annex 1 in Bindal et al. (2021) for a breakdown of economic losses compared relative to SDRF by state for the same period.
Note: State aggregate expenditure towards disasters may include addressing disasters that are not directly climate related. Shares are estimates that were calculated using damage data from EM-DAT, which heavily under-records the value of economic losses (https://doc.emdat.be/docs/known-issues-and-limitations/specific-biases/).

In addition to SDRF, NDRF and budgetary resources, India accesses development finance to address loss and damage from climate-related disasters. World Bank and ADB loans in particular have been supporting early to long-term recovery and reconstruction projects in Indian states, for instance after large-scale flood and cyclone events (Finance Commission, 2020; World Bank, 2016; Bindal et al., 2021). ODA grant and loan disbursements towards 'emergency response' and 'reconstruction relief and rehabilitation' sectors amounted to an average of about US$19 million and US$16 million per year respectively between 2012 and 2021 according to OECD records; though this also includes finance to address non-climate related disasters, such as Covid-19 in 2020 and 2021. On average, these disbursements are relatively small, representing about 0.3% of annual recorded damages from climate and weather-related hazards in India (Table A3.1).

India does not currently hold a sovereign insurance policy or catastrophe bond, but the Ministry of Agriculture and Farmers' Welfare promotes and subsidises the Pradhan Mantri Fasal Bima Yojana (PMFBY). The PMFBY is an insurance scheme covering farmers against crop losses, including from climate and weather-related perils such as storms, floods or droughts (MAFW, n.d.). At sovereign level, the Indian government has recognised the limitations of risk retention and
is exploring options for a diversification in financial instruments for disaster management.
A first proposed step towards this is to explore the feasibility of different insurance mechanisms: (1) a national insurance scheme for disaster-related deaths; (2) synchronising relief assistance with the PMFBY, (3) a national risk pool for infrastructure protection and recovery set up with an insurance company, and (4) international reinsurance to cover low-frequency, high-intensity hazard events (Finance Commission, 2020).

Table A3.2 ODA grant and loan disbursements for 'emergency response' and 'reconstruction relief and rehabilitation' sectors in India (totals in million, constant 2021 US$)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Emergency response	17.9	24.2	25.5	21.3	11.2	10.5	16.6	6.8	11.7	48.8
Reconstruction relief and rehabilitation	0.5	0.4	0.1	0.1	7.8	2.3	22.0	24.6	25.1	77.3
Total	18.4	24.7	25.6	21.4	19.1	12.8	38.6	31.5	36.8	126.1
Total as share of GDP	0.001%	0.001%	0.001%	0.001%	0.001%	0.000%	0.001%	0.001%	0.001%	0.004%
Total as share of total ODA	0.5%	0.5%	0.5%	0.4%	0.3%	0.2%	0.6%	0.5%	0.7%	1.9%
Total as share of 2012–21 annual average recorded climate and weather-related damage	0.2%	0.2%	0.2%	0.2%	0.2%	0.1%	0.4%	0.3%	0.3%	1.2%

Source: Authors, based on data from the OECD DAC Creditor Reporting System (https://stats.oecd.org/Index.aspx?DataSetCode=crs1#) and EM-DAT (https://public.emdat.be/)

Note: The OECD DAC CRS data includes finance towards addressing disasters that are not directly climate related.

India's funds for disaster response, recovery and reconstruction

The NDRF is financed through the national calamity contingency duty (levied on products such as tobacco and crude petroleum) and budgetary provisions. For the 2023/24 financial year, the Indian Ministry of Finance allocated Rs 8,780 crore (over US$1 billion as of August 2023) to the fund (PRS, 2023; Ministry of Finance, 2023). Allocations to the SDRFs are shared between the central and state governments (Finance Commission, 2020).

While the primary responsibility for disaster management is at the state level and supported by the SDRFs, state governments can request additional technical and financial assistance from the NDRF when their state level resources are exhausted (Ministry of Home Affairs, 2021; Finance Commission, 2020). This system aims at providing resources for disaster assistance on a predictable and reliable basis (Finance Commission, 2020). In practice, however, the amounts allocated to states from the NDRF totalled less than half of what states requested in all years between 2018/19 and 2020/21 (PRS, 2023). To manage increasing requests from states to the

NDMF, the 15th Finance Commission's[34] 2021–2026 report proposed cost sharing between national and state governments to increase gradually with the amount requested (up to 25% state contribution for requested assistance exceeding Rs 500 crore). It also recommends that allocations to state governments for disaster management should be made on the basis of a combination of exposure, hazard, vulnerability and capacity indicators going forward – rather than only on previous levels of expenditure as was the case in the past; and that a simplified process should be used to determine and release allocations from the NDRF to states in a faster, more efficient and more transparent manner (Finance Commission, 2020).

Further, the 15th Finance Commission suggested a key reform to the NDRF and the SDRF to better serve different functions of disaster management. This would see the NDRF and SDRF incorporated under the umbrella of a national and state-level disaster risk management funds (NDRMF and SDRMF), which would also include newly established risk mitigation funds (NDMF and SDMF). While the NDRF and SRRF would remain intact, they would be split into three specific funding windows: Response and Relief (with 40% of the total NDMF earmarked for this purpose), Recovery and Reconstruction (30%), and Preparedness and Capacity Building (10%) (Figure A3.2). This proposed split is meant to close the gaps that state governments have faced with regard to accessing finance for recovery and reconstruction. In the past, they had no dedicated facility in place for this purpose and were largely dependent on loans from MDBs, which needed to be approved by the national government and were dependent on the state's overall borrowing. Without earmarking, disaster management funds tended to be swallowed up by response and relief (Finance Commission, 2020).

Much of the focus of the NDRF and SDRF was on addressing the immediate impact of sudden-onset events in the past, but the new proposed structure shifts the focus towards longer-term recovery and reconstruction. It also starts explicitly addressing some slow-onset climate impacts like rising seas levels and erosion along rivers and in coastal areas. This is reflected in a proposed Rs 1,000 crore (US$120 million) allocation to provide alternative settlements and government assistance to address erosion-induced displacement via the recovery and reconstruction window of the NDRF, complemented by a 10% cost sharing allocation from state governments (Finance Commission, 2020).

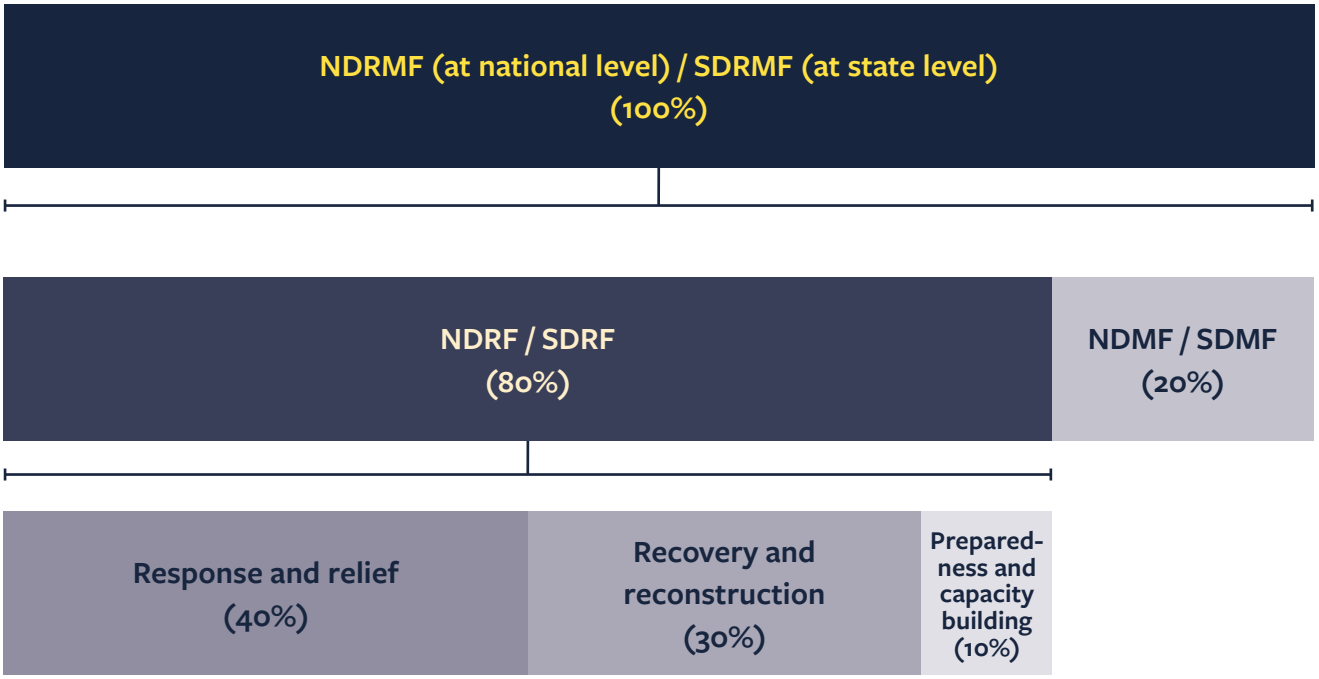
Gaps and challenges in disaster risk finance in India

India is primarily relying on risk retention to finance disaster response through its state – and national-level disaster response funds. Recent reform efforts have aimed at stabilising

34 "The Finance Commission is a Constitutionally mandated body that is at the centre of fiscal federalism. Set up under Article 280 of the Constitution, its core responsibility is to evaluate the state of finances of the Union and State Governments, recommend the sharing of taxes between them, lay down the principles determining the distribution of these taxes among States" (https://fincomindia.nic.in). The 15th Finance Commission's recommendation on disaster risk management and finance were translated into concrete guidelines on constitution and administration by the Ministry of Home affairs in 2022 (https://ndmindia.mha.gov.in/images/Guidelines.PDF and https://ndmindia.mha.gov.in/images/P&CB%20approved%20guidelines.pdf).

contributions to these funds, and at ensuring that they include earmarked shares to address not only short-term response and relief requirements but also longer-term recovery and reconstruction and some slow-onset climate related impacts from coastal and river erosion. However, the combined capacity of the NDRF and SDRFs is limited compared to the estimated current and future average annual losses and damages from climate-related sudden and slow onset disasters. The 15th Finance Commission deemed the existing disaster risk financing arrangements in India 'less than adequate in terms of both sources and application' (Finance Commission, 2023: 231). Despite the framework that has been established, gaps remain with respect to the sources of disaster-related expenditure and the growing risks brought on by climate change (Panwar et al., 2022).

Figure A3.2 Earmarked funding for response and relief and recovery and reconstruction



Source: Finance Commission (2020)

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Appendix 4 Mali

Mali, a Least Developed Country located in West Africa, is exposed to significant drought and flood risk. The World Bank estimates that about 400,000 people (1.9% of the 2019 population) on average are affected by droughts and 500,000 (2.4% of the population) affected by floods each year. The recent severe drought periods in 2020 and 2022 affected an estimated 6.8 million people (32% of the 2020 population) and 1.7 million people (7.5% of the 2022 population), respectively.[35] Droughts are likely to result in US$9.5 million (0.05% of 2019 GDP) of agricultural income loss per year, on average. Floods are expected to cause an average US$10 million (0.06% of 2019 GDP) in crop damage and US$250 million (1.4% of 2019 GDP) in damage to buildings per year; in addition to exposing road infrastructure, education and health facilities (World Bank, 2019).[36] Droughts and rainfall variability have repeatedly contributed to severe food crises in Mali, including in 1972–1974, 1983–1985, 2002–2003, 2011–2012, 2015–2018 and 2021–2022 (World Bank, 2019; FONGIM and Mali Food Security Cluster, 2022). So far, scientists have struggled to determine the role of climate change in the specific 2021–22 food crisis event due to uncertainties in the observational data in Mali, calling for investments in rain gauge networks to better understand drivers of drought (World Weather Attribution, 2022).

Climate projections indicate a rise in temperature between 2.0 and 4.6 °C in Mali by 2080. Annual rainfall is expected to decrease by 10mm on average over the same time, while dry and wet periods are likely to become more extreme (Tomalka et al., 2020). Given the population's already high vulnerability to erratic rainfall, climate change is expected to negatively impact water availability, transport infrastructure, agricultural production and human health, and likely to cause substantial economic losses as a result (ibid.; World Bank, 2022).

Overview of finance for addressing loss and damage in Mali

A considerable amount of money for addressing loss and damage from climate-related disasters in Mali is mobilised through the international humanitarian system. Between 2012 and 2021, Mali received on average over US$182 million per year in ODA towards humanitarian emergency response to climate-related and other events; and about US$15 million per year towards immediate post-emergency reconstruction and rehabilitation (Table A4.1).[37] Grants

35 Based on data from EM-DAT, CRED / UCLouvain, Brussels, Belgium (www.emdat.be)

36 Data on materialised loss and damage from climate-related risks is limited for Mali. The EM-DAT database recorded seven drought events and 22 flood events for the period 2000–2022, but includes no information on economic losses and damages from any of these events. The same applies to the 1,553 entries available for flood, drought, thunderstorm, windstorm and hailstorm in Mali over the same period in the DesInventar database (www.desinventar.net/DesInventar/profiletab.jsp).

37 Authors' calculations based on data from the OECD DAC CRS, accessed July 2023. The figures exclude ODA for longer-term reconstruction, which is reportable against the respective sectors and therefore difficult to disentangle and analyse from the available database.

and concessional loans are important sources of public financing more generally and Mali is at moderate level of debt distress. However, the country is experiencing political instability and in 2022 was temporarily restricted in mobilising funds from the regional financial market, the West African Economic and Monetary Union (WEAMU), due to sanctions from the Economic Community of West African States (ECOWAS) following the 2021 coup d'état (World Bank, 2022; Risemberg, 2022).

Table A4.1 ODA grant and loan disbursements for 'emergency response' and 'reconstruction relief and rehabilitation' sectors in Mali (totals in million, constant 2021 US$)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Emergency response	263.0	216.7	209.6	154.5	154.1	131.5	170.0	169.5	182.9	168.9
Reconstruction relief and rehabilitation	0.2	5.8	13.3	23.7	12.6	22.7	28.4	18.9	17.0	7.9
Total	263.1	222.5	222.9	178.3	166.7	154.1	198.3	188.4	199.9	176.8
Total as share of GDP	2.0%	1.7%	1.6%	1.2%	1.1%	0.9%	1.1%	1.0%	1.1%	1.0%
Total as share of total ODA	23.5%	15.1%	16.9%	12.1%	11.4%	9.6%	11.2%	9.1%	11.2%	11.7%

Source: Authors, based on data from the OECD DAC CRS (https://stats.oecd.org/Index.aspx?DataSetCode=crs1#)
Note: The OECD DAC CRS data includes finance towards addressing disasters that are not directly climate related.

The Government of Mali has a dedicated National Agricultural Support Fund (Fond National d'Appui à l'Agriculture – FNAA) in place for climate change adaptation and mitigation, but only a small part of the fund (about US$84,000) is set aside for disaster response in the sector (World Bank, 2022). Grain reserves and government and partner funds are established in Mali to respond to food insecurity, including the Fonds de Sécurité Alimentaire (FSA), the Fonds Commun des Partenaires (FCP) and the Fonds Commun de Contrepartie (FCC) (CSA, 2022a). However, these have suffered from insufficient resourcing, delays in fund mobilisation and difficulties with replenishment in the past (CSA, 2011).

National adaptive social protection systems are still nascent in Mali. There is experience with using social protection in response to the economic impacts from Covid-19 in the country, but the capacity to analyse and cost the implications of different shocks, as well as the commitment of government budget and financing to ensure a timely social protection response to shocks, is particularly weak in Mali – both compared to other G5 countries and compared to other building blocks of adaptive social protection such as data and information or delivery systems in Mali itself

(World Bank, 2022). Most agricultural holdings in Mali are not insured against climate-related risks, though new index-based crop and livestock insurance products have been tested and offered in recent years.[38]

ARC and ARC Replica coverage in Mali

At the sovereign level, Mali has been purchasing drought coverage from ARC Ltd with donor support to premium payments for several agricultural seasons since 2015/16. The World Food Programme (WFP) started taking out ARC Replica Coverage[39] in the 2019/2020 season (Table A4.2).[40]

Table A4.2 ARC and ARC Replica coverage in Mali, 2014–2022

Agricultural season	ARC coverage	ARC payouts	ARC Replica coverage (WFP)	ARC Replica payouts (WFP)
2021/2022	15,000,000	14,535, 969	7,362,989	7,136,192
2020/2021	—	—	15,000,000	—
2019/2020	15,000,000	—	12,677,009	—
2018/2019	—	—	—	—
2017/2018	12,632,609	—	—	—
2016/2017	15,000,000	—	—	—
2015/2016	15,000,000	—	—	—
2014/2015	—	—	—	—

Source: Compiled based on data from the African Risk Capacity (https://www.arc.int/risk-pools)

In 2022, the government of Mali and WFP received the first round of payouts from ARC Ltd (Table AiV-2). WFP announced the US$7.1 million Replica disbursement in February that year, following the end of the harvesting period for most major cash and food crops. The payout was triggered by a lack of rainfall in 2021, which diminished agricultural production and increased food security risks primarily in the regions of Kayes, Gao, Mopti, Segou and Timbuktu. The Replica payout was intended to support WFP's emergency response and resilience-building interventions between March and May 2022, following a country operational response plan jointly prepared by WFP and the government of Mali. The joint plan was developed to facilitate a coordinated and timely response (WFP, 2022a).

38 This includes for instance a bundled crop insurance and weather and climate advisory services product (Lancel, 2023) and a recent World Bank feasibility study of index-based livestock insurance, which indicates that about 60% of Mali's livestock has potential to be covered following further in-depth analysis (Yan et al., 2023).

39 African Risk Capacity's Replica Coverage allows UN agencies and other humanitarian actors to match ARC country insurance policies (www.arc.int/arc-replica).

40 The rainy season in Mali lasts from around June to October. Seasonal harvesting, depending on the crop, takes place between August and February the following year (https://data-in-emergencies.fao.org/documents/hqfao::mali-crop-calendar/about).

However, as a result of the 2021 coup d'état and Mali's subsequent suspension from the African Union, the first major ARC payout to the government of Mali could not initially be made. ARC invested 'significant efforts ... to find alternative solutions' to resolve the situation (Hillier et al., 2022: 45) and ended up channelling the payout to a third-party implementer instead (WFP, 2022b). In May 2022, Mali's national Food Security Commission (CSA) convened the country's ARC technical coordination and management group to refine the detailed work programme for implementation of the national ARC operational response plan and in June 2022, the CSA announced that activities funded by the ARC payout were underway as part of the government's 2022 national food insecurity response plan, the Plan National de Réponses (PNR) 2022 (CSA, 2022a-c). As a further consequence of the sanctions to Mali, donors were unable to provide subsidies directly to the government in support of its ARC premium payment in the past, even though these subsidies had already been under negotiation when sanctions were applied (Scott et al., 2022).

Gaps and challenges in disaster risk finance in Mali

The political and economic context in Mali means that the country is limited in its ability to make use of available climate-related disaster risk financing options for addressing loss and damage in a timely and effective way. This has been, and will continue to be, a major challenge for any financial mechanism aimed at addressing loss and damage in Mali, as well as in fragile and conflict situations in other countries. Humanitarian assistance is plugging some of the gaps in the immediate emergency response and early recovery stages of a crisis to meet acute humanitarian needs, but leaving indirect losses and non-economic loss and damage, longer-term recovery, reconstruction and rehabilitation, and the slow-onset impacts from climate change largely unaddressed.[41] In addition, it may not be appropriate to channel loss and damage finance through humanitarian agencies rather than national structures or local civil society organisations representing affected populations. It is unclear how much ODA overall is currently being made available to address climate-related loss and damage in Mali.

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41 It is important to note that efforts to speed up humanitarian response, including through disaster risk financing mechanisms such as ARC (Replica), may aim to reduce and mitigate indirect losses in the first place, as shown in Figure 3 in chapter 3 of the main report.

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