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Research Report Making headway on loss and damage: Bridging policy, research and practice

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MAKING HEADWAY ON LOSS AND DAMAGE

Bridging policy, research and practice

Lily Salloum Lindegaard, Heidi White and Zoha Shawoo

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Cover photo:

Leyte, Philippines. 15 November 2013: A man walks amidst destroyed houses in one of the villages in Tacloban city, in the province of Leyte. Super Typhoon Haiyan, locally known as 'Yolanda' and among the strongest recorded typhoons, pummelled through central Visayas on 9 November 2013 leaving widespread devastation in the region and over 6,300 people dead in the Philippines alone. According to the World Meteorological Organisation, the impacts of Typhoon Haiyan were more extreme because of climate change. ZUMA Press, Inc. / Alamy Stock Photo.

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ABBREVIATIONS

AF	Adaptation Fund
AILAC	Independent Alliance of Latin America and the Caribbean
AOSIS	Alliance of Small Island States
AR6	IPCC Assessment Report 6
BC	British Columbia
CMA	Conference of the Parties serving as the meeting of the Parties to the Paris Agreement
COP	Conference of the Parties
CRD	Climate Resilient Development
EWS	Early Warning Systems
FbF	Forecast-based Financing
G77	Group of 77
GCF	Green Climate Fund
GDP	Gross Domestic Product
GHG	Greenhouse Gas
IPCA	Indigenous Protected and Conserved Area
IPCC	Intergovernmental Panel on Climate Change
IPCC WGII	Intergovernmental Panel on Climate Change Working Group II
KBIB	Kanaka Bar Indian Band
L&D	Loss and Damage
LDC	Least Developed Country
NbS	Nature-based Solutions
NDC	Nationally Determined Contributions
NEL	Non-economic loss and damage
ODA	Official Development Assistance
OECD	Organisation for Economic Co-operation and Development
SB	Subsidiary Bodies
SIDS	Small Island Developing States
SLR	Sea Level Rise
UNFCCC	United Nations Framework Convention on Climate Change
V20	Vulnerable Twenty
WIM	Warsaw International Mechanism
WIM ExCom	Warsaw International Mechanism Executive Committee

EXECUTIVE SUMMARY

Losses and damages are increasingly felt across the globe, with the most vulnerable countries and populations most affected. At the same time, processes around Loss and Damage under the United Nations Framework Convention on Climate Change (UNFCCC) are characterised by divergent positions and slow progress. This is despite the recognition in the Paris Agreement of 'the importance of averting, minimising and addressing loss and damage associated with the adverse effects of climate change'.

This report provides input to support Loss and Damage deliberations towards COP27 and beyond. To do so, it bridges policy, research and practice, assessing the latest knowledge and developments within Loss and Damage, and identifying gaps and possible ways forward.

Loss and Damage has developed as a policy space from 1991 to the present. Yet even as losses and damages on the ground are increasingly documented and devastating, divergent positions and understandings of Loss and Damage continue to undercut progress in international processes. This has limited action in practice, especially in addressing losses and damages. In contrast, efforts to avert and minimise losses and damages are already well underway through established mitigation and adaptation mechanisms.

Despite policy challenges, experience from research and practice is growing as climate change impacts – including losses and damages on the ground – intensify. The latest assessment report from the Intergovernmental Panel on Climate Change (IPCC) describes 'widespread, pervasive impacts' from climate change already now, and projects increasingly severe impacts at higher levels of warming. Efforts to minimise and address these impacts already exist in a range of fields – disaster risk

reduction, adaptation, humanitarian assistance, and conservation, among others. However, significant losses and damages remain un- or under addressed, particularly related to slow onset events, non-economic losses, losses (contra damages), and existential losses.

Experience from research and practice provides important input to real-time policy developments within Loss and Damage. These developments include discussions about funding arrangements for activities to avert, minimise and address Loss and Damage in the Glasgow Dialogue; the institutional arrangements to fully operationalise the Santiago Network; and the governance arrangements for the Warsaw International Mechanism (WIM). These three issues are critical to ensuring that the WIM can effectively carry out its functions and deliver solutions for frontline communities, yet there are clear sticking points.

Based on its assessment of policy, research and practice, this report identifies the following key gaps within the field of Loss and Damage and details possible ways forward, with focus especially on the UNCCC policy space. Addressing these gaps will ensure major advances within Loss and Damage policy and action:

GAP 1: Policy attention to addressing losses and damages, as efforts to date have focused more on averting and minimising.

GAP 2: Further development of knowledge of un- or under-addressed losses and damages, particularly slow onset, non-economic losses (rather than damages) and existential losses.

GAP 3: Designing approaches and modalities to respond to losses and damages, as these can be unprecedented in nature or scope.

GAP 4: Finance, especially for addressing losses and damages, as current funding gaps are limiting responses to losses and damages.

GAP 5: Operationalise a fit for purpose Santiago Network, to enhance action and support to loss and damage, including finance, technology and capacity building.

GAP 6: Clarity on the governance arrangements of the WIM, so it can better fulfill its mandate and support effective loss and damage action within the UNFCCC.

GAP 7: Coordination and institutionalisation across actors and scales, to align efforts and link sub-national and national processes with international efforts.

GAP 8: Making progress through the politics of Loss and Damage, to meet acute and growing needs in practice.

1. INTRODUCTION

Kutubdia, Bangladesh, July 2009: Sandbags on the seashore to protect houses from rising sea levels due to climate change. Photo: Salvacampillo, Shutterstock.

Sand Contraction

'Loss and Damage' has fast moved to the forefront of climate policy as climate change impacts intensify across the globe. More intense and frequent storms, sea level rise, droughts, rainfall variability, crop diseases and pests are on the rise (IPCC 2022: 9–11). The 'extent and magnitude' of such impacts are greater than previously assessed (IPCC 2022: 9), with 'widespread, pervasive impacts to ecosystems, people, settlements, and infrastructure' (ibid.). This translates into increased and diverse losses and damages – loss of human lives, of biodiversity, of economic outputs, of cultural heritage, and damage to human health, to property and to economic productivity, to name a few (ibid.). Such losses and damages are evident across continents, affecting both rich and poor countries and communities. However, vulnerable communities and developing and small island states are especially affected, linked to exposure, vulnerability and lack of ability to cope with the effects of climate change (IPCC 2022: 12).

Even as severe impacts are increasingly tangible at 1.1°C of warming, global mean temperatures continue to climb. Emission reduction pledges remain grossly inadequate to meet the 1.5°C goal, which the IPCC characterises as 'not considered "safe" for most nations, communities, ecosystems and sectors', and posing 'significant risks to natural and human systems' (IPCC 2019: 44). Instead, current policy scenarios put the world on track towards up to 2.7°C of warming (UNEP 2021) with potentially catastrophic consequences where no adaptation actions are possible. At the same time, adaptation responses, although scaling up considerably, have been inadequate and underfunded when contrasted with the magnitude of what is needed (IPCC 2022: 2617), and will not be able to prevent all loss and damage. Rather, we are seeing the window for adaptation action narrow as temperatures increase (IPCC 2022: 43).

Further efforts to avert, minimise and address loss and damage, and develop knowledge and mechanisms for doing so, are therefore crucial. Significantly strengthened mitigation action in line with the 1.5°C goal of the Paris Agreement to avert further loss and damage, and scaled-up adaptation action to minimise the same will be critical. At the same time attention to addressing loss and damage is also needed, as it is already pervasive and widespread and is occurring across development contexts, i.e. even with robust resources and capacities it is not entirely preventable and, moreover, is clearly projected to worsen as temperatures rise.

International climate change responses will thus increasingly be faced with losses and damages. Responding to these will require considerations around institutional and financial arrangements as well as improved knowledge of losses and damages and relevant responses. However, addressing losses and damages in international

MULTIPLE UNDERSTANDINGS OF 'LOSS AND DAMAGE'

One fundamental challenge in loss and damage discussions is the multiple and at times competing understandings of loss and damage.

Within the UNFCCC regime, the COP Decision establishing the Warsaw International Mechanism (WIM) (2/CP.19) describes loss and damage as follows:

"...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".

Loss and damage is further described in the text of the Paris Agreement as: '...associated with the adverse effects of climate change, including extreme weather events and slow onset events, and the role of sustainable development in reducing the risk of loss and damage'.

The IPCC distinguishes the concept as follows:

The concept of Loss and Damage (with capitalised letters, L&D) refers to the discussion point under the UNFCCC, 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 of losses and damages refer broadly to harm from (observed) impacts and (projected) risks (IPCC, 2018a). The IPCC report uses the latter for its assessment on loss and damage which may provide useful information for the former (IPCC 2022: 170).

These definitions leave room for interpretation and differing approaches to loss and damage as illustrated by recent efforts to classify loss and damage typologies, described in Section 2.3 below. These different interpretations of loss and damage prompt differing policy approaches and proposed solutions. It is therefore important to be aware of them when engaging in discussions of loss and damage.

climate negotiations is challenging; there are strongly divergent perspectives and approaches to loss and damage among negotiating parties, and in some instances questions of loss and damage involve non-UNFCCC actors. In addition, meaningful progress requires an integrated understanding of loss and damage not only as a policy issue, but as a complex reality experienced by societies around the world. Drawing on the IPCC differentiation, this study uses capitalised 'Loss and Damage' to refer to loss and damage within UNFCCC processes and lower case 'loss(es) and damage(s)' to refer to negative current and predicted future impacts of climate change.

This study seeks to bridge policy, research and practice in Loss and Damage, spanning discussions across the negotiating table as well as lived experiences of loss and damage on the ground. Its main aim is to assess the current status and gaps in loss and damage action, with a focus on UNFCCC efforts, to identify what is working and which areas will require additional action for 'averting, minimising and addressing losses and damages', which the international community has recognised as important in the Paris Agreement.

To do so, it takes a three-fold approach as set out in more detail below. It briefly reviews the development and status of loss and damage from both scientific and policy perspectives, then assesses growing experience from research and practice, and finally analyses recent policy developments and challenges, seeking to integrate insights from research and practice into policy discussions.

- The review of the development and status of Loss and Damage sheds light on the development of Loss and Damage in international climate change negotiations. It first provides a brief overview of the latest science of losses and damages, i.e. the realities on the ground to be addressed through international efforts. It then outlines the status of main topics and positions, providing insight into the perspectives of different actors and groups, which continue to shape negotiations today.
- The assessment of research and practice examines key research findings and practice-based experiences of how losses and damages are being felt and addressed across the globe. It presents case studies of various aspects of loss and damage assessment and response, e.g. slow and sudden onset climaterelated events, economic and non-economic losses, across both human and natural systems and also considers risk-based approaches to minimising and addressing losses and damages.
- The analysis of recent policy developments and challenges examines three main unresolved issues in current negotiations, namely: funding arrangements for loss and damage, the institutional arrangements to fully operationalise the Santiago Network and the governance arrangements for the WIM. These three issues are critical to ensuring that the WIM can carry out its functions effectively and deliver solutions for frontline communities, yet there are clear sticking points.

Data collection and methods

Many of the topics assessed in this report are evolving quickly. At the same time, literature on the latest policy developments and their implications is highly limited. The analysis in the report therefore draws on multiple data collection methods to capture up-to-date information and diverse perspectives on these topics, as well as relevant scientific literature and other assessments. These methods include a literature review, a document review, observation of relevant meetings, workshops and negotiations, and stakeholder consultations, as further described below.

- For the literature review of scientific and grey literature, keyword searches were conducted on the Web of Science database of academic literature, through Google searches, and through Google Scholar searches to identify relevant documents from both scientific and grey literature. Keywords were selected based on the topics included in the terms of reference for this study¹ as well as the report outline developed by the project team. In the search process, these keywords were paired with the term 'loss and damage' to achieve more specific results. Keywords included, among others, 'Article 8 of the Paris Agreement'; 'paragraph 51 of decision 1/CP.21'; 'WIM ExCom'; 'Santiago Network for Loss and Damage'; 'WIM governance'; 'slow onset events'; 'sudden onset events'; 'economic and non-economic'; 'risk reduction'; 'residual risk'. Abstracts of search results were collected and checked for relevance against the project description and outline, and those documents with aims and findings relevant to the focus of the study were reviewed further. These documents were supplemented by published and unpublished materials outside the above review, including some shared by the project steering group when they were judged by the project team to be relevant to the scope and focus of the study as outlined in the terms of reference and report outline.
- The document review entailed review of policy documents, specifically UNFCCC documents such as COP/CMA decisions, submissions, and Party proposals related to the themes discussed in the report. Outputs from the WIM and its three expert groups, technical expert group and task force were also reviewed, drawing on the websites for each. The authors also conducted a review of the IPCC Assessment Report 6 Working Group II Contribution, which provides a recent synthesis of climate change-related knowledge. This included a review of the Summary for Policymakers, the Technical Summary, and a keyword search of the remainder of the document, where keywords were identified and searched, as outlined above, and sections with these keywords were reviewed and included where relevant.

- In addition, the authors attended negotiation sessions; meetings of the WIM ExCom; the technical workshop on the Santiago Network in May 2022; presidency-led consultations on the Santiago Network throughout 2020 and 2021; meetings with the UK COP26 Presidency as a member of the Adaptation and Loss and Damage Friends Group; and the Glasgow Dialogue at SB 56.
- The authors also conducted stakeholder consultations, mainly in the form of informal consultations with negotiators and other stakeholders during negotiating sessions and in additional informal consultations, both in person and virtually. These encompassed diverse stakeholders, including developed and developing country Parties as well as practice-based organisations and non-governmental organisations (NGOs). Observation and consultations provided data supporting the analysis of Loss and Damage as a policy space, understandings of Loss and Damage, and positions and responses (Section 2) as well as analysis of recent policy developments and challenges (Section 4) and provided up-to-date and nuanced information in a rapidly evolving and at times highly political space.

In data collection and analysis, efforts to avert, minimise and address losses and damages were considered in order to illustrate the current landscape of efforts and actors within Loss and Damage, including where efforts exist and where these are lacking or not currently adequate. Focus was especially directed to minimising and addressing losses and damages (see Section 2.1.).

Aims and findings

On the basis of its assessment of policy, research and practice, the study identifies critical gaps in knowledge, policy and practice and suggests potential ways forward within Loss and Damage towards COP27 and beyond. Here, the report focuses especially on addressing losses and damages as this emerges in our analysis as under-addressed by current efforts. Section 5 identifies and describes the following key gaps and lays out potential ways forward within each, including in international policy processes, research and practice:

- GAP 1: Policy attention to addressing losses and damages
- GAP 2: Further development of knowledge of un- or under-addressed losses and damages
- GAP 3: Designing approaches and modalities to respond to losses and damages
- GAP 4: Finance, especially for addressing losses and damages
- GAP 5: Operationalise a fit for purpose Santiago Network
- GAP 6: Clarity on the governance arrangements of the WIM
- GAP 7: Coordination and institutionalisation across actors and scales
- GAP 8: Making progress through the politics of Loss and Damage

This assessment of gaps and ways forward can serve as a tool for negotiators and other actors working with Loss and Damage by highlighting where attention should be focused to secure progress towards COP27 and beyond – and by supporting action for those communities and countries enduring acute losses and damages already now.

San Francisco, California, USA, 8 September 2018: Thousands march in San Francisco in the Rise for Climate rally in advance of the Global Climate Action Summit. Pacific islanders carry signs and banners reading 'The Pacific is our homeland' and 'We are not drowning. We are fighting.' Pacific islands and SIDS have played an important role in the development of Loss and Damage as a policy space. Photo: Shelly Rivoli / Alamy Stock Photo.

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2. FROM SCIENCE TO POLICY: THE DEVELOPMENT OF LOSS AND DAMAGE



This section presents an overview of the current science of loss and damage as well as topics, understandings and positions on Loss and Damage as a policy space. These are interlinked; as new evidence on loss and damage becomes available, positions and understandings continue to shift, albeit slowly.

2.1. SCIENCE OF LOSS AND DAMAGE

Losses and damages emerge when efforts to mitigate and adapt have not been adequate to avoid 'harm from (observed) impacts and (projected) risks' (IPCC 2022: 170). In this report, we use 'avert', 'minimise' and 'address' to refer to: 'mitigation to avert loss and damage... adaptation to minimise loss and damage and... addressing loss and damage from the impacts of climate change that are not avoided by mitigation and adaptation' (Achampong and Roberts 2022). This is in line with the IPCC understanding of 'those residual losses and damages that are felt beyond the adaptation actions taken' (IPCC 2022: 170), as well as the language used by a range of actors within the Loss and Damage policy space. Losses and damages are thus closely linked to mitigation and adaptation action.

To date, mitigation action has brought us closer to the temperature goals of the Paris Agreement albeit only putting these tenuously within reach. The world is currently experiencing 1.1°C of mean warming, with the effects unevenly distributed, generally affecting low-income countries most negatively (OECD 2021). The latest UNEP Emissions Gap Report, which tracks the difference between emissions pathways and temperature goals, states that '[t]here is a fifty-fifty chance that global warming will exceed 1.5°C in the next two decades, and unless there are immediate, rapid and large-scale reductions in GHG emissions, limiting warming to 1.5°C or even 2°C by the end of the century will be beyond reach' (UNEP 2021: iv). Current emissions reduction pledges will 'only have a limited impact' on these projections (ibid.). Highly ambitious action is therefore urgently needed to reach the temperature goals of the Paris Agreement and to avert further losses and damages.

As the impacts of existing levels of warming are increasingly felt, adaptation action has intensified. The latest IPCC report describes significant progress in adaptation, including in planning and implementation across regions and sectors (IPCC 2022: 20). An indication of increasing adaptation action is the scaling-up of funding to adaptation and a greater emphasis on balance in climate finance between mitigation and adaptation. However, this has been uneven. There are gaps including, for instance, in finance to vulnerable countries and communities (IPCC 2022: 84), and

action to date has largely relied on incremental approaches which limit opportunities for transformational approaches that have the potential to overcome soft limits to adaptation (IPCC 2022: 20, 26). While significant progress has been made in adaptation, thereby minimising losses and damages, there is a continued need for heightened adaptation action.

Despite these mitigation and adaptation efforts, losses and damages are already being felt around the world. Countries in the Global South are often geographically more exposed to the effects of climate change (OECD 2021, Jensen and Jabczyńska 2022). A recent assessment found that the most rapid climate changes are occurring in tropical oceans, followed by North Africa and the Middle East and then other tropical land areas. It describes how 'the average relative change in extreme heat is 50% higher for a person in a Least Developed Country (LDC) compared to global average increase. Meanwhile, OECD members experience relative changes in extreme heat slower than the global average' (OECD 2021: 9). Moreover, poorer countries and populations are generally less able to address losses and damages as they have fewer means with which to do so. At the same time, low-income countries and their populations have contributed much less to the global emissions driving anthropogenic climate change than high-income counties have (ibid.).

Losses and damages linked to the effects of climate change are diverse and already extreme.

Losses and damages linked to the effects of climate change are diverse and already extreme, as illustrated in Figure 1. The figure provides examples, rather than a full overview of various kinds of losses and damages, drawing on the most recent IPCC assessment report.

The figure presents excerpts directly from the most recent IPCC report (AR6). In addition to these excerpts, it is important to note that the IPCC report documents a range of other losses and damages, for instance relating to human health, human mobility, economic losses and slowed reduction of inequality globally, among many others. These provide a crucial contribution to our knowledge base on losses and damages as a global community and are drawn on throughout this report. In addition, to present the nuances and lived experiences of losses and damages, four empirical case studies describing losses and damages by scholars representing the communities and countries in focus are also provided in Section 3.

Figure 1. IPCC findings on losses and damages

Overall messages on loss and damage

- Human-induced climate change...has caused widespread adverse impacts and related losses and damages to nature and people, beyond natural climate variability.
- Across sectors and regions the most vulnerable people and systems are observed to be disproportionately affected.
- The rise in weather and climate extremes has led to some irreversible impacts as natural and human systems are pushed beyond their ability to adapt (high confidence).

Overall impacts

Widespread, pervasive impacts to ecosystems, people, settlements, and infrastructure have resulted from observed increases in the frequency and intensity of climate and weather extremes...Increasingly since AR5, these observed impacts have been attributed to human-induced climate change.

- Increased heat-related human mortality (medium) confidence)
- Warm-water coral bleaching and mortality (high confidence)
- Increased drought-related tree mortality (high confidence). Observed increases in areas burned by wildfires have been attributed to human-induced climate change in some regions (medium to high confidence).
- Adverse impacts from tropical cyclones, with related losses and damages, have increased due to sea level rise and the increase in heavy precipitation (medium confidence)
- Impacts in natural and human systems from slow onset processes such as ocean acidification, sea level rise or regional decreases in precipitation have also been attributed to human induced climate change

Ecosystem impacts

Climate change has caused substantial damages, and increasingly irreversible losses, in terrestrial, freshwater and coastal and open ocean marine ecosystems (high confidence). The extent and magnitude of climate change impacts are larger than estimated in previous assessments (high confidence). Widespread deterioration of ecosystem structure and function, resilience and natural adaptive capacity, as well as shifts in seasonal timing have occurred due to climate change (high confidence), with adverse socioeconomic consequences (high confidence).

- Approximately half of the species assessed globally have shifted polewards or, on land, also to higher elevations (very high confidence)
- Hundreds of local losses of species have been driven by increases in the magnitude of heat extremes (high confidence), as well as mass mortality events on land and in the ocean (very high confidence) and loss of kelp forests (high confidence). Some losses are already irreversible, such as the first species extinctions driven by climate change (medium confidence).
- Other impacts are approaching irreversibility such as the impacts of hydrological changes resulting from the retreat of glaciers, or the changes in some mountain (medium confidence) and Arctic ecosystems driven by permafrost thaw (high confidence).

Impacts on human systems

efforts to meet Sustainable

- Climate change(s)... [are] hindering Although overall agricultural productivity has increased, climate change has slowed this growth over the past Development Goals (high confidence). 50 years globally (medium confidence).
 - Increasing weather and climate extreme events have exposed millions of people to acute food insecurity and reduced water security (high confidence).
 - [I]ncreased malnutrition in many communities (high confidence), especially for Indigenous Peoples, small-scale food producers and low-income households (high confidence), with children, elderly people and pregnant women particularly impacted (high confidence).

Source: IPCC Assessment Report 6, Working Group II Contribution, 2022, p. 9.

It is important to underline that these losses and damages are occurring at 1.1°C of warming, while current projections indicate warming of more than 2°C during the twenty-first century, despite current mitigation pledges (UNEP 2021). As described in the IPCC 1.5°C Special Report, 'long-term risks of coastal flooding and impacts on populations, infrastructures and assets (high confidence), freshwater stress (medium confidence), and risks across marine ecosystems (high confidence) and critical sectors (medium confidence) are projected to increase at 1.5°C compared to present-day levels and increase further at 2°C, limiting adaptation opportunities and increasing loss and damage (medium confidence)' (IPCC 2019: 39). Worryingly, the most recent IPCC Assessment Report (AR6) concluded that climate risks are appearing and will also become more severe at lower levels of warming than previously predicted (IPCC 2022: 43). Taken together, these suggest the importance of heightened action on mitigation measures in line with the precautionary principle and the Paris Agreement goal of 1.5°C of warming to avert the risk of losses and damages (OECD 2021). They also underline the importance of increased adaptation efforts to minimise losses and damages. Finally, they point to the need for actions to address losses and damages in order to minimise the effects of those losses and damages which do occur and which are intensifying, as documented by the IPCC.

Attribution science is also of relevance to loss and damage science. Attribution science generally seeks to further scientific understandings of causal links between climate change and human and natural systems (James et al. 2019; IPCC 2022: 149). Within this, there are various forms of attribution assessments. Some seek to establish a causal link between an extreme weather event and anthropogenic climate change (OECD 2021: 110). Others go a step further to attribute changes in natural, human or managed systems to anthropogenic climate change, thereby establishing a clear connection between climate-related impacts and anthropogenic climate change. This entails a two-step process where, first, a climate event or change is attributed to anthropogenic influences and, second, this is linked to a change in natural, human or managed systems (IPCC 2022: 2424).

Attribution is discussed in relation to Loss and Damage policy in terms of allocating responsibility for losses and damages and guickly becomes linked to politically sensitive questions of liability and compensation (IPCC 2022: 2565), where country positions diverge sharply, as will be discussed further in Section 4. It is also increasingly being used in climate-related litigation (IPCC 2022: 124, 2598). This is supported by rapid improvements in attribution science itself. As noted in a recent OECD report, emitters' relative responsibilities in terms of emissions generated are now 'relatively uncontentious scientifically and open to quantitative analysis' (OECD 2021: 28). However, scientific understandings of the climate risks associated with different levels of warming and their interaction with other socio-economic and environmental factors continues to develop (OECD 2021; IPCC 2022: 43). Specific challenges also remain for assessments of events in lower income countries, including poor records, inadequate climate models and differences between disaster reporting mechanisms (OECD 2021: 110). Despite this, cutting edge research has attributed concrete losses to historical emissions, finding that the largest five emitters are responsible for 6 trillion USD in cumulative losses from 1990 to the present, or 11% of annual global GDP (Callahan and Mankin 2022). The authors note that 'these economic changes are attributable to the largest emitters despite the substantial uncertainties at each step in the causal chain from emissions to impact' (Callahan and Mankin 2022: 15–16), and that 'uncertainties decrease substantially when analysis is conducted at national rather than global level' (ibid.).

Despite the politically sensitive nature of liability and compensation, to which attribution science often becomes linked, attribution merits attention. Firstly, attribution can help drive awareness and action on climate change, including from decision makers, through improved understandings of causal linkages between emissions and impacts (IPCC 2022: 149). Research has highlighted that better understandings of causal drivers may improve management of climate-related risks and may also support policy positions on Loss and Damage (James et al. 2019). Secondly, attribution science – and the ability to scientifically ascertain the losses and damages associated with GHG emissions – will continue to improve and will likely require policy attention, if not now, then in the near future.

2.2. KEY ASPECTS OF LOSS AND DAMAGE

Within the international policy regime, key aspects of Loss and Damage debates have emerged. These relate both to Loss and Damage as a policy space – how it developed as such and what it does or does not address – as well as key themes that figure large within this policy space. These include slow and sudden onset climate events, economic and non-economic losses, risk, human mobility and limits to adaptation, as well as losses and damages as distinct topics. Here, we first present these themes, as they give insight into what loss and damage is. We then describe the development of Loss and Damage as a policy space, shedding light on current mechanisms and debates.

Key themes

As noted above, key themes within Loss and Damage policy and research include slow and sudden onset climate events, economic and non-economic losses, risk, human mobility and limits to adaptation.

Slow and sudden onset events Loss and damage is extremely broad, covering impacts associated with both slow and sudden onset climate events. Sudden onset events, e.g. storms or floods, occur over a very short timeframe, while slow onset events occur over a longer period of time. Slow onset events can include 'increasing temperatures; desertification; loss of biodiversity; land and forest degradation; glacial retreat and related impacts; ocean acidification; sea level rise; and salinization' (Decision 1/CP.16, paragraph 25). Within Loss and Damage, there has been special focus on slow onset events, to better understand these events and their impacts. See also Section 3.1.

Economic and non-economic losses and damages are also differentiated. Economic losses include 'loss of property, assets, infrastructure, agricultural production and revenue that can result from the impacts of the adverse effects of climate change' (UNFCCC 2022: 1). Non-economic loss and damage (NEL) refers to 'a broad range of losses that are not easily quantifiable in financial terms and not commonly traded in markets' (ibid.). Such losses are diverse and can affect individuals, societies or the environment, as illustrated in Figure 2 (UNFCCC 2022: 1). Non-economic losses are also receiving particular focus within Loss and Damage, specifically through the WIM ExCom's Expert Group on non-economic losses as well as its task force on displacement, which looks at various forms of human mobility. See also Sections 4.2. and 4.3.

Figure 2. Non-economic losses and damages



Source: UNFCCC 2013b

Risk is a central concept within the international climate response as well as Loss and Damage specifically. It refers to 'the potential for adverse consequences for human or ecological systems, recognising the diversity of values and objectives associated with such systems' (IPCC 2022: 5), and is produced in the interplay between climate hazards, exposure and vulnerability.

- Risk reduction refers to ex-ante measures to reduce the potential for adverse consequences. It is often divided into structural measures (e.g. infrastructure) and non-structural measures (planning, early warning systems [EWSs], behaviour change).
- Risk transfer refers to mechanisms to shift financial consequences of a specific climate risk to another party, typically entailing some kind of compensation to that party (IPCC 2022: 2921). Insurance is an oft-cited example, where an insurance provider takes on the risk of those insured, who pay an insurance premium for this service.
- Risk retention refers to situations where risk is not or cannot be reduced or transferred, so is retained by the original actor.
- Residual risk describes those risks that have not been or cannot be reduced or transferred.

Various mechanisms exist for risk reduction, transfer and retention of residual risk. A comprehensive risk management approach is often promoted to ensure coherent planning across the different types of risk and response. Under the Wim ExCom, there is the Technical Expert Group on Comprehensive Risk Management. See also Section 3.4. on risk.

Human mobility linked to climate change refers to human movement including relocation, displacement and migration, and increasingly also immobility. Such mobility is recognised as part of Loss and Damage, specifically non-economic losses, and is increasingly documented and evident across the globe, prompted by both sudden and slow onset events (IPCC 2022: 52). A Task Force on Displacement was established in 2015 under the WIM ExCom, and considers human mobility, including migration, displacement and planned relocation. See also Section 3.2.

Limits to adaptation relates to the boundaries of Loss and Damage itself. These limits refer to instances where adaptation action is not possible due to financial, environmental or institutional factors, among others. Once the adaptation limits are reached, no further action can be taken to prevent negative impacts of climate change, and losses and damages can ensue. Adaptation limits can be both 'soft' or

'hard': soft adaptation limits are reached when adaptive actions are possible, but constraining factors (e.g. finance or capacity) undermine adaptation planning on implementation. Soft limits are therefore mutable and can be tackled by addressing constraining factors. Hard limits, in contrast, are met when no further adaptation action is possible (Thomas et al. 2021; IPCC 2022: 196). Limits to adaptation can be subjective, as indicated in the case of relocations in Bogotá, Colombia (see Section 3.4). They can also be transcended by transformative measures, thus avoiding losses and damages (Thomas et al. 2021).

Loss and Damage as a policy space

As a whole, Loss and Damage needs to be understood in the context of a regime which was established to deal with mitigation and adaptation (Verheyen 2012). The Convention's ultimate objective is to 'stabilize greenhouse gas concentrations within a timeframe sufficient to enable ecosystems to adapt naturally to climate change' (UNFCCC, art 2). Meanwhile, its principles and commitments require that precautionary measures be undertaken to anticipate, prevent or minimise the causes of climate change irrespective of whether there is full scientific certainty, and that developed countries shall assist developing country Parties in meeting the costs of adaptation (UNFCCC, arts 3.3, 4.1(b), 4.1(e), and 4.4).

While no reference to the topic of Loss and Damage appears in the text of the Convention, the topic was raised by Vanuatu on behalf of members of the Alliance of Small Island States (AOSIS) during the negotiations to establish the Convention. This was in the form of a proposal for an international climate fund to counter the adverse consequences of climate change and a separate international insurance pool 'to provide financial insurance against the consequences of sea level rise', with the resources of the insurance pool to be used to 'compensate' small island and low-lying coastal developing countries 'for loss and damage resulting from sea level rise'. Vanuatu referred to the Ministerial Declaration of the Second World Climate Conference which identified that together with developing countries particularly vulnerable to desertification and drought, small island and low-lying coastal developing countries are one of two groups 'whose survival was most threatened by the adverse consequences of climate change' (UNFCC 1991: 7). However, there was no consensus for this proposal to be included in the Convention.

As the ultimate objective of the Convention, mitigation became the dominant focus of the climate change regime for its first decade. In 2001 this began to shift as initiatives for planning, knowledge sharing and enhanced action on adaptation were established (Verheyen 2012).² In 2007, means to address Loss and Damage were mentioned for the first time in the context of enhanced action adaptation in the Bali

Action Plan.³ It was not until 2010, however, that tangible progress on Loss and Damage began with a three-year work programme on Loss and Damage being established at COP16 in Cancun.⁴ During the work programme Parties recognised the need to strengthen international cooperation and expertise on Loss and Damage, and the need to enhance support for relevant actions, including finance, technology and capacity building. Parties elaborated on these actions and agreed where further work was needed to advance understanding and expertise.⁵

At the conclusion of the Cancun work programme, Parties agreed to establish the Warsaw International Mechanism for Loss and Damage (WIM) under the Cancun Adaptation Framework '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'.⁶ An Executive Committee (WIM ExCom) was also established to guide the implementation of the functions of the WIM, which broadly include:

- (a) Enhancing knowledge and understanding of comprehensive risk management approaches to address loss and damage including slow onset impacts.
- (b) Strengthening dialogue, coordination, coherence and synergies among relevant stakeholders.
- (c) Enhancing action and support, including finance, technology and capacity building, so as to enable countries to undertake actions.⁷

In 2015, at COP21 in Paris, Loss and Damage was recognised in Article 8 of the Paris Agreement. It was clearly separated from adaptation for the first time as a distinct pillar of action. However, a new framing of the topic was also introduced as Parties recognised the importance of 'averting, minimising and addressing' Loss and Damage. As earlier acknowledged in the framing of this report, some Parties have interpreted this language as capturing the full spectrum of efforts under the Convention, from 'mitigation to avert loss and damage to adaptation to minimize loss and damage and finally, addressing loss and damage from the impacts of climate change that are not avoided by mitigation and adaptation' (Achampong and Roberts 2022). This is not a universally agreed interpretation, however, and an alternative perspective is to look at what Loss and Damage addresses under the Convention and the Paris Agreement, namely slow onset events and extreme weather events caused by global warming as well as the tools and institutions that identify and mitigate such risks (Huang, Guilanpour and Wenger 2022). It is also important to note that in paragraph 51 of the decision adopting the Paris Agreement, Parties decided 'that Article 8 of the Agreement does not involve or provide a basis for any liability or compensation', though there are multiple interpretations of this (see Section 4.3.).

Since it was established the WIM ExCom has organised its work across a spectrum of actions to avert, minimise and address Loss and Damage. It has three expert groups which respectively cover slow onset events, non-economic losses and action and support; a technical expert group on comprehensive risk management; and a task force on displacement (UNFCCC n.d.-a). However, recent research has shown that there were significant delays in establishing these groups which were each established at different times and some workstreams have progressed more than others (Johansson et al. 2022). This critique is not only confined to the WIM ExCom; other UNFCCC constituted bodies and the UNFCCC more generally have been similarly criticised. Some stakeholders have commented that despite criticism of its performance, the WIM ExCom in fact performs better than a number of other constituted bodies. Early in the session at COP25 in Madrid in 2019, where Parties reviewed the WIM including its performance, functions and structure, there was consensus that the WIM had some achievements but was under-performing and an enhanced WIM was needed (Third World Network 2019). For example, Finland on behalf of the European Union submitted that although significant steps had been taken by the WIM ExCom to fulfil the core functions of the WIM, there were challenges and lessons learnt in several areas that the review could consider (Finland and the European Commission 2019).

Parties agreed in Madrid that further work is needed to effectively operationalise the functions of the WIM. This included the establishment of the WIM ExCom expert group on action and support, and the Santiago Network which was established to catalyse technical assistance for the implementation of approaches at the local, national and regional level in developing countries.[®] The progress in operationalising the Santiago Network, including its status and prospects, as well as other recent policy developments and challenges such as funding arrangements for activities relevant for averting, minimising and addressing Loss and Damage including the Glasgow Dialogue; and the governance of the WIM will be further unpacked in Section 4.

Since the Convention was established the policy space for Loss and Damage has increased, with the establishment of the WIM and ongoing work to operationalise its functions. There has also been convergence around the need for enhanced action and support to be provided to developing countries particularly vulnerable to the adverse effects of climate change. However, as we will now turn to explore, the understandings of Loss and Damage encompass a spectrum of viewpoints, and how this translates into responses and positions within the negotiations continues to create divergence among various groups.

2.3. UNDERSTANDINGS OF LOSS AND DAMAGE

Understandings of Loss and Damage encompass a spectrum of viewpoints about what 'Loss and Damage' means that are reflected in various positions on how to address or respond to it. The IPCC summarises these as falling into four more general perspectives:

- (a) An adaptation and mitigation perspective linking all human-induced climate change impacts to potential Loss and Damage and the mandate to avoid dangerous anthropogenic interference.
- (b) A risk management perspective emphasising interconnections among disaster risk reduction, climate change adaptation, and humanitarian efforts.
- (c) A limits to adaptation perspective focused on residual Loss and Damage beyond adaptation and mitigation; and
- (d) An existential perspective highlighting inevitable harm and unavoidable transformation for some people and systems.

(IPCC 2022)

Different stakeholder groups do not fall neatly into the four perspectives, but there are examples of different groups placing emphasis on particular elements (see, e.g. Boyd, James and Jones 2017). Some studies on Loss and Damage do subscribe to one clear category, but many also cover various viewpoints (McNamara and Jackson 2019). The four understandings have been described as overlapping in practice and potentially able to 'reinforce each other in determining policy orientation, ambition and application to address the root causes of vulnerability' (Roberts and Pelling 2019).

Categorisation under these four understandings enables improved understanding of perspectives and has the potential to facilitate 'more transparent discussion of the options available to address L&D' (Boyd et al. 2017: 724–5). The figure below (taken from Boyd et al. 2017) illustrates their research findings on the extent to which different understandings of Loss and Damage are articulated by stakeholder groups and are encompassed by the WIM and the Paris Agreement:

Figure 3. Understandings of Loss and Damage



Source: Adapted from Boyd et al. 2017.

Boyd et al. (2017) found that some stakeholders see Loss and Damage as more about ex-ante measures, meaning action before the event while others see it as needing ex-post measures, meaning action after the event in circumstances where unavoidable Loss and Damage is occurring. In general, developed countries favour the adaptation and mitigation perspective whilst Small Island Developing States (SIDS) and Least Developed Country (LDC) positions contain elements of the existential, limits to adaptation and risk management understandings of Loss and Damage. There was a clearer demarcation of perspectives among some observer groups, with climate justice campaigners very clearly seeing Loss and Damage as an existential problem. The narrower understanding depicted for the Paris Agreement vis-à-vis the Convention is explained by Article 8.4 which sets out a non-exhaustive list of eight possible areas that Parties may include in efforts to cooperate and facilitate enhanced understanding, action and support. Although this list is not exhaustive it is nonetheless narrower in scope than the areas referred to in the numerous decisions relating to Loss and Damage under the Convention. The existential perspective recognises the importance of addressing '...irreversible loss, non-economic losses, justice and responsibility' (Boyd et al. 2017: 725). It has an element of compensation, which also captures the concepts of historical responsibility and state liability for climate change-related harms. There is strong divergence between developed and developing countries on this topic (Vanhala, Robertson and Calliari 2020), although it is of note that this is not a 'simple polarization between those who seek compensation and those who wish to avoid paying compensation' (Boyd et al. 2017: 728). There is also no simple polarisation between developed and developing countries, with Calliari et al. finding in their study that different views among developing countries include whether compensation is for rapid response or longer-term, slow onset events, and also whether it is distinctly for financial support or whether it extends beyond finance to include capacity building and technology transfer. The divergence on compensation and liability more broadly is reflected in paragraph 51 of the decision adopting the Paris Agreement 'that Article 8 of the Agreement does not involve or provide a basis for any liability or compensation' (1/CP.21; Calliari, Serdenczny and Vanhala 2020). This paragraph has been described as a political compromise that happened behind closed doors and there are varied interpretations regarding its implications (Calliari, Serdenczny and Vanhala 2020; Khor and Raman 2020: 190-2).

Given the polarising nature of the existential perspective, which has received increasing support from civil society and in the media in recent years, it is useful to further unpack it in the context of climate justice understandings. The central concern of theories of climate justice is '[d]eciding what is owed to whom and why' (Vanderheiden 2011). Adelman (2016) explains that compensation has only recently become a central concern of theories of climate justice. This is because previously the belief had been that '...successful adaptation would obviate the need for [compensation]' but perspectives have now emerged that compensation is justified based on ethical grounds and to remedy failed efforts to mitigate and adapt to climate change. Caney (2010: 172, as cited by Adelman) explains that 'the point of adaptation is to protect and uphold rights, and the point of compensation is to redress the fact that people's rights have been violated'. There are different ways of framing responsibility for the violation of those rights. However, at its core is the understanding that developed countries bear the greatest responsibility for climate change and thus have an ethical responsibility to provide support to developing countries who are most vulnerable to its adverse effects.

The adaptation and mitigation perspective, as noted above, is a framing that sees Loss and Damage as intertwined with mitigation and adaptation actions. In this view, all anthropogenic climate change impacts are potential loss and damage, and the UNFCCC mandate is to avoid loss and damage caused by dangerous anthropogenic interference. Boyd et al. (2017: 724) cite an interviewee with this perspective, who said 'it's hard to argue a differentiation between loss and damage and adaptation or disaster risk management'. This translates into positions that distinct actions to address losses and damages are not required and existing mechanisms could be utilised to deal with losses and damages. Those with this perspective highlight that research efforts to inform adaptation and mitigation policymaking and understand climate change impacts – all of which are potential losses and damages – are most relevant.

What is clear in the research is that different understandings of Loss and Damage have limited the ability of Parties to reach consensus on what progress on Loss and Damage under the Convention looks like. Research indicates that developed country groups have generally emphasised adaptation, disaster risk reduction and humanitarian understandings of Loss and Damage. In contrast, developing country groups have historically pressed for actions that go beyond adaptation (Calliari, Serdeczny and Vanhala 2020). In addition, there are nuances in the positions of different country groups that cannot be captured in this analysis, and country positions of course reflect the needs and priorities of different regional and national contexts. It is useful to now turn to consider how this has manifested in the positions and responses of Parties in the context of the topics and understandings that have been highlighted.

2.4. POSITIONS AND RESPONSES

At the outset of this section, it is critical to acknowledge that positions are constantly evolving. They are presented in this section based on the information available at the time of writing and in the context of the topics and understandings set out above, to assist with understanding the landscape while noting that evolution is possible and necessary for agreements to be reached at COP27 and beyond. One of the issues that makes Loss and Damage positions particularly difficult to describe is the framing of Loss and Damage as both a technical discussion where pragmatic solutions are sought and as a high-level political discussion. The political nature of Loss and Damage has been cited as the reason why it has progressed at a slow pace both in the negotiations and in implementation. Thus, researchers have suggested that de-politicisation or grounding of the Loss and Damage discussions is one way to facilitate progress (Calliari, Serdeczny and Vanhala 2020 citing Mechler et al. 2019; Byrnes and Surminski 2019; and Boyd et al. 2017).

In a paper that unpacks the controversial nature of Loss and Damage in an effort to understand what fuels contention within the Loss and Damage negotiations to better identify the options for progress, Calliari et al. conclude that Loss and Damage 'catalyses different yet intertwined unresolved discussions' (Calliari, Serdenczny and Vanhala 2020). As already alluded to above, those unresolved discussions include, for example, disagreement about 'whether [Loss and Damage] is something separate and additional to adaptation or part and parcel of it [and] contestation over understandings of historical responsibility, state liability and compensation'. Although there has been evolution in these debates over time, they continue to be relevant as tensions between countries continue to manifest in an inability to agree to responses that are both technically and politically feasible (Calliari, Serdeczny and Vanhala 2020: 4, 6).

The core principles and commitments under the Convention include 'equity' and 'common but differentiated responsibilities and respective capabilities' meaning that Parties agree that not all countries are equally responsible for (or capable of) addressing the adverse effects of climate change.9 When AOSIS proposed an international insurance pool for Loss and Damage in 1991, for example, it was framed in terms of compensation for the most vulnerable countries with the source of revenue being contributions levied on industrialised developed countries (UNFCCC 1991). However, save for the clear reference in the 1991 proposal by AOSIS and the reference in paragraph 51 of the decision adopting the Paris Agreement, compensation and liability are generally not terms that are used explicitly in Loss and Damage negotiations discourse. Calliari et al. (2020) highlight the following reflection from a developing country negotiator: 'anything that hints of liability and responsibility creates tensions' (Calliari, Serdeczny and Vanhala 2020). In the most recent push for a dedicated financial facility for Loss and Damage at COP26 in Glasgow, for example, this was not explicitly framed in liability and compensation terms, however it is possible that this was one of a number of factors that resulted in the proposal not enjoying consensus. In lieu thereof the Glasgow Dialogue was established 'to discuss the arrangements for the funding of activities to avert, minimize and address loss and damage'.¹⁰

The issue of the relationship between Loss and Damage and adaptation and mitigation also repeatedly emerges in UNFCCC processes. The establishment of the WIM under the Cancun Adaptation Framework, the listing of Loss and Damage under 'adaptation and resilience' on the Convention's website (UNFCCC n.d.-b), the including of Loss and Damage as a sub-section to adaptation in transparency reporting, the inclusion of Loss and Damage as an element of the adaptation and

resilience campaign of the United Kingdom COP26 Presidency, and more recently the planning of an adaptation and agriculture thematic day at COP27 by the Egypt Presidency that includes discussion of Loss and Damage are all examples of Loss and Damage responses under the Convention being framed on the basis of an understanding of Loss and Damage from the adaptation and mitigation perspective. This is consistent with the understanding of Loss and Damage of some Party groups and such overlap is therefore logical. However, some Parties who see Loss and Damage as a distinct pillar of action beyond adaptation have criticised this framing.

Developing countries have been united in their call for a separate agenda item on Loss and Damage at the annual COP negotiations that goes beyond the annual report of the WIM ExCom and the five-yearly review of the WIM, particularly in order to create a space to negotiate Loss and Damage finance. This highlights the challenge of Parties reaching convergence on the need for a dedicated negotiations stream for Loss and Damage. The most recent manifestation of this call was the request at the SBs in Bonn in June 2022 where proposals by the G77 and China for agenda items on the Glasgow Dialogue and Loss and Damage finance respectively did not enjoy consensus. The latter proposal is now provisionally on the agenda for COP27/CMA4 in November 2022.

Despite the critique that not all understandings of Loss and Damage are equally reflected in policy responses, analysis of the WIM finds that the workplan of the ExCom does include terminology that incorporates perspectives beyond mitigation and adaptation, for example, non-economic loss and damage. However, research highlights that inclusion in the workplan is not a guarantee of the prioritisation of action across all topics (Boyd et al. 2017: 727). We see, for example, in a recent study of the performance of the ExCom that planned activities and indicated timelines are not always completed and if they are, they are not always completed on schedule. The study found inter alia that the ExCom relies on other organisations' resources to implement many of its activities. The study also acknowledged a limitation insofar as it was solely based on publicly accessible documentation which challenged the researchers' ability to assess the power dynamics between different actors and how they impact the negotiation of workplans and ambition to meet mandates (Johansson et al. 2022). Further research to consider how different viewpoints on Loss and Damage correlate with progress on different topics on the spectrum of averting, minimising and addressing Loss and Damage would be useful. Similarly, research to better understand the implications, including potential limitations and strengths, of the WIM ExCom's reliance on organisations to carry out its work would be useful.

Table 1 draws on an analysis of what differentiates finance for addressing loss and damage from other types of finance dedicated to averting and minimising loss and damage (Heinrich Böll Stiftung et al. 2021). It assesses types of finance including a range of sources for adaptation, disaster risk management and risk reduction, humanitarian assistance, and Official Development Assistance. The paper concluded that defining finance for addressing loss and damage cannot be or is not being avoided' exposed a funding gap for support of those measures. This framing usefully describes what some Parties and stakeholders mean when they refer to finance for addressing loss and damage. As noted earlier in this paper, it is acknowledged that not all Parties conceptualise finance for 'addressing' loss and damage in this way.

Table 1. Funding for averting, minimising and addressing losses and damage

	Averting loss and damage	Minimising loss and damage	Addressing loss and damage		
Impacts			Reversible		Irreversible
			 Super storms Heatwaves Forest fires Floods Droughts 	 Sea level rise Desertification Global melt Erosion 	 Loss of biodiversity (including extinction of species)
Mitigate Adapt	Climate change	Climate change adaptation	Recoverable	irre	Permanent and coverable losses
Address	mitigation Reducing greenhouse	Risk reduction: early warning emergency	Economic losses		Non-economic losses
	gas emissions	preparedness building dykes retrofitting infrastructure	Humanitarian ass relief recovery reconstruction rehabilitation social protec resilient rebu	tion ilding	Loss of culture Loss of heritage
Displacement			Temporary displacement	Permanent relocation	Loss of territory
Funding	Dedicated but insufficient		Limited		No funding

Source: Heinrich Böll Stiftung et al. (2021).

During the first Glasgow Dialogue held in Bonn in June 2022 there was a recognition by all Parties as to the need for finance for averting, minimising and addressing loss and damage. However, many developing country Parties were clear in emphasising their calls for solutions to address the urgent need for new and additional finance for measures falling within the conceptual frame of 'addressing' loss and damage set out in Table 1 and highlighted that existing institutions do not address this gap and a new dedicated finance facility for Loss and Damage needs to be established to address this shortfall. Some developing country groupings expressed overall hesitation at suggestions, for example, by the US, of the important role of the humanitarian space. Although they agreed with its relevance, Antigua and Barbuda noted that it is 'a drop in the ocean' in terms of the scale of what is needed to address Loss and Damage. An intervention by the International Federation of the Red Cross seeking to provide clarification highlighted that the humanitarian assistance community dealt with only one piece of the puzzle, the immediate needs, but that they do not cover reconstruction which they consider to be for development actors.

In contrast to this, although developed country Parties also recognise the need for finance across all aspects of Loss and Damage, their emphasis remains largely on measures that are encompassed by the adaptation and mitigation perspective as well as the risk management perspective. This was reflected in an intervention by the United States, posing the question 'what is the existing architecture?' and pointing to the Green Climate Fund and Global Environment Facility as relevant institutions for Loss and Damage, that the humanitarian space can be improved, and that the Global Shield against Climate Risks proposed by the G7 could also be a useful tool: in sum that there is a critical role for first improving institutions that already exist before creating anything new (UNFCCC n.d.-c). The Global Shield is to be officially launched at COP27 and has been presented as falling within the parameters of climate risks for vulnerable people in addition to social protection schemes and pre-arranged finance (BMZ 2022). As this initiative is still under development, its scope is not yet fully defined in publicly available documents.

While the full range of views cannot be captured comprehensively in this report, the first Glasgow Dialogue is a useful recent indication of positions on Loss and Damage of the various stakeholders. It was an exchange that led to further understanding and convergence on points including the need for enhanced action, and that there are gaps that need to be addressed. However, the Glasgow Dialogue also showed that understandings of Loss and Damage remain divided among Parties and among stakeholders, with different solutions being emphasised by different groups showing there is still divergence on positions and responses on how those gaps can be met in a way that is commensurate with the scale of needs. Although views differ on the steps needed to advance the Loss and Damage policy agenda to deliver outcomes for those on the frontlines of climate change, all Parties have high expectations for COP27. However before turning to assess the policy challenges ahead of COP27, this report will now turn to research and practice for a better understanding of what is happening on the ground and what challenges the policy discussions need to address.

3. EXPERIENCE FROM RESEARCH AND PRACTICE

Jos East, Plateau State, Nigeria, 12 May 2021: A woman fetches contaminated water from a pit for daily consumption. Severe water scarcity is increasing due to climate change. Photo: Oni Abimbola, Shutterstock.com Parallel to ongoing policy discussions are more technical discussions around research and practice engaging with loss and damage. These fields provide crucial input to the policy discussions taking place, for instance in what kinds of loss and damage are being experienced, by whom and where, as well as how and to what extent existing institutions and mechanisms are able to address them. This section therefore presents research findings and practice-based experiences of how loss and damage is being felt and responded to across the globe. The sub-sections each address established topics of importance within loss and damage, reflecting the task force, expert groups and technical expert group under the WIM ExCom, as well as the latest IPCC report, Assessment Report 6 (AR6). AR6 authors describe the adverse effects associated with climate change as including 'those on lives, livelihoods, health and well-being, economic, social and cultural assets and investments, infrastructure, services (including ecosystem services), ecosystems and species' (IPCC 2022: 2545).

This section therefore includes sub-sections on slow and sudden onset climate change; economic and non-economic losses; impacts across human and natural systems; and producing and reducing climate risk. The themes of human displacement and migration emerge across these sub-sections. For each sub-section, key scientific insights, a concrete case study of loss and damage, and practice-based experiences are presented. The section discusses efforts to both minimise and address loss and damage as well as considerations across various understandings of Loss and Damage (see Section 2.3). In line with the report's aim to provide input to COP27 and beyond, the section concludes with key insights on loss and damage emerging across research and practice.

3.1. SLOW AND SUDDEN ONSET EVENTS

Research has increasingly documented losses and damages associated with both slow and sudden onset events. Despite this, there is a persistent knowledge gap on slow onset climate change especially; research indicates that sudden onset events have received greater attention in previous IPCC reports, while slow onset events are underexamined by comparison (Van der Geest and Warner 2020). Importantly, IPCC reports merely synthesise existing scientific and grey literature, so this reflects a wider knowledge gap. Improving our understanding of both slow and sudden onset events, and the interactions between them, is increasingly pressing in order to minimise and address losses and damages through policy and practice.

Research on slow and sudden events and their impacts

Research suggests that slow onset events can be more difficult to detect and respond to; there are indications that slow onset events may be overlooked by policymakers (Le and Nguyen 2022) or more difficult for policymakers to address (Tosun and Howlett 2021). Yet the effects of such gradual changes and variability will increasingly affect billions globally, with 3.3 to 3.6 billion people already living in contexts highly vulnerable to climate change (IPCC 2022: 12), and will therefore likely impact more people than sudden onset events. This is especially in areas with existing vulnerabilities, e.g. where people are more dependent on the environment for their livelihoods and in countries which are less equipped to respond to such changes, with these factors often linked to historical inequalities such as colonialism (ibid.).

In addition, research indicates that impacts associated with slow onset events can, as with sudden onset events, be catastrophic. This is through cumulative effects or 'tipping points'. In the first, slow changes accrue to major impacts: while 1mm of sea level rise or one growing season with failed rains may be manageable, an accumulation of many may not be. With tipping points, slow onset events reach a threshold at which there are sudden, extreme impacts in human or natural systems (see, e.g., IPCC 2022: 382, 433, 1083). This could be coral bleaching events, which can severely degrade entire coral ecosystems. In such cases, losses and damages can become acute, and effects can be long-lasting or irreversible (IPCC 2022: 447). Yet due to the different nature of slow onset events when compared with sudden onset events, responses may require different institutions, financial mechanisms and policies than sudden onset events. It is therefore important to sustain the growing attention to slow onset events in research, and particularly to develop methodologies and capacities for doing so.

Increasingly, research has also highlighted the linkages between slow and sudden onset climate change events, and the impacts of the same. This is of course the lived reality on the ground where cumulative slow onset climate change can affect both exposure and vulnerability to sudden onset events and vice versa (e.g. coastal erosion and salinisation affecting vulnerability to typhoons). While in climatic terms these may be discrete events, their economic and non-economic impacts can be interlinked. The interlinkages between slow and sudden onset climate change come out clearly in the most recent IPCC report which describes climate risks as 'complex, compound and cascading' where 'multiple climate hazards will occur simultaneously, and multiple climatic and non-climatic risks will interact, resulting in compounding overall risk and risks cascading across sectors and regions' (IPCC 2022: 18). The report describes, for instance, how '[u]navoidable sea level rise will bring cascading and compounding impacts resulting in losses of coastal ecosystems and ecosystem services, groundwater salinisation, flooding and damages to coastal infrastructure that cascade into risks to livelihoods, settlements, health, well-being, food and water security, and cultural values in the near to long-term (high confidence).' (IPCC 2022: 19), as illustrated in Case 1, below. The complex interlinkages between various slow and sudden onset climate events and existing vulnerabilities will require holistic responses with consideration of wider systems dynamics rather than merely specific impacts. In practice, this will likely require working across silos of disaster, development and climate reponse efforts, as well as different sectors and across scales ranging from the international to sub-national.

CASE STUDY 1: SLOW AND SUDDEN ONSET INTERPLAY ON THE VIETNAMESE COAST

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Vietnam is among the countries most affected by climate change (Lin et al. 2021), with coastal and mountainous areas most vulnerable (Sen et al. 2020; Bruun 2012). The country is affected by slow onset events including salinity intrusion, increased temperatures, drought, rainfall variation, and sea level rise, as well as sudden onset events including typhoons, storm surges, floods, landslides, coastal erosion and flash floods. The most serious sudden onset events in the central coastal areas of Vietnam have been typhoons and storm surges (Sekhar 2005; Lin et al. 2021). Due to climate change, these sudden events have appeared more frequently and with greater intensity (Binh et al, 2016).

These climate-related events have caused significant losses and damages (Tanaka et al, 2018). Losses and damages include to ecosystems and biodiversity, to livelihoods such as aquaculture and crop production, and thus to the lives and food security of citizens (Binh et al. 2016; Pham et al. 2022). Sea level rise particularly has inundated wetlands and lowlands, accelerating coastal erosion, increasing the salinity of estuaries and aquifers, and degrading water quality and coastal ecosystems (Lin et al. 2021).

Losses and damages are increasingly produced in the interaction between slow and sudden onset events. The increased intensity and frequency of hazards/sudden onset events, particularly typhoons and storm surges in the central coastal region, has worsened the impacts of slow onset events. The combination of increasingly frequent and extreme droughts and inundations during storms has led coastal salinity to expand further inland faster. This affects the livelihoods of vulnerable populations along the central coast (Hung, 2018; Lin et al. 2021; Phuong et al. 2018; Huynh et al. 2021), leading to forced changes in livelihoods and migration. In addition, it undermines agricultural production and daily practices by degrading groundwater resources and is now reaching over 10km inland, affecting the intake for the water supply to the provincial capital.

Despite the interplay between slow and sudden onset climate changes in producing losses and damages, focus on sudden onset events is significantly greater. This is common among the many research projects, policies, and programmes that have been carried out in the area and may be due to the very visible losses and damages caused by the sudden onset events (Staupe-Delgado 2019; van der Geest et al. 2021). This trend is exemplified in the upland areas in the north central region of Vietnam. Here, drought is the main livelihood constraint on farmers, but the attention and adaptation action of authorities and involved stakeholders has been focused on flash floods and landslides due to their visible effects (Le and Nguyen 2022). Overlooking the central role of slow onset climate events, also their interaction with sudden onset events, has contributed to failure to minimise or address frequent and severe losses in crop production, contributing to food insecurity and outmigration.

Minimising and addressing impacts in practice

Because loss and damage is a relatively new field, many efforts to minimise and address them to date have emerged from within existing fields of intervention, including development efforts, disaster risk reduction, humanitarian efforts and adaptation. Here we provide an overview of the landscape of efforts to minimise and address loss and damage in practice, from existing fields of practice to novel measures. This overview can support an understanding of the current landscape and help identify potentials and gaps. More specific discussions of finance are found in Section 3.2, considerations of efforts across human and natural systems in Section 3.3, and discussion of reducing, transferring and managing risk in practice in Section 3.4.

While policy debates look specifically at the relationship between mitigation, adaptation and loss and damage, practice-oriented discussions are increasingly linking to sustainable development (see e.g. Boda et al. 2021; IPCC 2022). Development efforts can help minimise loss and damage from both slow and sudden onset events by reducing vulnerability and exposure. Many of the aims of the Sustainable Development Goals, from reducing poverty to ensuring gender equality, can contribute to these ends. Specific approaches to linking sustainable development and climate risk reduction have emerged, including 'Risk informed development' and 'Climate resilient development' (CRD) (IPCC 2022). In addition, tools long used within development are now being applied to loss and damage, for instance social protection payments, or social transfers (see discussion in OECD *forthcoming* 18–19). They can be used ex-ante to minimise (long-term social protection schemes) and to address (forecast-based financing (FbF), where support is provided when a pre-established trigger event is forecast to occur (Costella et al. 2018); as well as ex-post to help address losses and damages associated with climate events.

There are, however, potential disadvantages to using development channels to minimise or address losses and damages. For instance, if loss and damage support, e.g. to recovery and rebuilding, is channelled through project-based development modalities, recipient countries would not have sole governance or ownership of the support, programming or implementation to prevent or respond to losses and damages as they see fit. Country ownership has consistently emerged as important for effective climate-related interventions (see e.g. Brown and Patel 2013; IPCC 2022: 2087). It is for instance a core principle for the GCF and has been recognised by the COP to the UNFCCC as important in the GCF's work (Asfaw et al. 2019). Development financing does not necessarily support country ownership as it can be volatile or affected by priorities of the donor country (OECD *forthcoming*; IPCC 2022: 2087). In addition, some countries most at risk of losses and damages, e.g. nine of the 38 SIDS, are not eligible for ODA, due to their higher income status. Finally, there is the issue of additionality, which is already a source of disagreement, particularly regarding adaptation finance.

Disaster Risk Reduction is also hailed as a field that can help minimise losses and damages, with focus on sudden onset events. Notable advances in relation to sudden onset events, e.g. disaster management, early warning systems, etc. have significantly reduced losses and damages associated with extreme events. However, as will be discussed in Section 3.4, there are marked limitations to these measures, most clearly in addressing losses and damages after an event, as these are outside the scope of Disaster Risk Reduction efforts.

The humanitarian sector is already addressing the realities of loss and damage on the ground, mostly in relation to sudden onset events, though also some slow onset events such as droughts. Several developed countries have argued, most recently at SB 56 in June 2022, that humanitarian relief is well-suited to addressing losses and damages, particularly after sudden onset events. Humanitarian organisations are indeed well-positioned, with quick response times and established financing and implementation systems, and they have an important role to play in relation to loss and damage. However, the need for humanitarian support is increasing significantly, outstripping available funds (OCHA 2017; Ahmed 2021), and moreover, ownership can again be out of recipient countries' hands. Humanitarian efforts also do not address many slow onset events that gradually erode environmental conditions, often simultaneously affecting socio-economic conditions, with a drastic cumulative effect. In addition, highly affected countries note that they are experiencing a gap between short-term humanitarian and development assistance, where mediumterm rebuilding efforts are not supported, financially or otherwise. This issue has been recognised by humanitarian actors themselves as observed in the Glasgow Dialogue, and continues despite efforts being made through the humanitariandevelopment (hum-dev) nexus approach (OCHA 2017). Challenges in practice with minimising and addressing losses and damages are closely linked to issues of finance, further discussed in relation to practice in Section 3.2.

In addition to these international mechanisms, domestic efforts to minimise and address losses and damages are ongoing, involving national and subnational government entities as well as non-state actors. This includes social protection schemes, climate-related resettlement, disaster response, livelihood transformation when existing, environmentally-based livelihoods are becoming untenable, improving services and infrastructure in informal settlements experiencing influxes of climaterelated migrants, etc. Again, however, there are indications that slow onset events particularly may be overlooked by policymakers (e.g. Le and Nguyen 2022) or more difficult for policymakers to address (Tosun and Howlett 2021). Despite such efforts, communities, households and individuals around the world often shoulder the burden of addressing losses and damages themselves, potentially contributing to poverty traps (IPCC 2022: 2563). Groups and individuals, often the most vulnerable, are reducing consumption and skipping meals when harvests fail; rebuilding with little or no support after extreme events; engaging in mobility and migration to find new income-generating opportunities; coping with negative health impacts; and mourning loss of life, of sacred places, and of cultural practices (GCM 2021). For national and sub-national state actors to address these growing challenges, loss and damage considerations will increasingly need to be mainstreamed into policy and planning in highly affected areas and for vulnerable groups, including with bottom-up input and engagement. Implementation will require increased finance, technical support and capacity building, as well as finding ways of sharing and learning from the increasing practice-based experiences (Addison et al. 2021; Shakya and Bharadwaj 2021).

Overall, it is clear that there are existing potentials and capacities, yet also substantial gaps. People, often the most vulnerable, are already bearing the brunt of loss and damage, in many cases without external support. This may be especially true of slow onset changes. Here, there are some existing potentials, especially for minimising losses and damages associated with slow onset events, but also major gaps in country ownership, financing and non-economic losses. For sudden onset events, there are efforts to minimise associated losses and damages, particularly through development and DRR. For addressing losses and damages, the gaps are substantial. Addressing losses and damages ex-post is underfunded, with needs remaining in medium-term rebuilding and recovery as well as in responding to slow onset changes. In addition, non-economic losses have received limited attention in practice. There are thus extensive needs that are not addressed by existing mechanisms or support. Consideration of potential financing arrangements to fill these gaps is taken up in Section 4.1. Emerging efforts to address losses and damages outside existing fields of intervention may provide insight into addressing losses and damages in new ways, particularly non-economic losses.

As these gaps become increasingly apparent, discussions of governance will be central. This includes questions of who decides what constitutes losses and damages as well as how or to what extent to minimise or address these. As evident from the above discussion, some types of losses and damages are going overlooked, as in the case of slow onset impacts, or 'undiagnosed', as in the case of non-economic losses (see Section 3.2), indicating a lack of institutional mechanisms for recognising these. In addition, even when formal institutions and processes exist, those most affected may have little input into them (see Section 3.4). Add to this issues of country ownership in some existing international mechanisms, and it becomes clear that progress in addressing loss and damage will need to foreground institutional and governance mechanisms from sub-national to international scale. These will need to both recognise and address various types of losses and damages, with input from those affected and ownership at country level, linking these to international mechanisms.

3.2. ECONOMIC AND NON-ECONOMIC LOSSES

Learning on economic and non-economic losses and damages is improving as these are increasingly experienced, addressed and researched. However, it is still limited, especially in regard to non-economic losses. This is linked partially to the lack of an agreed-upon distinction between loss and damage and adaptation, to different epistemologies and conceptualisations of losses and damages, as well as to limited knowledge in what is a relatively new field in research and practice. To support future efforts to better understand and address economic and noneconomic losses and damages, this section will briefly survey key debates related to defining, assessing and valuing different types of losses and damages, and practical experience with the same.

Research debates on economic and non-economic losses

Minimising and addressing economic and non-economic losses requires a better understanding of losses and damages. First, this entails being able to define more clearly what constitutes loss and damages, which will necessarily be an evolving process over time, marked by diverging perspectives and conceptualisations. This is because losses and damages – both economic and non-economic – are inherently value-based and linked to different ideas of what holds value. It is underpinned by the challenge of the lack of an agreed-upon definition of loss and damage. This said, there is consensus on economic and non-economic as two major types of losses and damages. Debates on these revolve around how they are experienced, where and by whom, already now as well as in the future. These questions are linked closely to approaches for assessing both, which will be examined in this section.

Economic losses and damages

Climate change is impacting across economic sectors around the world. Extreme weather events have caused decreased economic growth affecting both developed and developing countries, though with major effects on the former (Callahan and Mankin 2022; IPCC 2022: 54). In addition, widespread climate impacts have undermined livelihoods, particularly among vulnerable groups and for climate-sensitive livelihoods (IPCC 2022: 55). This is due to impacts on inputs, water scarcity, and decreased labour productivity due to heat and other recent extreme events, and is associated with significant costs due to damaged property, infrastructure and supply chain disruptions. Development dynamics have also contributed (IPCC 2022: 54). Economic losses and damages are unevenly distributed, with the most recent IPCC report noting that Africa as a continent is being hit particularly hard (IPCC 2022: 54).

Economic losses and damages are closely linked to 'attribution science', as discussed in Section 2.1 (IPCC 2022:149). Attribution science itself is rapidly improving and can help inform our understanding of how climate change affects human and natural systems (OECD 2021: 28; IPCC 2022: 2424). As attribution is improving, also in terms of attributing economic losses and damages, it is increasingly used in litigation and can better support decision making and planning (IPCC 2022: 124, 149). Attribution research quickly becomes linked to sensitive political questions of responsibility, liability and compensation. These are seen as especially sensitive by developed countries, which has led some actors to avoid assessments related to loss and damage and the needs associated with addressing them. This is unfortunate, as doing so may further exacerbate the negative impacts of losses and damages by limiting the development of our knowledge base around losses and damages and evidence-based responses to minimise and address them (James et al. 2019). In contrast, improving knowledge on losses and damages can better support efforts to minimise and address losses and damages (IPCC 2022: 149, James et al. 2019), possibly addressing some of the gaps described in Section 3.1.

Non-economic losses and damages

Defining and assessing non-economic losses is also gaining increasing attention, both from the WIM expert group on NELs as well as from scholars and practitioners. NELs are diverse, ranging from health to territory, and can be related to individuals, societies and environments. However, while these types of non-economic loss have been recognised for years, there has been limited progress in developing methods to assess them (IPCC 2022: 171). Existing methods for assessing non-economic losses include, for example, environmental impact assessments and vulnerability assessments (see UNFCCC 2013c: 3), again dependent on value judgements (UNFCCC 2013b; IPCC 2022: 1207).

Some approaches to assessing NELs have suggested attempting to quantify or monetise them (UNFCCC 2013b). This approach has been critiqued with arguments that it risks 'commodifying incommensurable values' and 'undermining meaningful practices for recovery and renewal' (Tschakert et al. 2017). While it may not be feasible, nor desirable, to financially value NELs, financial resources will still be important for developing and implementing measures to addressing NELs, for instance regarding health or environmental degradation, or supporting communities through processes of loss. Also, quantifying aspects of NELs may support their integration in decision making processes.

In the emerging science on assessing NELs, there is greater consensus that NELs should be understood as highly context-dependent, place- and value-based, and incommensurable, that is, unable to be measured (Tschakert et al. 2017; Serdeczny et al. 2019). However, some researchers argue that lost values and functions for those affected can be assessed in a qualitative manner, and that considerations around NELs should be integrated into comprehensive risk management approaches (Serdeczny et al. 2019). These types of assessments may be able to contribute to risk management and addressing NELs under the UNFCCC (ibid.; IPCC 2022: 67).

More fundamental questions remain: what holds value, who can assess this value, how, and how this should be represented and communicated? This is especially true of non-quantifiable losses and damages, in order that these may also be visible and carry weight in decision making processes (Van der Geest and Warner 2015). These challenges are illustrated by the case of economic and non-economic losses in the Ghanaian drylands presented below, which underlines how losses and damages can be highly localised and linked to place-specific values and ways of life, making them difficult to assess or aggregate for scientific and policy processes.

Loss versus Damage

In addition, a distinction between losses and damages is increasingly being made by some researchers. They suggest that losses and damages have guite different characteristics, despite often being considered together. They distinguish between damages, which refers to reparable harm, for instance damage to infrastructure or crop failure, and losses, which refers to irreparable harm such as loss of lives, ecosystems or cultural heritage (Lusk 2017; Jensen and Jabczyńska 2022, Puig 2022a). Damages occur when adaptation is insufficient or ineffective, i.e. before the hard limits to adaptation have been reached. Addressing them requires risk management measures and financial resources. Losses, in contrast, occur beyond the limits to adaptation, and addressing them will hinge much less on finance but rather on 'understanding how to prevent or delay loss, when this is possible, and how to manage loss, when loss occurs' (Puig 2022a: 8). In research and practice, it may therefore be constructive to distinguish between losses and damages in order to develop approaches tailored towards each. In addition, distinguishing between the two will likely also be useful in policy deliberations across levels, with research describing how this may be relevant to UNFCCC processes and even perhaps the Global Stocktake (Puig 2022b).

Distinguishing between losses and damages may also be useful for developing approaches to addressing existential losses in research, policy and practice. Existential losses refer to 'inevitable harm and unavoidable transformation for some

people and systems' (IPCC 2022: 171, see also 2564), for instance sea level rise posing an existential threat to small island states and low-lying areas (IPCC 2022: 15, 94, 478). Even if warming is stabilised at 2°C coastlines will continue to shift, 'affecting at least 25 megacities and drowning low-lying areas' over longer timescales (IPCC 2022: 478). In the Pacific region there is a high risk that sea level rise will prompt forced relocation (IPCC 2022: 1207).

Such existential losses would be of a magnitude that has little precedent for response in modern international arrangements. Already now, current governance and institutional arrangements cannot address climate risks in low-lying areas globally (IPCC 2022: 480). Projected future losses are much worse. This again underlines the critical nature of further averting losses and damages through heightened mitigation action. The profound social, political, economic, and environmental implications of those existential losses that remain will likely require the development of tailored measures for minimising and, especially, for addressing them.

CASE STUDY 2: ECONOMIC AND NON-ECONOMIC LOSSES IN THE GHANAIAN DRYLANDS

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Climate change represents one of the most critical developmental challenges in the drylands of the Upper West Region of Ghana. Generally, Ghana has experienced a just over 1°C temperature increase, a reduction in rainfall, and high climate variability between 1960 and 2000, with much of the change occurring in the dryland areas (Klutse et al. 2020).

The Upper West region of Ghana is especially affected due to the population's high dependence on natural resources, the nature of the environment, and persistently high poverty levels (Derbile 2014; Dapilah et al. 2020). Against this backdrop, the Upper West has suffered recurring droughts and floods. The droughts of the 1970s and 1980s and several more recent dry spells and droughts devastated crops and animals, resulting in extensive food insecurity (van der Geest 2011; Teye et al. 2021). From the 1990s, floods including those of 2007, 2011, 2017 and 2021 have wrought havoc on crops and livestock, damaged most households' homes and wiped out key infrastructure including bridges, roads and markets.

There are also non-economic losses associated with these events, though these are often overlooked. They include loss of biodiversity, loss of cultural ways of living, stress, diminished social capital, and loss of hope. The shea tree, dawa dawa, and several herbs that hold much cultural and health significance have been negatively affected by climate change. The existence of some indigenous varieties of maize, sorghum and groundnut is also under threat from climate variability. In addition, the adoption of climate resilient seeds, particularly maize, yam and sorghum, is resulting in loss of longcherished traditional varieties, which are needed for traditional foods, local sacrifices and festivals (Derbile et al. 2016).

One of the most prominent aspects of loss and damage, however, is human mobility, which also evidences the overlaps between economic and noneconomic losses in practice. Over the last few decades flooding and strong winds have resulted in many temporary displacements, with communities often receiving little or ad hoc assistance from Government and experiencing suffering and damages to livelihoods, property and social networks as well as psychological challenges. Many households have had to relocate, losing their social networks in the process. Both distress and planned migrations, which are key climate mobility strategies in the region as agricultural livelihoods decline, also come with huge physical, health and emotional burdens. Migrants, often youths, leave their families for long periods and sometimes engage in hazardous labour in plantations and illegal mines in the south of the country with the risk of severe or irreparable health effects. These forms of climaterelated mobility have far-reaching consequences for the communities and households directly affected, as well as for the social fabric of entire communities (Teye et al. 2021).

Experiences of addressing economic and non-economic losses

Addressing economic losses in practice is becoming increasingly challenging. As noted above, humanitarian needs are growing tremendously and outstripping capacity (OCHA 2017; Ahmed 2021), and public coffers are in some cases under strain to respond to increasingly frequent and intense events (OECD *forthcoming*). Options and opportunities for addressing economic losses also vary for different actors across scales – national governments have more options than do subnational governments with little discretionary funding or avenues for income generation, and communities and individuals' options can be even more limited. In

addition, political challenges in reaching consensus on Loss and Damage and financing may hinder action, even as losses and damages are increasingly felt globally (IPCC 2022: 2563).

When considering addressing **economic losses and damages**, or those that can be monetised, it is also useful to distinguish between sudden and slow onset events. From a national government perspective, main options for addressing economic losses associated with sudden onset events are greater and include humanitarian assistance, development assistance, climate funds, risk transfer mechanisms, and public finance. A basic assessment of the utility of each, based on accessibility and ability to address needs, is presented below.

Table 2. Assessment of options to address slow and sudden onset events

Source	Brief description	Current utility for slow and sudden onset events Red (low utility) Yellow (medium utility) Green (high utility)	
		Slow	Sudden
Humanitarian assistance	Addressing economic losses and damages is generally outside its scope, as are widespread losses and damages linked to slow onset events, e.g. seasonal changes, erratic rainfall, temperature extremes. Humanitarian assistance is also to a greater degree focused on short-term relief.		
Development assistance	Can contribute to recovery and rebuilding efforts, though this is contested, and has potential drawbacks in the context of losses and damages, e.g. ownership (see Section 3.1 and OECD forthcoming).		
Climate funds	See Sections 3.1 and 4.1. Their role has hitherto been limited and is discussed in relation to slow onset events. The Green Climate Fund has been most active, with loss and damage themes reflected in main activities of 16% of financed projects (IPCC 2022:2565).		
Risk transfer, e.g. insurance	Insurance is especially used in relation to sudden onset events, though also for, e.g., droughts, livestock, etc. It entails costs to the insured (unless premiums are paid by another entity) but reduces the risk of being unable to access finance at a time of need (OECD forthcoming). Its utility to address the broad spectrum of losses and damages has been assessed as limited (Norlander et al. 2020).		
Borrowing	National governments can also borrow to address economic losses and damages, see below. This is generally linked to sudden onset events, though has been used to a lesser extent in relation to slow onset events.		
Public finance	Public finance is used in minimising loss and damage, e.g. through development, adaptation and DRR, as well as addressing loss and damage, e.g. disaster response and recovery. However, especially for disproportionately affected developing countries, public finance is insufficient and will need to be supplemented to fully address losses and damages (IPCC 2022: 2565).		

Source: Own elaboration.

The first three sources of support for addressing economic losses and damages are discussed in Section 3.1, while risk transfer is discussed in Section 3.4. As is evident from the table, no single source of financing has a high utility for addressing losses and damages, pointing to the need for multiple as well as novel sources and approaches.

Borrowing is also a common response for many actors, not just national governments. National governments borrow to address economic damages and cover the costs of rebuilding. This is more common for developing countries; wealthier countries have more savings and other financing options, for instance issuing bonds (OECD forthcoming). Families and individuals also borrow or rely on social networks for assistance after extreme events. However, as illustrated in the case study, this is in some cases becoming unsustainable as climate stressors increase. A similar tendency on another scale is evident for national governments, where major disasters contribute to credit downgrades, decreasing access to credit and reducing capacity to respond climate stressors and related development issues. This is disproportionally a problem for developing countries who are more dependent on international financial markets (OECD forthcoming). There is also uneven access to finance and lending opportunities in general, both at household and country level, with poorer households and countries at a disadvantage. This is a cause for concern, as guick access to resources can help reduce losses and damages after an extreme event (see figure in Costella et al. 2018: 2; OECD forthcoming). Some countries and financial institutions have responded by pre-arranging credit contingent upon the occurrence of specific climate events (OECD forthcoming: 51).

Public finance is another option. This can be digging into purposed reserves, for instance catastrophe funds, or using funds from the government budget when such reserves are not available. This is often not an option for sub-national governments with limited discretionary funding, which suggests that smaller events, such as local flooding may be unlikely to prompt support as described in the case study above. This is a wider issue across the avenues of support.

Existing avenues for addressing economic losses and damages are limited in their utility, as illustrated above, and there are indications that the same is true of their coverage, i.e. the extent to which they address economic losses and damages. In addition, they are not necessarily based on solidarity nor on UNFCCC principles such as equity and common but differentiated responsibility. Together, this means that more vulnerable individuals and countries continue to bear much of the economic costs themselves; indeed, climate change is already 'estimated to have slowed trends of decreasing economic inequality between developed and developing

Adaptation finance can be illustrative for the opportunities and challenges facing loss and damage finance. Adaptation finance has been inadequate when compared to estimated needs, even in relation to pledges, which have themselves not been met. In addition, the quality of the finance has been low (e.g., non-conditional loans being counted as equivalent to grants). The majority of adaptation finance is bilateral and multilateral, while dedicated climate funds provide a much smaller share. This again raises questions of ownership. In addition, research indicates that donors' adaptation spending is influenced by geopolitical considerations. There are also challenges associated with the finance provided through dedicated climate funds; it can be difficult to access, prompting increasing focus on devolved finance and direct access mechanisms. This is linked in part to fiduciary and other requirements regarding administration and documentation that can act as barriers to access (IPCC 2022: 3008).

countries' (IPCC 2022: 54). This indicates a need for further efforts to address economic losses. However, there is continued, deep-seated disagreement among Parties to the UNFCCC over the extent to which existing tools are adequate and in what way they should be expanded and supplemented, such as through a dedicated loss and damage funding window of the GCF (Kempa et al. 2021) or a dedicated loss and damage financing mechanism. In addition, discussions of compensation, potentially relevant to addressing economic losses, are ongoing. They are currently limited within the UNFCCC process but are receiving extensive attention in the scientific literature (McNamara and Jackson 2019).

Regarding non-economic losses and damages, experience addressing these remains limited. There are some areas that have received attention, generally because they fall under existing areas of intervention. These include mobility, health, and biodiversity and ecosystem services, among others. Mobility and health are discussed briefly here, while addressing losses and damages in natural systems will be discussed in Section 3.3.

Human mobility linked to climate change includes relocation, displacement and migration, and also immobility, and is increasingly documented and evident across the globe. Both extreme and slow onset events drive involuntary migration and displacement in interaction with contextual factors, and mobility is most often in-

country or to neighbouring countries rather than further afield (IPCC 2022: 52). Planned relocations are also increasingly documented around the world, generally through domestic programmes (IPCC 2022: 639, 1086), and seek to manage residual risk. International policies and mechanisms reflect intensifying climate mobility, from the Global Compact on Migration to the Sendai Disaster Risk Framework. Under the UNFCCC, climate mobility is recognised in the Paris Agreement and within the WIM through the Task Force on Displacement, which has done significant work on the topic. However, concrete mechanisms to address human mobility are lacking. The GCF, for instance, while financing some projects with human mobility 'elements', does not include climate-related mobility as part of its overall objectives, which may limit financing at scale (IOM 2018).

Additional attention, knowledge, and rapid, concerted action are needed to both minimise and address such losses and damages to prevent human tragedies of as yet unknown proportions.

Human health impacts linked to anthropogenic climate change have been geographically extensive and severe, for both physical and mental health (IPCC 2022: 11). However, these impacts can be mediated by human and natural systems. Robust health systems can, for instance, play a role in minimising and addressing health-related losses and damages associated with climate change (IPCC 2022: 1625). This can be through implementing Heat Health Action Plans, improving water access, improving sanitation systems to handle heavy rains and flooding, developing and improving access to vaccines and treatment for vector borne diseases, and improving monitoring of psychosocial impacts from climate events and access to mental health care (IPCC 2022: 25). However, there are also examples of health systems being disrupted by extreme events. This can lead to indirect losses and damages, where negative impacts of climate change lead to second-order impacts. Researchers looking at maternal and infant health, for instance, have documented that extreme events are associated with reduced access to antenatal and paediatric care, as well as increases in unattended deliveries (IPCC 2022: 1075). This is in addition to documented associations between heat exposure and premature birth. low birthweight and stillbirth (ibid.). Maternal and infant deaths are merely one example of increasing and diverse health impacts linked to the effects of climate change. Additional attention, knowledge, and rapid, concerted action are needed to both minimise and address such losses and damages to prevent human tragedies of as yet unknown proportions.

Looking across experiences with addressing economic and non-economic losses, it is clear that the patchwork of existing efforts, in their current configuration and scope, will not be able to coherently address the many aspects of loss and damage on the ground. This is evident when looking at the diversity of the losses and damages described in the two previous case studies and comparing this to current forms of support described in Sections 3.1 and 3.2. It is also illustrated clearly in the following figure, which provides an overview of efforts to avert, minimise and address economic and non-economic losses and damages associated with sudden and slow onset events, and indicates areas which remain unfunded through climate finance:

Table 3. Types of activities to avert, minimise and address losses and damages

	Sudden-onset events	Slow-onset events			
Averting loss and damage (addressed through mitigation finance)					
	 Decarbanisation measures Reforestation and land use management Behaviour change 	 Decarbonisation measures Reforestation and land use management Behaviour change 			
Minimising loss and damage (addressed through adaptation finance)					
	 Early warning systems triggering effective pre-event prevention and response actions Preventative building measures (retrofitting and new building codes to increase the resilience of infrastructure) Contingency planning Vulnerability reduction and capacity-building 	 Forecasting and early warning triggering pre-event risk reduction Physical risk reduction measures (e.g. dykes and sea walls) Other risk reduction measures (e.g. climate-resilient agriculture) Vulnerability reduction and capacity-building 			
Addressing loss a	nd damage (as yet unfunded through clima	te finance)			
Economic loss and damage	 Compensation and other social protection measures Short and long-term recovery and rehabilitation Rebuilding damaged infrastructure Planned relocation / assisted migration Support for rebuilding livelihoods Insurance and risk transfer 	 Planned relocation / assisted migration Reskilling and alternative livelihoods provision Compensation and other social protection measures 			
Non-economic loss and damage	 Recognition and repair of loss (whether or not accompanied by financial payments) Enabling access / safe visits to abandoned sites Active remembrance (e.g. through museum exhibitions, school curricula) Counselling Official apologies 	 Recognition and repair of loss (whether or not accompanied by financial payments) Enabling access / safe visits to abandoned sites Active remembrance (e.g. through museum exhibitions, school curricula) Counselling Official apologies 			

Source: Adapted from Shawoo et al. 2021.

3.3. LOSS AND DAMAGE ACROSS HUMAN AND NATURAL SYSTEMS

Loss and damage is increasingly felt across human and natural systems globally. Within responses to climate change, there has been growing attention to losses and damages in natural systems, e.g. biodiversity loss, as well as focus on adaptation within and drawing on natural systems, for instance nature-based solutions. This is illustrated in the latest IPCC report, which describes 'adverse consequences due to climate change' as including 'those on lives, livelihoods, health and well-being, economic, social and cultural assets and investments, infrastructure, services (including ecosystem services), ecosystems and species' (IPCC 2022: 2545). This section explores growing understandings of losses and damages across human and natural systems and approaches to addressing these.

Research across human and natural systems

Historical debates on losses and damages have often placed great weight on human systems, i.e. on loss of human life, loss of territory, or loss of social and cultural practices etc. However, there has been growing attention to natural systems within these discussions, both in their own right, but also in relation to their importance for human systems. This may also reflect an increase in observed impacts on natural systems. Anthropogenic climate change is affecting ecosystems globally, and there are indications that effects are happening more quickly and are more far-reaching and significant than expected (IPCC 2022: 43). The responses of natural systems have often not been adequate to cope with these changes, and we are therefore seeing increasing species loss, disease, mass mortality, climate-related extinctions, and the loss of specific ecosystems (IPCC 2022: 45). Many of these losses are, and will increasingly be, irreversible. Forecasts of future impacts of anthropogenic climate change clearly indicate that we will be increasingly confronted with such biological losses and damages, grapple with their meanings, and have to contend with their implications for human systems (ibid.).

Already now, observed impacts in biological systems have had far-reaching consequences for human systems. These include negative impacts to human health and well-being, as well as changes to cultural and social practices in societies around the world. In addition, there have been economic and livelihood losses from extensive damage to coastal areas and environmental livelihoods across the world. Losses are often more severe for Indigenous Peoples and those more reliant on the environment for cultural practices and livelihoods. In addition, researchers highlight the feedback mechanisms between and across human and natural systems and the deep linkages between them. For instance, environmental degradation due to human intervention can exacerbate the negative impacts of climate change on natural

systems, in turn further negatively affecting the populations dependent on such systems (IPCC 2022: 12). This can be seen in loss and damage in relation to droughts in Africa. Pre-existing land degradation can exacerbate vulnerability to drought and losses and damages associated with droughts (King-Okumu et al. 2021). Other research underlines that when such climate stressors undermine livelihoods, people in some cases turn to activities, e.g. charcoal production, that can further exacerbate anthropogenic climate change and local land degradation (IPCC 2022).

Research suggests that alternative approaches outside of mainstream responses to climate change may hold promise, both for pushing adaptation limits to minimise loss and damage, as well as to address losses and damages beyond adaptation limits. This includes transformative approaches as well as approaches informed by local or indigenous knowledge. Transformative approaches to climate change are often contrasted to business-as-usual approaches and are described as entailing systemic change, implying shifts from existing approaches and trajectories (IPCC 2022: 2668).

Local and indigenous knowledge is often based on different epistemologies, or understandings of the world, to those of mainstream approaches to understanding and addressing climate change. While extremely diverse, local and indigenous knowledge often places more value or emphasis on natural systems than do mainstream approaches. Approaches based on local and indigenous knowledge and epistemologies therefore have greater potential to not only minimise and address loss and damage in human systems, but across both human and natural systems. The benefits of approaches with an integrated consideration of human and natural systems are increasingly recognised and are being taken up more broadly, for instance in nature-based solutions, as discussed later in this sub-section.

There is now robust research indicating the importance of integrating such diverse perspectives and epistemologies not only in programming, but also in climate change knowledge generation and policy formulation (IPCC 2022: 99). Benefits include that it broadens understandings of climate change and its solution space; provides additional valuable input to scientific knowledge and policymaking on specific climate impacts, including how to minimise and address these; and that it addresses the specific challenges facing vulnerable populations, including indigenous groups (IPCC 2022: 99; IPCC 2019).

CASE STUDY 3: UNPACKING CLIMATE CHANGE IMPACTS AND LOSSES ACROSS HUMAN AND NATURAL SYSTEMS IN KANAKA BAR BAND (BRITISH COLUMBIA, CANADA)

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Patrick Michell, Nlaka'pamux Nation member, Former Chief, Kanaka Bar Indian Band

For Indigenous Peoples in Canada, climate change impacts and losses threaten human, inherent, and constitutionally protected rights. Individual, family and community health impacts are occurring due to the losses and changes in ecosystems and animal migration patterns, changing modes and pathways of transportation (e.g. unavailability of winter roads), food security and availability of clean drinking water. These impacts are disproportionate: Indigenous Peoples are 18 times more likely to be evacuated due to disasters than people living off-reserve, while fire-related fatalities are ten times higher (Yumagulova et al. 2021). Intergenerational knowledge sharing is disrupted due to evacuations, displacement, and loss of community members and elders (Yellow Old Woman-Munro et al. 2021). Continued impacts of colonization and climate change are deepening Indigenous Peoples' 'lived experiences' of loss and dislocation. This is often in the form of 'solastalgia', a homesickness one gets when still at 'home' (Albrecht et al, 2007) – as this home is no more.

For over 7000 years, Kanaka Bar Indian Band's (KBIB) Traditional Territory has sustained Nlaka'pamux People (KBIB 2022) and the visitors who come to the land. Contact and colonisation altered the KBIB Peoples' way of life, forcing the community to live out of alignment with their values. To heal from cultural genocide, the recovery began within the human systems. As shared by Patrick Michell, an Nlaka'pamux leader and KBIB's former chief, 'It took Kanaka Bar about 36 years to reverse the adverse colonial effects on individual, family and community mind, body, heart, and soul. We did it through getting back on the land and developing renewable energy'.

Taking back the community's future was the first step in self-sufficiency in daily lives and managing extremes being experienced now. Since the late 1970s KBIB has been observing changes within the natural systems (Fire, Water, Earth, and Air) that do not align with the typical historical evolutions of

the landscape (KBIB 2019). KBIB continually seeks to better understand climate change impacts on the Territory and People. Indigenous knowledge and observations are combined with Western science to help proactively prepare for an uncertain future. Kanaka has conducted a vulnerability assessment for water (ecosystems health, domestic purpose, irrigation, firefighting and generating energy), food security and other key sectors and developed a detailed community resilience plan – a five-year roadmap of projects and programmes ensuring that the community can shelter in place, regardless of the weather.

Decades of work were put to the test in 2021. British Columbia experienced 'BC's Year of the Climate Disaster', a year that 'baked, dried out, scorched, flooded, froze and inundated regions with mud, rock and debris flows' (Gage 2021). The impacts were dire within human and natural systems. More than one billion sea creatures cooked to death (Yurk 2021). On June 29th, Lytton experienced the highest ever recorded temperature in Canada. On June 30th, it burnt to the ground. In Kanaka, only 14 kilometres south of Lytton, the infrastructure remained standing, but the people were deeply impacted by the losses.

In July 2022 KBIB vowed to protect endangered ecosystems in the proposed T'eqt'aqtn Indigenous Protected and Conserved Area (IPCA). This 350 km² IPCA will include preservation of around 125 km² of old-growth forests and will safeguard the territory's unique ecosystems and cultural heritage from further harm, restore areas damaged by industrial logging and mining, and mitigate wildfires, floods, and landslides (KBIB 2022). A Land Guardian programme will ensure that continued relationships between the human and natural systems are monitored.

Action across human and natural systems

There are ongoing efforts in practice to minimise and address loss and damage across human and natural systems. An overview of such efforts largely focused on human systems is included in Section 3.1. Regarding natural systems, these often also fall within existing fields of intervention, specifically biodiversity and conservation efforts. There have been growing efforts to minimise loss and damage to natural systems in these fields, and increasingly, to address losses, for example through ecosystem restoration and rehabilitation and, for these fields, anthropogenic climate

change poses a new, additional challenge. Existing fields will continue to be important for minimising and addressing losses and damages in natural systems. However, they have been criticised for deprioritising the human aspect, especially vulnerable populations.

Here, we look to practice-based experience with efforts to minimise losses and damages across both human and natural systems. The case study above provides an excellent example of indigenous knowledge and practices. We supplement this with further information and experiences of transformational approaches, indigenous and local knowledge and nature-based solutions.

Transformational approaches, in contrast to more incremental change, entail 'change in the fundamental attributes of a system including altered goals or values' (IPCC 2019) and can include changes to 'worldviews, ideologies, structures and power relationships' (IPCC 2022: 2668; see also IPCC 2022: 171–172). Attention to transformational approaches has grown with the understanding that transitions within existing systems cannot ensure human and planetary health in the face of intensifying climate change (IPCC 2022: 2668). Transformational approaches have the potential to overcome soft limits to adaptation (IPCC 2022: 26) as well as support more equitable, just and sustainable outcomes (IPCC 2022: 172, 2668), though this is not a given. In view of the far-reaching nature of transformative change, lessons from existing climate interventions point to the need for caution in formulation and implementation of transformative interventions to avoid negative outcomes, especially for the most vulnerable (Eriksen et al. 2021).

According to the IPCC 1.5°C Special Report, transformative change will be needed across many sectors and systems, e.g. land, water and ecosystems, energy systems, and infrastructure systems (IPCC 2019), and one aspect of such transformative change is often greater linkages between human and natural systems. Examples of transformational approaches include shifts in agricultural production systems (IPCC 2022: 2669), use of urban ecological infrastructure (IPCC 2022: 100), and 'green economy' approaches (IPCC 2022: 173). Because transformational approaches entail shifts in systems and relationships within them, research points to the utility of indigenous and local knowledge as well as nature-based solutions in supporting such shifts. While a common characteristic of transformational approaches is their tendency towards greater balance between human and natural systems, this requires adequate resources and supportive governance arrangements (IPCC 2022: 99).

Indigenous knowledge and local knowledge have long been overlooked by Western scientific approaches, but recognition of their value has increased, including through knowledge and information of climate and environmental change, solutions to the same, and diverse ways of knowing and understandings of human and natural systems (IPCC 2022: 99, 2713). Indigenous and local knowledge and related systems are extremely diverse. Indigenous knowledge refers to 'the understandings, skills and philosophies developed by societies with long histories of interaction with their natural surroundings,' while local knowledge refers to 'the understandings and skills developed by individuals and populations, specific to the places where they live' (UNESCO n.d.; IPCC 2019). They are thus often characterised by rich, locally-specific knowledge, and understandings of change in ecologies and their relationships with human systems over time, as well as different methods for producing and communicating such knowledge (IPCC 2022: 2713). A detailed example of addressing loss and damage informed by indigenous knowledge is illustrated in the case study above. Other experiences include:

- Ecosystem restoration by Sámi, Nenets and Komi groups in Scandinavia and Siberia.
- Agroforestry practices and native seed use by the Mapuche in Chile and Maya in Guatemala.
- Climate forecasting through environmental observation by Afar pastoralists in north-eastern Ethiopia and Inupiat in Alaska (IPCC 2022: 2715).

The diversity of these examples illustrates the value indigenous and local knowledge and related systems can offer in efforts to understand and respond to environmental change. However, experiences thus far underline the necessity for pluralistic governance and knowledge production processes to ensure the inclusion of these valuable contributions (IPCC 2022: 99). Finally, experience suggests that drawing on knowledge on climate risk and responses from diverse knowledge systems can support transformation towards climate resilient development (IPCC 2022: 99).

Nature-based Solutions (NbS) is an umbrella concept that refers broadly to 'actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits' (Cohen-Shacham et al. 2016: 2). NbS have received increased focus in recent years, specifically because of their aim to place environmental, social and economic concerns on an equal footing (IPCC 2022: 163) and their potential to simultaneously support climate resilience, biodiversity conservation and human development (Funder and Gravesen 2022). They also offer greater opportunities for social and ecological transformation than do interventions

relying on grey/physical infrastructure or social policy (IPCC 2022: 81). In relation to climate change, NbS can in some instances offer both mitigation and adaptation outcomes simultaneously, for example through afforestation, agroforestry, marine and wetland management, urban greening, and agricultural practices such as intercropping (IPCC 2022: 163). However, there have been concerns with NbS, e.g. large-scale agricultural and afforestation interventions negatively affecting biodiversity and native ecosystems (Seddon et al. 2020); undermining rights, access and input of affected communities (Funder and Gravesen 2022); contributing to maladaptation; and in some cases even becoming a negative carbon sink (IPCC AR6 WG II 2022: 163). In 2020 the International Union for Conservation of Nature adopted the Global Standard for NbS, which includes criteria and indicators to address some of these concerns and without which activities cannot be formally considered NbS. In terms of loss and damage, NbS can contribute to averting and minimising losses and damages associated with climate change impacts. There may also be potentials for NbS to address losses and damages, for instance through ecosystem restoration, an area which could be further explored.

3.4. PRODUCING AND REDUCING RISK

Discussions around the impacts of climate change, including loss and damage, are grounded in the concept of risk. The IPCC defines 'risk' as 'the potential for adverse consequences for human or ecological systems, recognising the diversity of values and objectives associated with such systems' (IPCC 2022: 43). The AR6 Report definition explicitly notes that 'risks can arise from potential impacts of climate change as well as human responses to climate change emerging in the interaction between climate hazards and the vulnerability and exposure of human systems, ecosystems and their biodiversity, as illustrated through the well-known propellor diagram (see IPCC 2022: 42). Here, key debates and considerations around defining, measuring and addressing risk are presented, as well as their implications for loss and damage in practice and policy.

Research on defining and assessing risk

Research points to the importance of how risk is defined and measured for the kinds of solutions that are developed and how they are implemented. Differing approaches to risk may lead to different views on what does and does not constitute loss and damage associated with the adverse effects of climate change, or to different approaches to addressing this risk. It is clear that losses and damages result not only from climate-related events but also from 'pre-existing conditions' such as urbanisation, biodiversity loss, land degradation, social justice issues, the COVID-19 pandemic, etc. (OECD 2021; IPCC 2022: 45). These latter fall under 'exposure and vulnerability' in the IPCC definition of risk, and IPCC understandings of risk have over time increasingly recognised the societal systems and factors contributing to risk.

The role of both climatic and non-climatic factors in producing risk creates challenges: how to discern the relative weight of different drivers of risk, climatic and social, and how best to address them? While the IPCC definition acknowledges these different drivers, there is a spectrum of approaches in research and practice. On the one hand, there are approaches that foreground the hazard itself, for instance a storm or drought, and examine the consequences. On the other, there has been an influential vulnerability approach that considers a particular outcome, e.g. hunger, and examines the role of the hazard alongside other underlying factors, e.g. resource access, to understand how this outcome came about for particular individuals or groups (see discussions in Ribot 2014; Bassett and Fogelman 2013).

Hazards-based approaches, due to their more technical nature, often fail to address 'root causes' of vulnerability, exposure and subsequent risk (Bassett and Fogelman 2013). Root causes are unevenly distributed within and across groups and are linked to existing inequalities – a minority woman living in an informal settlement is more at risk of negative impacts following urban flooding than an affluent urban man. Failing to recognise or address such root causes limits the extent to which climate risk can be fully addressed. In addition, overlooking the soft limits to adaptation inherent in vulnerability and exposure may lead to assessments of non-mitigable risk, e.g. potential losses and damages, where attempts are not made to minimise these. This is evident in the case study below, with far-reaching consequences for those affected.

Because of these different approaches, who is assessing risk and how become highly significant. Those most at risk are generally highly vulnerable, i.e. their risk is driven to a high degree by social factors. At the same time, they are often in marginal groups that are chronically underrepresented in political and social processes. In other words, they likely do not have the influence to engender changes in the conditions placing them at greater risk of losses and damages. This points not only to the importance of incorporating vulnerability into risk assessments, but also the need for inclusion and representation of those affected when defining and assessing risk (Suva Dialogue 2018a).

Finally, perceptions of risk differ extensively. They are influenced by values and worldviews, sense of place, perceptions of justice and accountability, and discourses and power. These are not fixed; they vary over space and time (Granderson 2014). This variability in risk poses challenging questions for defining residual risk (what counts as loss and damage?) and non-mitigable risk (when must lives and livelihoods change, perhaps drastically?) It is also a highly political space, in which stakeholders' conflicting values and interests play out (OECD 2021). The ambiguities and politics of climate risk are well illustrated in the case of landslide risk, zoning and resettlements in Bogotá, Colombia, described below.

Ultimately, assessing risk is value-based and political at the same time, as the boundaries of climate risk are themselves variable. Rather than depoliticise this process, or approach it as solely technical, experience indicates the importance of transparent and inclusive processes that acknowledge divergent views.

CASE STUDY 4: LANDSLIDES IN BOGOTÁ COLOMBIA: THE ROLE OF ZONING LAWS AND PRACTICE IN PRODUCING RISK

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Climate risk in urban Bogotá is closely linked to poverty and inequity. However, risk reduction measures have tended towards purely technical understandings, failing to consider underlying risk drivers. This has driven incomplete interventions that cause unfair distributions of risk management resources, affecting the capacity for adaptation of impacted populations and urban spaces.

One of the major climate risks in Bogotá is landslides, and a leading measure for managing landslide risk in Bogotá is population resettlement. It involves identification, through technical diagnosis, of households exposed to nonmitigable risk conditions, and their subsequent relocation to housing solutions in safer environments. This process relies on one of the most robust climate risk databases in Latin America (Fraser 2017). However, bottom-up opposition to these measures has shed light on contradictions in the process. The socalled non-mitigable risk conditions, as determined by municipal authorities, correspond with low income areas, even though biophysical variables determining susceptibility to landslides are evident across areas of different socio-economic levels. The municipal authority's 'diagnosis' of non-mitigable risk is final in marginal areas. Other, private, landowners in contrast, have the privilege of being allowed to define the risk category for their properties through formal procedures, allowing them to continue to use and exploit their land.

Consequently, the non-mitigable risk of landslides in Bogotá is a condition exclusive to low-income households who, in this way, lose control of their land, which is then expropriated. Furthermore, the risk condition itself implies an economic detriment: as the land loses its value completely former landholders become 'beneficiaries' of resettlement, where they face procedural barriers to access replacement housing, lose the value of their assets, experience dispersion and separation of family groups, and are relegated to standardised, low-cost housing solutions. These housing arrangements are provided by intermediaries that gain from developing urban areas, even those in similar geographical mountainous conditions.

Regarding relocation areas, claims indicate a fragmented incidence of relocation, an absence of future planning for these urban spaces and an expansive ripple effect caused by underlying risk drivers in affected sites. Once high-risk areas are declared, they are castigated by severe restrictions that have a repellent effect on the public and private investments needed to dynamise social and urban functions essential for risk recovery and to enable transformative changes towards sustainability (Masten and Obradovic 2008; Pereira et al. 2018).

Reducing and managing risk in practice

In practice a range of risk reduction, transfer and retention strategies are increasingly used in relation to loss and damage. Risk reduction and transfer especially often come up in loss and damage debates. They are addressed by the WIM's Technical Expert Group on Comprehensive Risk Management and figure large in UNFCCC processes on Loss and Damage, most recently in the Glasgow Dialogue at SB 56. They are touched on briefly here as well, as they contribute to minimising losses and damages. However, risk retention, which entails addressing losses and damages and has generally received less focus, will be increasingly important in practice as emissions rise and climate impacts intensify further.

Risk reduction refers to ex-ante measures to reduce the risk of negative outcomes associated with climate-related stressors. As risk is a function of vulnerability, exposure and hazards, there are innumerable avenues of risk reduction, including sustainable, inclusive development and adaptation. In loss and damage debates specifically, early warning systems (EWSs) have garnered extensive attention and support in policy and practice and were, for instance, mentioned repeatedly in Loss and Damage discussions at SB 56 in Bonn. Similarly, improved climate services, including long-term forecasting, have been hailed as a tool to avoid losses and damages associated with slow onset events, for instance by providing better seasonal forecasts to farmers so they can avoid losses and damages to their crops. However, risk reduction measures cannot address losses and damages, and their ability to limit losses and damages is also limited. For instance, EWSs can only to a lesser extent prevent losses and damages to livelihoods, property and infrastructure. While a family may survive a typhoon, their home and all their belongings may be destroyed - along with local schools, clinics, markets and roads - and they may experience displacement for months or even years, also a form of loss and damage. Also important, the prioritisation of near-term risk reduction measures can come at the cost of transformational adaptation (IPCC 2022: 20).

Risk transfer describes any measure where risk is transferred to another entity, including informal mechanisms of mutual support as well as formal measures such as insurance (see Suva Dialogue 2018a; WIM ExCom 2019). Risk transfer can occur at individual levels, for people or businesses, as well as collectively at government levels. Examples of the latter are developing apace and receiving growing attention in Loss and Damage debates (OECD forthcoming) and include, for example, the African Risk Capacity and Caribbean Catastrophe Risk Insurance Facility (IPCC 2022). Insurance is also an option for individuals, who can for instance insure agriculture (IPCC 2022), e.g. livestock or crops. However, vulnerable households can lack information on and funds for insurance (GCM 2021). Parametric insurance is also increasingly being used (Broberg 2020). A central question regarding insurance is who should pay the premiums as those who take out the insurance are generally more vulnerable, less wealthy and less responsible for the emissions driving climate impacts. Some novel insurance efforts are underway under the umbrella of loss and damage, that seek to a higher degree to address these justice concerns. While many actors agree that risk transfer has a role to play in minimising losses and damages, risk transfer mechanisms, specifically insurance, have been assessed as failing to address a broad spectrum of losses and damages (Norlander et al. 2020).

Finally, **risk retention** entails managing residual risk, e.g. that which is not reduced or transferred. Risk retention consists solely of measures to address losses and damages. In some cases, countries or households may decide to retain risk rather than bear the cost of risk transfer, for instance in situations of frequent, low-impact

events (WIM ExCom 2019). In other situations, there may be no option for risk transfer and, because of this, many individuals, communities and governments involuntarily retain risks (Suva Dialogue 2018b). Current approaches to risk retention include both ex-ante and ex-post measures, for instance emergency assistance loans, humanitarian assistance, national disaster funds, public sector-funded reconstruction and rehabilitation, social protection and safety nets (Suva Dialogue 2018a). Households often draw on loans, savings, social networks or remittances (WIM ExCom 2019), which can strain social ties and exacerbate vulnerability.

However, not all risks can be retained, as is already evident in the lack of finance to address the impacts of extreme events. Other barriers include lack of insurance, lack of capacities on risk retention planning and management, and lack of appropriate technologies (Suva Dialogue 2018b). In such cases, losses and damages go unaddressed, inordinately affecting poor and vulnerable countries and populations.

Key points emerging across practice are the need for robust risk assessments (see WIM ExCom 2019: 6–7), which should inform comprehensive risk management approaches. Such approaches can help identify which risks should be addressed and through what kinds of tools, i.e. risk reduction, transfer or retention. Implementation can be challenging, as risk management is necessarily highly context-specific, faces extensive uncertainties, and often requires the involvement of an array of actors across scales and sectors (WIM ExCom 2019; Suva Dialogue 2018b). In addition, the inclusion of those affected will be crucial for successful outcomes (Suva Dialogue 2018a).

Improving knowledge and action on risk management, especially risk retention, and capacities and financing for the same, will be necessary for ensuring that the burden of risk management, and losses and damages, is not falling on the most vulnerable.

3.5. INSIGHTS EMERGING FROM RESEARCH AND PRACTICE

The sections above point to increasing climate-related impacts and concurrent gaps in minimising and addressing losses and damages. Taken together, they paint a bleak picture. They suggest that unless concerted action is taken, we may well see a global divergence between relatively less-affected, wealthier populations, better able to manage coming climate change impacts, and more affected, poorer and more vulnerable populations that will struggle to address the increasing losses and damages their populations will undoubtedly face. Indeed, climate change of only 1.1°C has already been assessed to have slowed the decrease in global inequality (IPCC 2022: 54). Already we are seeing national governments struggle to fund rebuilding efforts, national credit ratings downgraded, and international investors shy away from climate risk (OECD *forthcoming*). At the same time health impacts and food insecurity intensify (IPCC 2022: 11), and basic state services, including health and education, are increasingly affected (IPCC 2022: 662, 935). Finally, losses across human and natural systems, within social networks, and relating to cultural practices and religious beliefs undermine the most basic relationships with the societies and environments in which we live.

To move forward within research and practice specifically, the following are needed:

- Improved understandings of loss and damage, especially how it is experienced in practice, its attribution to anthropogenic climate change, and linkages to other socio-political economic and environmental dynamics. This includes the linkages between adaptation and loss and damage, i.e. limits to adaptation. In addition, lessons from efforts to address loss and damage are needed, particularly regarding non-economic losses and damages and slow onset events. Building a greater knowledge base on losses and damages will require both financial and technical support.
- Coherence across existing fields working with loss and damages in practice as well as bespoke solutions. The existing patchwork of efforts is inadequate in coverage and scope to address losses and damages. Specific types of losses and damages, e.g. slow onset, NELs, and existential losses, are especially underaddressed in existing efforts, as are efforts to address losses generally, e.g. community remembrance, support to resettlement, training and support to new livelihoods, ecosystem restoration, etc.
- Action and support across scales, from global to national and sub-national measures and mechanisms. This requires capacity sub-nationally for a sustainable, localised response, a supportive national environment as well as international mechanisms, e.g. finance, technical assistance, knowledge development/sharing, etc.
- Attention to structures and institutions, and financing, capacity and technical assistance across these levels. To date, discussions and negotiations are underway within the UNFCCC system and one third of NDCs to COP26 already mentioned loss and damage. These will need to reflect and address the localised losses and damages felt on the ground, that are already widespread across geographical and development contexts.

- Localised, inclusive approaches that are informed by the best available climate knowledge, attuned to a broader set of developmental concerns, and shaped by local and indigenous knowledge and priorities. Concerted efforts to integrate underrepresented components and perspectives, including vulnerable groups, e.g. women, the elderly, children and youth, ethnic and religious minorities, etc. will be needed. Representation of their perspectives needs to feed upwards into planning and policy processes so that these can reflect needs on the ground.
- Novel approaches in research, policy and practice. In research this will require further development of assessment methods, incorporating diverse forms of knowledge and epistemologies, with focus on under-researched areas of NELs and slow onset events. In policy and practice this will entail non-linear, transformative approaches to minimise and address loss and damage, requiring forms of support with room for unproven methods in high-risk environments and small-scale pilot projects.

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4. ANALYSIS OF RECENT POLICY DEVELOPMENTS AND CHALLENGES

ACE TO

Glasgow, UK, 3 November 2021: Interior of the Action Zone of the 26th UN Climate Change Conference, known as COP26. Photo: jeremy sutton-hibbert / Alamy Stock Photo.

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The status of Loss and Damage ahead of COP27 is characterised by advances including the establishment of the WIM and the WIM ExCom in 2013, legal recognition of loss and damage under the Paris Agreement in 2015, the establishment of the Santiago Network in 2019, and the launch of the Glasgow Dialogue in 2021. These developments are analysed here, with insight into current status, points of convergence and divergence among Parties, and areas requiring further policy work and negotiation.

4.1. FUNDING ARRANGEMENTS FOR LOSS AND DAMAGE

As demonstrated in Section 3, human-induced climate change has already caused extensive losses and damages to both nature and people (IPCC 2022). Limiting warming to 1.5°C would not eliminate all losses and damages, and evidence suggests that even effective adaptation cannot prevent all losses and damages (Hoegh-Guldberg et al. 2019; Roberts et al. 2014; Wrathall et al. 2015). Moreover, Section 3 also demonstrates that there are extensive unmet needs resulting from both slow and sudden onset events, with urgent support needed for both economic and non-economic losses and damages. As such, the availability of finance to address these current and future losses and damages is becoming increasingly pertinent.

Studies have estimated that annual loss and damage finance needs in developing countries will reach US\$200–580 billion annually by 2030 (Markandya and González-Eguino 2019; Richards and Schalatek 2017). This range remains large given the unclear boundaries and interpretations by different actors for how loss and damage can be defined and categorised as distinct from adaptation, humanitarian, development and disaster risk reduction needs (Boyd et al. 2017), as well as a lack of clarity on the exact scale and scope of the activities relating to loss and damage that would need to be funded (Gewirtzman et al. 2018). Further research will be needed to better gauge funding needs. In addition, existing finance, particularly adaptation commitments to date, have not been distributed on the basis of scientific assessments of financial needs. For instance, highly vulnerable regions have received lower levels of finance or an imbalance between mitigation and adaptation finance compared to their needs (see e.g. IPCC 2022: 1305–07).

Against this background, this section presents the different views on the suitability of existing funding mechanisms and options for further funding arrangements for loss and damage. Specific attention is given to addressing losses and damages, as this has been identified as a gap by a number of researchers and previous assessments of loss and damage finance (Adelman 2016; Germanwatch 2021; Gewirtzman et al. 2018; Roberts et al. 2014; Shawoo et al. 2021). Moreover, vulnerable countries in need of loss and damage finance have repeatedly stressed within UNFCCC negotiations and within the first session of the Glasgow Dialogue that finance for addressing loss and damage remains a key gap, with examples from the ground. Here, we therefore present potential options for how finance for addressing loss and damages and damages. While Section 3 has focused on the broader network of actors working to address loss and damage on the ground, including, for example, humanitarian actors, here we focus more on mechanisms within the UNFCCC regime in order to present an analysis that could feed into upcoming discussions on loss and damage finance at COP27. We still refer to external mechanisms, including the humanitarian aid system, to reflect on how this relates to addressing loss and damage through the UNFCCC.¹¹

Feasibility of existing funding instruments

Table 4 below presents an analysis by Germanwatch (2021) of the potential for the existing UNFCCC financial architecture to be able to address loss and damage. Based on the current funding scope and portfolio of work of these funds, it is evident that the operating entities under the UNFCCC do not provide funding for the full portfolio of activities needed for addressing loss and damage, such as support for planned relocation, alternative livelihoods provision and addressing non-economic losses and damages.

When it comes to existing climate funds, the Green Climate Fund has a mandate to fund efforts to address losses and damages and has funded several projects with loss and damage-related activities (Kempa et al. 2021). However, these are less than a guarter of funded projects, and as demonstrated above, several activities for addressing loss and damage remain unfunded. Furthermore, the structure and modalities of the GCF limit the extent to which it can provide support for addressing losses and damages going forward, particularly for sudden onset events (as indicated in Table 2). For example, studies have highlighted challenges recipient countries face to access finance, such as long lag times in proposal development and approval phases leading to two-three year wait times for finance (Fonta et al. 2018; Omukuti et al. 2022; Wang and Tai 2015). In addition, the stringent accreditation requirements of the GCF can often add capacity burdens onto recipient countries, and consequently exclude low-income countries with limited capacity from accessing finance (Omukuti et al. 2022). These barriers could be mitigated through, for instance, more funding for readiness support as well as enhanced direct access mechanisms; the GCF has already been taking steps in this direction.



Table 4. Potential financing for loss and damage measures under the UNFCCC financial architecture

Source: Germanwatch 2021

The Adaptation Fund is also sometimes discussed in Loss and Damage debates and is, of course, highly relevant in relation to minimising losses and damages through adaptation action. However, the Adaptation Fund does not have an official mandate to fund activities for addressing loss and damage; board members would have to agree by consensus to give the fund the mandate to do so. Despite this, evidence indicates that it is potentially already funding some activities that could be relevant to addressing losses and damages, such as social protection schemes (Germanwatch 2021). Due to its mandate on adaptation specifically, support from the AF remains lacking for recovery and rehabilitation following sudden onset events or for efforts to address non-economic losses and damages. One benefit of the AF as an option for addressing loss and damage could be that it would be well placed to monitor the gaps in finance for minimising loss and damage, and therefore compensate for the additional support needed for addressing loss and damage, seeing the two as a spectrum. However, concerns have been raised that channelling loss and damage finance through the AF could risk additionality and potentially take finance away from much-needed adaptation support. If considered as an option, finance specifically for loss and damage would have to be ringfenced as such, and donor countries would have to ensure that additional funding is committed for addressing loss and damage specifically, beyond existing climate finance commitments for mitigation and adaptation. This would require donor countries to scale up the availability of finance domestically, such as through carbon taxation, debt for climate swaps, or shifting fossil fuel subsidies. Furthermore, as with the GCF, alternative models of financing beyond the project-based model would be required to reduce lag times and address sudden onset events with the level of urgency required.

Moving beyond climate finance, the humanitarian aid sector provides several lessons that are valuable for addressing loss and damage, particularly drawing on its experience with reaching affected communities with the urgency required following sudden onset events. However, research indicates that the humanitarian sector is becoming increasingly overstretched in terms of resources (Ahmed 2021). Loss and damage finance would add additional demands to already limited humanitarian aid, which could only be mitigated if additional funding support is committed through the climate finance landscape or if humanitarian support is significantly scaled up. Furthermore, humanitarian aid is designed primarily for immediate recovery, along time scales of four-six weeks following sudden onset events. As such, it is less likely to be designed to deliver more dedicated support for medium and longer-term recovery and rehabilitation, such as helping communities rebuild livelihoods or assisting with planned migration. Humanitarian aid is generally not suitable for

addressing slow onset events, nor for providing support for non-economic losses and damages, such as through active remembrance or compensating affected communities for cultural losses.

Bilateral finance is also beginning to be targeted towards addressing losses and damages. Some Nordic governments, for instance Denmark, Sweden and Norway, provide support to responses to losses and damage through framework agreements with NGOs, providing flexibility for these organisations to address both slow and sudden onset events and to some extent also address non-economic losses. In addition, financial pledges to loss and damage responses have been made by the Scottish and Wallonia Governments, and most recently the Danish Government (Volcovici 2022). Such bilateral support may be one piece of the puzzle to contribute to meeting under-addressed needs and could provide assistance while dialogue continues on possible UNFCCC financing arrangements. However, as outlined in Section 3.2., there are also potential drawbacks to using development assistance to address losses and damages that should be considered.

Overall, it is evident that existing funding mechanisms offer several key lessons regarding how finance can be mobilised and reach communities in need, but also include gaps and challenges that limit their suitability for financing the full spectrum of losses and damages, and particularly for addressing loss and damage.

Additional arrangements for loss and damage finance.

Given the scale of funding required to address all losses and damages, as well as the limitations of existing funding mechanisms, further or improved funding arrangements at an increased scale are likely needed to address the full spectrum and scope of losses and damages. Options for large-scale funding include a dedicated window of the GCF and a dedicated loss and damage finance facility, as well as other novel approaches that are also emerging.

A new window at the GCF could be established that is specifically focused on loss and damage (see e.g. Kempa et al. 2021). This could have the benefit of streamlining climate finance, reducing fragmentation and coordination challenges, and limiting the extent to which recipient countries would have to follow new procedures for accessing finance. It may also enable quicker finance mobilisation to meet the urgency of the need as compared to establishing a new financial mechanism. On the other hand, the long lag times as well as the project-based model of the GCF are less suited for providing financial support following sudden onset events. During the Glasgow Dialogue, developing countries seeking to access funding repeatedly stressed that the structures of the GCF have proved to be particularly challenging for meeting local needs. The GCF has also been criticised for serving the interests of donors rather recipients, of not being aligned with local needs and priorities, and of often not reaching the most vulnerable and marginalised communities in need (Omukuti et al. 2022). In order to be suitable for addressing loss and damage, therefore, the GCF scope, structure and functioning would have to be significantly changed.

Another option could be a dedicated financial facility. At COP26 in Glasgow the G77 and China tabled a proposal to establish a new financial facility for loss and damage. This proposal ultimately did not make it into the Glasgow Climate Pact. Instead, countries agreed to establish the 'Glasgow Dialogue' to discuss funding arrangements for activities to avert, minimise and address Loss and Damage (UNFCCC 2021). The Dialogue is to take place annually during the intersessional climate negotiations (SBs), from 2022 until 2024. The first session of the Glasgow Dialogue in June 2022 highlighted key divisions between developed and developing countries, particularly SIDs and LDCs, regarding loss and damage finance. Developed countries stressed the need to build on existing financing instruments and the existing financial architecture for loss and damage in order to ensure efficiency, avoid fragmentation and ensure that financial support for loss and damage can be provided with urgency. Developing countries, on the other hand, highlighted the shortfalls and limitations of existing financial instruments and structures, and therefore called for a new 'Loss and Damage Finance Facility' to be established for addressing loss and damage.

A new finance facility within the UNFCCC would have the benefit of having been agreed upon by all Parties and would also ensure that financial support is in line with existing principles under the convention. Advocates for a dedicated finance facility suggest that it would enable loss and damage finance to be utilised in a more targeted manner to fill the gaps within, rather than overlap with, existing climate financial support for loss and damage through a dedicated commitment within the UNFCCC (CAN International et al. 2022) and could open a window of opportunity for designing it in accordance with key climate justice principles that have been identified within the literature (Adelman 2016; IPCC 2022: 98, 160-161).

Establishing a dedicated facility for loss and damage would likely provide more flexibility in designing tailored finance mechanisms than if working within existing funding instruments. This could potentially address gaps in relation to (1) mechanisms fitting for both economic and non-economic losses and damages (see Section 3.2.) and both slow and sudden onset events (see Section 3.1.). This would likely require multiple windows, for instance a window for addressing sudden

onset events with some form of pre-accreditation to enable timely response; (2) identified weaknesses in existing climate finance mechanisms, for instance regarding accessibility for vulnerable countries and communities, timely disbursement of finance and national and local ownership over how finance is utilised (IPCC 2022); (3) concerns of fragmentation in the financing landscape if designed to play an overarching, coordinating role; and (4) mismatches between scientific assessments of needs and the distribution of climate finance by centralising, needs-based approaches and assessments in funding processes. These are potentialities and would depend on how such a facility was designed. While some of these issues may be accommodated through extensive changes to existing mechanisms, doing so may be challenging and not necessarily feasible.

On the other hand, concerns have also been raised regarding the need for, and feasibility of, a new loss and damage facility, especially by developed country Parties. These include that it could itself lead to increased fragmentation of the climate finance architecture and duplication of existing structures within and outside climate finance, which could add to capacity burdens of recipient countries. This would particularly be the case if a new facility comes with additional accreditation and reporting requirements, which also make accessibility of finance more difficult. Moreover, as indicated by the IPCC, losses and damages are already occurring, adding a sense of urgency to requirements for finance. As such, financial support for loss and damage needs to be available as quickly as possible. Establishing and operationalising a new finance facility would likely take years, particularly due to the slow-moving pace of climate negotiations.

A number of new initiatives have also been launched in the past few months. For example, under the German Presidency, the G7 have decided to create a 'Global Shield against Climate Risks', which aims to provide financial protection against climate risks through insurance and social security schemes, and develop a more comprehensive and systemic approach to addressing risks by linking vulnerable communities to existing instruments. However, insurance schemes in particular are generally suitable for sudden onset events rather than slow onset events or for non-economic losses and damages. Moreover, in order for insurance mechanisms to effectively ease the burden of losses and damages on affected communities, developed countries would need to pay the premiums, rather than affected communities themselves. Another initiative launched recently is the Vulnerable Twenty (V20)'s pilot loss and damage funding facility, which aims to demonstrate how loss and damage finance can be utilised by victims of climate impacts. This approach has potential for generating lessons on how finance for loss and damage can be designed, and it could create a model that can be replicated at scale. On the

other hand, concerns have also been raised around the pilot fund potentially being divisive by prioritising funding being channelled to certain countries that are considered particularly vulnerable, rather than all countries affected by losses and damages.

Finance going forward

Challenges exist for financing going forward. Given the large and rapidly increasing scale of the needs and economic costs of losses and damages as highlighted above, finance within the existing climate and development finance architecture is unlikely to be able to address all losses and damages, which are projected to be substantial, and to increase as the global mean temperature rises (Kempa et al. 2021; OECD forthcoming). Even prior to the most recent IPCC report, and its conclusion that climate impacts are occurring at lower levels of warming than previously projected, grant-based finance was 'comparatively low or not sufficient in scale or complexity' to either transfer risk or support adequate transformative solutions (UNFCCC 2019: 35).

Finance within the existing climate and development finance architecture is unlikely to be able to address all losses and damages, which are projected to be substantial, and to increase as the global mean temperature rises.

Moreover, there are competing definitions of 'loss and damage finance' within both the literature and in climate negotiations, with different interpretations of what activities do and do not count as relating to 'loss and damage' (Boyd et al. 2017; Vulturius and Davis 2016). This could potentially lead to loss and damage finance diverting existing climate finance; problematic given the limited climate finance available and unmet existing pledges, e.g. the target of US\$100 billion per year by 2020 (OECD 2022). Therefore, regardless of which financing arrangements are employed, they will likely need to be paired with (i) a new category of loss and damage finance alongside adaptation and mitigation categories to increase transparency of finance amounts and distribution; and (ii) innovative mechanisms to accelerate the availability of finance, such as through implementing taxation measures.

Politically, strong divergences remain. In a recent Head of Delegation meeting, Parties heard from the European Union that they were open to discussing a provisional agenda item on funding arrangements for Loss and Damage at COP27 but would not want to prejudge outcomes. It is thus unlikely they will come to COP27 with a mandate to establish any new institutional architecture for Loss and Damage. Switzerland also stated, for example, that they were not convinced that establishing another fund is the solution for Loss and Damage finance. It is thus likely that calls by the G77 and China for a new funding mechanism will be met with hesitation by developed country groups who continue to advocate the benefits of first exploring the use of existing structures rather than creating anything new.

Currently, based on the G77 and China's proposal, the COP and CMA have included a provisional agenda sub-item on 'matters relating to funding arrangements for addressing loss and damage', which was a proposal to the Executive Secretary in Bonn and has been adopted as a provisional agenda item for COP27 and CMA 4. The proposal for the content of that agenda item was (1) Clarifying the status of funding arrangements to finance averting, minimising and addressing of loss and damage at COP27; (2) The further elaboration of the design and operational modalities of the L&D finance facility at COP27; and (3) Other matters relating to the operationalisation of the L&D finance facility. However, it remains to be seen whether the agenda item will be adopted as such, and whether it would allow for tangible decisions if adopted.

4.2. FULLY OPERATIONALISING A FIT FOR PURPOSE SANTIAGO NETWORK

As Section 3. concluded, to move forward within research and practice, there are a number of elements needed. Many of the elements listed at the conclusion of Section 3. – including, for example, improved understandings of loss and damage; coherence across existing fields; action and support across scales; attention to structures and institutions, and financing, capacity and technical assistance across those levels; localised, inclusive approaches; and novel approaches – have relevance to the opportunity presented by a fit for purpose Santiago Network that is fully operationalised with institutional and financial arrangements that enable it to deliver on the needs of developing countries.

The Santiago Network was established at COP25 in Madrid in the context of the review of the WIM, which Parties considered was not fulfilling its three functions, particularly its third function to enhance action and support, including finance, technology and capacity building, to enable countries to undertake actions to address Loss and Damage (Vanhala, Robertson and Calliari 2020). The Santiago Network was therefore established '...to catalyse the technical assistance of relevant

organisations, bodies, networks and experts, for the implementation of relevant approaches at the local, national and regional level, in developing countries that are particularly vulnerable to the adverse effects of climate change'.¹² Parties also agreed to invite the Organisations, Bodies, Networks and Experts (OBNEs) to report on their progress to the ExCom, and the ExCom was requested to include relevant information from that reporting arrangement in its annual reports.¹³

Beyond the guidance provided in the text establishing the Santiago Network, no agreement was reached on how it would operate and what form it would take. In October 2020, the Santiago Network was launched on the Convention's website by the COP25 Chilean Presidency (UNFCCC n.d.-d). The UNFCCC Secretariat also conducted a survey under the guidance of the COP25 Chilean Presidency to identify country needs for technical assistance 'to design approaches to catalyse technical assistance', producing a brief analysis of the results in December 2020.¹⁴ In circumstances where some Parties did not consider that a virtual platform could carry out the agreed mandate of the Santiago Network, the COP25 Chilean Presidency and incoming COP26 United Kingdom (UK) Presidency jointly convened an event in December 2020 inviting Parties '[...] to share ideas on how to continue the development of the Santiago Network [...] and understand how decisions at COP26 can assist with this' (UNFCCC n.d.-e).

As COP26 was postponed due to the COVID-19 pandemic, both Presidencies held further consultations during 2021 with Parties and observer organisations and developed a series of papers that sought to progress the vision of the Santiago Network (COP25 Chilean Presidency and COP26 United Kingdom Presidency 2021a, 2021b, 2021c, 2021d). These consultations were followed by a technical meeting in July 2021 with technical assistance providers (COP25 Chilean Presidency and COP26 United Kingdom Presidency 2021e, 2021f), and a further meeting in October 2021 to better understand the potential role and structure of the Santiago Network in advance of COP26 (COP25 Chilean Presidency and COP26 United Kingdom Presidency 2021g). During these consultations, the European Union, the United States and Switzerland all expressed a preference for the Santiago Network to be operationalised, at least in part, under the WIM ExCom. Developing countries did not see the WIM ExCom as having any operational role, noting that the Santiago Network was established under the WIM not the WIM ExCom. There was some convergence on a secretariat/coordinating body, but divergence on what this would look like, for example whether it should be set up inside or outside the UNFCCC (The Loss and Damage Collaboration 2021).

At COP26 in Glasgow, Parties reached agreement on the functions of the Santiago Network and a process to negotiate its institutional arrangements in 2022.¹⁵ Regarding finance, Parties agreed that the Santiago Network will be provided with funds to support technical assistance, and developed countries were urged to provide funds both for the operation of the Santiago Network and for the provision of technical assistance. There was agreement that the management of funds provided for technical assistance and the terms for their disbursement would be determined by the negotiations process in 2022.¹⁶

The process to negotiate institutional arrangements included an invitation to Parties and relevant stakeholders to submit their views on five aspects.¹⁷ Those submissions¹⁸ were then discussed as part of a technical workshop in May 2022 arranged by the UNFCCC Secretariat in collaboration with the Chairs of the Subsidiary Bodies (SBs) (UNFCCC n.d.-f). At the SBs in Bonn in June 2022 Parties then considered the submissions and technical workshop with a view to making recommendations for consideration and adoption at COP27.¹⁹ This three-part process elucidated areas of convergence and divergence on the operational details of the Santiago Network. However, Parties were unable to agree on detailed recommendations in Bonn that could form the basis of an agreement at COP27. Instead, the session concluded with the adoption of an informal note with an annex of elements that Parties will take into account as they continue consideration of the institutional arrangements of the Santiago Network at COP27 (Subsidiary Body for Scientific and Technological Advice and Subsidiary Body for Implementation 2022a, 2022b).

However, many Parties in the room in Bonn considered that the informal note and its annex are not reflective of the progress made by Parties. Not included in the informal note are documents on roles and responsibilities of the governing body and the secretariat/coordinating body, and diagrams on the structure. These were the subject of extensive discussion during the session and could be built upon when Parties reach Sharm el-Sheikh. At a Head of Delegation meeting held in July 2022, almost all Parties called for a virtual space to speak in advance of COP27 in order to work through some of the areas of divergence that arose in Bonn. In September 2022 Parties were able to meet in person for a further Head of Delegation meeting where further progress was made towards an ambitious outcome at COP27.

There is convergence among Parties that the structure of the Santiago Network will consist of a secretariat/coordinating body to facilitate the delivery of the functions agreed in Glasgow. Many parties see establishing this body at COP27 as a priority, including selecting a host for the secretariat/coordinating body. There is also

convergence that there will be a network of members that can respond to requests for assistance through the secretariat/coordinating body and deliver options and solutions tailored to local needs. Parties have made progress in exploring the role of the WIM ExCom and how its work can be complementary. However, strong divergence remains on its role as a governance mechanism and whether a separate and distinct governance mechanism such as an advisory board needs to be established.

Divergence on governance arrangements was the major stumbling block at the SBs in June 2022. After a few days of discussions within the developing country groups, the G77 and China proposed an advisory body was needed separate to the WIM ExCom, which they did not consider to have the mandate, resources nor capacity to carry out this role. In contrast, Switzerland considered that establishing an advisory body specially for the Santiago Network would create unnecessary bureaucracy given that, in their view, the WIM ExCom is well placed to carry out the governance role. The EU and Norway were not convinced of the added value of an advisory body, with the EU suggesting that a number of the proposed roles and responsibilities of the advisory body could be carried out by the secretariat of the Santiago Network and the WIM ExCom. At the recent Heads of Delegation meeting in September, Parties did foreshadow a willingness to show flexibility and it is likely that a way forward can be found with an innovative, lean and agile proposal for the Santiago Network's governance arrangements.

The connection between the Santiago Network and the national level, including the role of Loss and Damage Contact Points as the connectors between the Santiago Network and countries, has also been discussed as have monitoring and evaluation modalities, the needs assessment process and funding arrangements, with work needed to ensure that there is convergence on all of these matters (Niyitegeka and White 2022). Parties will need to have a clear understanding of how these different elements can fit together to ensure the Santiago Network delivers on the agreed functions, and in turn the needs of developing countries that are particularly vulnerable to the adverse effects of climate change.

Figure 4. Functions of the Santiago Network

- a) Contributing to the effective implementation of the functions of the WIM by catalysing the technical assistance of OBNEs.
- b) Catalysing demand-driven technical assistance including of OBNEs, for the implementation of relevant approaches to averting, minimizing and addressing loss and damage in developing countries that are particularly vulnerable to the adverse effects of climate change by assisting in:
 - i. Identifying, prioritizing and communicating technical assistance needs and priorities;
 - ii. Identifying types of relevant technical assistance;
- iii. Actively connecting those seeking technical assistance with best suited [OBNEs];
- iv. Accessing technical assistance available including from such [OBNEs];
- c) Facilitating the consideration of a wide range of topics relevant to averting, minimising and addressing loss and damage approaches.
- d) Facilitating and catalysing collaboration, coordination, coherence and synergies to accelerate action by OBNEs, and for them to deliver effective and efficient technical assistance.
- e) Facilitating the development, provision and dissemination of, and access to, knowledge and information on loss and damage.
- f) Facilitating, through catalysing technical assistance of OBNEs, access to action and support which includes finance, technology and capacity building.

On funding arrangements, in its submission the European Union recorded pledges by EU Member States to the Santiago Network amounting to approximately €25 million. It was noted that this complements the broader funding the EU gives to providers of technical assistance for averting, minimising and addressing loss and damage (France and the European Commission 2022). No other formal pledges have been made although some countries have informally indicated a willingness to make pledges once the Santiago Network is operational. In addition, at the technical workshop in May 2022 the possibility was raised that the host entity would take on the operational costs of the Santiago Network to enable funds provided to the Santiago Network to be directed to technical assistance rather than be absorbed into administrative costs.

Other inputs on the issue of funding are captured in the submissions made by Parties in early 2022. For example, the US considers that existing programmes and resources would be utilised, and funding can be requested by those delivering the

technical assistance where there are gaps. Norway submitted that finance should be channelled through the Green Climate Fund or through those delivering technical assistance, with the developing country party requesting support to work together with the technical assistance provider to identify the most suitable way of accessing finance if not available from the GCF or other relevant entity. Canada suggested that the costs associated with the Santiago Network be funded from various sources with those funds to be granted directly to technical assistance providers, and for there to be a cap on the total sum provided per project. The EU made the point that there should be ways to ensure that the technical assistance reaches the most vulnerable. The Independent Alliance of Latin America and the Caribbean (AILAC) also supported a variety of sources contributing to the Santiago Network but noted that the Santiago Network should not rely solely on voluntary funding, as this has created issues with delivery for the Climate Technology Centre and Network. Finally, Senegal on behalf of the LDC group noted that fast-tracked disbursement was critical for addressing extreme weather events.

A successful outcome at COP27 on the Loss and Damage agenda requires Parties to identify the institutional and financial arrangements necessary to fully operationalise a fit for purpose Santiago Network that delivers on the needs of developing countries particularly vulnerable to the adverse effects of climate change. In the short term, this requires consensus to be reached on the Santiago Network's structure including governance arrangements, the secretariat/coordinating body and a process to select a host organisation. Clarity is also needed on the finance arrangements needed for the Santiago Network to effectively deliver its mandate.

4.3. GOVERNANCE ARRANGEMENTS FOR THE WIM

Effective governance is key to effective loss and damage action going forwards. Presently, governance of Loss and Damage consists of a number of approaches at both the national and international level and within and outside of the UNFCCC including national approaches, strategies, risk management tools, policy tools and litigation. Under the UNFCCC specifically, the WIM is the only mechanism directly mandated to address loss and damage. However, the WIM has been criticised for lacking the 'substantive teeth' to operate as an accountability and redress mechanism and thus has been viewed as not being a comprehensive venue for global governance of Loss and Damage (Boyd et al. 2021).

The governance arrangements of the WIM represent a policy challenge that is the subject of significant divergence between Parties. The debate is about whether the

supreme bodies of both the Convention (COP) and the Paris Agreement (CMA) govern the WIM or whether it is governed solely by the supreme body of the Paris Agreement, though the WIM was established under the Convention.^{20 21} The resolution of this issue is widely considered to be of a political nature (Stabinsky 2019). The political tension includes how paragraph 51 of the COP decision that adopted the Paris Agreement influences the role of the WIM 'as a pathway for compensation' (Anisimov and Vallejo 2019).

The viewpoint of the United States, expressed most recently at COP26, is that Article 8 of the Paris Agreement was the result of a broader compromise to have a dedicated Loss and Damage article in the Paris Agreement (Calliari et al. 2020). The compromise included that the WIM would not continue to be governed by the Convention and would be instead under the sole authority of the Paris Agreement, which they propose is reflected in the text of Article 8.2:

The Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts shall be subject to the authority and guidance of the Conference of the Parties serving as the meeting of the Parties to this Agreement and may be enhanced and strengthened, as determined by the Conference of the Parties serving as the meeting of the Parties to this Agreement.

The content of the 'compromise' the US refers to is not explicitly documented, and various legal interpretations of the effect of the Paris Agreement currently co-exist (Stabinsky 2019). The G77 and China, for example, do not consider the Paris Agreement to have severed the Convention's governance role, suggesting that an explicit revocation of the authority of the COP in the Paris Agreement would have been required for that to occur. The text of paragraph 2 of 2/CP.19 thus remains operational: '...establishes an executive committee of the Warsaw international mechanism which shall function under the guidance of, and be accountable to, the Conference of the Parties...'. Thus, until any decision is made, the G77 and China argue that the status quo is that the WIM is dually governed by the Convention and the Paris Agreement. Generally, the developed country groups follow the lead of the US and developing country groups follow the lead of the G77 and China, with varying degrees of nuance. For example, some do not see the need to slow progress on other matters to press for a resolution on this issue, while others see that not resolving the issue creates uncertainty about how the work of the WIM is framed.

In an assessment of consistency with international legal principles (citing Mace and Verheyen 2016; Bodansky 2016),²² an unpublished analysis by Stabinsky, White and

Raffety²³ finds that interpreting a sole governance arrangement would be inconsistent with the ordinary meaning of Article 8 and the relevant decisions under the Convention,²⁴ and in the alternative, an interpretation of sole governance would lead to a result that is unreasonable. Another analysis by legal experts notes that decision 2/CP.19 and Article 8.2 of the Paris Agreement 'reveal a dual character of the guidance and accountability relationships between the WIM and the two Supreme Bodies'. However, they have also acknowledged that there is no single answer and that ultimately governance will be a political decision (Legal Response International 2019). Legal analysis of the sole governance position was not found in the document review conducted for this study.

Questions of dual or sole governance are important because the Convention and the Paris Agreement mandates are different, with the Convention defining foundational mandates and detailed guidance while the Paris Agreement does not elaborate any specific mandate for the WIM, but rather it broadly refers to enhancing understanding and lists possible areas of cooperation. Consistent with the analysis of Boyd et al. (2017) the Paris Agreement mandate is a narrower understanding of Loss and Damage, and thus sole governance could limit the scope of action undertaken under the WIM. Stabinsky, White and Raffety also conclude that the language of the Paris Agreement translates into a weaker obligation for action, for example by using terms such as 'should' and 'as appropriate' which imply a suggestion for action at the discretion of Parties. The Paris Agreement is also missing any reference to developing countries (Stabinsky, White and Raffety, unpublished assessment).

Further concerns related to governance of the WIM include whether countries who are not Parties to the Paris Agreement or withdraw from the Paris Agreement would be excluded from WIM activities if governance is under the Paris Agreement, and the possibility of duplicated processes in the case of shared governance (Huang et al. 2021). Examples of dual governance of constituted bodies under the Convention do exist, including the Technology Mechanism, a similar body to the WIM, which is governed jointly by the Paris Agreement and the Convention. This shared governance arrangement ensures the mandates from both bodies are addressed and the bodies are able to adjust their priorities and implement new mandates as appropriate. Analysis of these arrangements are beyond the scope of this report but this is a useful model for Parties to consider.

There are also questions around what effect paragraph 51 of the Paris Agreement would have on progress in the negotiations on finance for Loss and Damage if there was a sole governance arrangement. In interpretative declarations to the Paris Agreement, countries including Bolivia, the Philippines, Nauru, Marshall Islands, Cook Islands, Solomon Islands and Tuvalu addressed this question, emphasising that 'the application of the [Paris Agreement] shall in no way constitute a renunciation of any rights under international law concerning state responsibility for the adverse effects of climate change, and that no provision can derogate from principles of general international law or any claims or rights concerning compensation due to impacts of climate change'. This reflects the principle that 'cooperating to develop liability and compensation for adverse effects of climate change is a state responsibility, such as it is in the case of climate change' (Martínez Blanco et al 2022; Rio Declaration 1992).

What is clear is that whatever the outcome of the governance debate, there are several concerns that need to be addressed. This will require a political compromise to be reached that is inclusive of all Parties and ensures that the governance arrangements do not dilute the mandate of the WIM to enhance action and support for frontline communities, an essential element of which is finance.

4.4. INTEGRATED ASSESSMENT OF POLICY DEVELOPMENTS

Progress on funding arrangements for Loss and Damage, the institutional arrangements to fully operationalise the Santiago Network, and governance of the WIM are critical to a WIM that can effectively carry out its functions and deliver solutions for frontline communities. Although these issues will be negotiated separately, they need to be considered in the context of the bigger picture of a comprehensive and effective WIM. Agreement on the governance of the WIM is important to clarifying: (1) the mandate that the WIM ExCom is tasked with guiding the implementation of; (2) the mandate that the Santiago Network will be tasked with implementing when it is fully operational; and (3) the options for negotiated outcomes on finance for Loss and Damage going forward. Agreement on funding mechanisms will also be critical to the WIM fulfilling its third core function of enhancing action and support. This includes finance for addressing Loss and Damage as a critical step in filling the gap in financial support for Loss and Damage in developing countries. Finally, agreement on the Santiago Network is critical to ensuring that the WIM has not only a policy arm in the WIM ExCom but also an implementation arm that connects Parties with experts who not only can help them assess their Loss and Damage needs but also develop tailored solutions to address them. To move forward on these policy challenges, attention will also be needed to the gaps identified in research and practice, see Section 3.5.

The negotiations on the Santiago Network are the area where the most progress is possible in the short term, given the negotiations are progressing largely at the technical level at present and all Parties have engaged constructively in these negotiations to date. The aspects of the Santiago Network that could be challenging to progress include its governance and its financing. Regarding governance, this is a question which ties in to the interpretation of the mandate of the WIM ExCom and the overall vision of the Santiago Network in the context of the WIM. On finance, although it is agreed that the Santiago Network will be provided with funds, and there will be technical level negotiations on the modalities for managing those funds, with only the EU having pledged funds it is unclear whether further pledges will be made, and what the source and quality of those funds will be. This may need to be clarified or assured at the political level, care will need to be taken that finance for the Santiago Network is not confused with the broader ask for a Loss and Damage funding mechanism by developing countries.

The finance pledged for the Santiago Network is for technical assistance while Parties have indicated the ask on Loss and Damage finance goes beyond technical assistance. The parameters of what constitutes technical assistance and what goes beyond it would be useful for negotiators to have some understanding of, so that these two financial discussions are appropriately separated. This is particularly critical given the political pressure for an outcome on Loss and Damage funding arrangements created at the Bonn session in June 2022, with developing countries clear in their calls for an outcome on this, and civil society actors supporting these calls with strong advocacy. If the provisional agenda item on funding arrangements for Loss and Damage is indeed adopted at COP27 this will be critical to creating the space to negotiate milestones to achieve this.

5. GAPS AND POTENTIAL WAYS FORWARD

Alleppey, Kerala, India – 24 August 2018: A rescue team helps evacuate people from a flooded area. Photo: Jimmy Kamballur, Shutterstock. On the basis of the above assessment of policy, research and practice, we here identify critical gaps across these fields that are slowing progress within Loss and Damage policy as well as responses on the ground. Where possible, we also outline options for addressing these gaps and the political considerations around them.

These gaps and ways forward touch upon the main issues in the Loss and Damage debate: from policy and practice issues related to financing and governance, to framing issues related to definitions and understandings of loss and damage. In addition, they offer concrete steps for policymakers and actors working to respond to loss and damage on the ground. Together, they serve as a tool for negotiators and other actors working with Loss and Damage, pointing to where attention might be focused to secure progress on this challenging issue.

Box 2. Overview of Gaps

GAP 1: Attention to addressing losses and damages

GAP 2: Further development of knowledge of un- or under-addressed losses and damages

GAP 3: Designing approaches and modalities to respond to losses and damages

GAP 4: Finance, especially for addressing losses and damages

GAP 5: Arrangements for technical assistance through the Santiago Network

GAP 6: Clarity on the governance arrangements of the WIM

GAP 7: Coordination and institutionalisation across actors and scales

GAP 8: Making progress through the politics of Loss and Damage.

GAP 1: POLICY ATTENTION TO ADDRESSING LOSSES AND DAMAGES

The Paris Agreement recognises the need to 'avert, minimise and address' losses and damages. 'Avert' is often discussed in relation to mitigation action, 'minimise' in relation to adaptation, and 'address' to the remaining un-avoided and increasingly unavoidable negative effects associated with climate change. Our analysis of current efforts within the international climate response indicates that, hitherto, focus has understandably been placed to a large extent on mitigation and adaptation, in order to avert and minimise climate change-related losses and damages as much as possible.

At the current point in time, anthropogenic climate change has already progressed, and losses and damages are widespread. Enhancing existing efforts to avoid further losses and damages, including through mitigation and adaptation, is urgently needed. However, more attention is also needed to addressing climate changerelated losses and damages that unfortunately can neither be averted nor minimised sufficiently.

Potential ways forward:

- Some country Parties have argued that increased focus to addressing losses and damages – as well as action on loss and damage generally – could be supported by greater definitional clarity on Loss and Damage under the UNFCCC. This may be politically challenging, but could take a point of departure in the definition used by the IPCC of loss and damage as 'harm from (observed) impacts and (projected) risks' from climate change (IPCC, 2018a) with the related policy space of Loss and Damage serving 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.' These definitions have already been approved by all Parties.
- Further efforts under the UNFCCC, e.g. on financing arrangements and technical assistance, could to a greater degree focus on addressing losses and damages in order to fulfil the full spectrum of 'averting, minimising and addressing' recognised in the Paris Agreement and address the increasingly acute losses and damages as described in the most recent IPCC Assessment Report (IPCC 2022: 9).
- In addition, action outside of the UNFCCC will likely be necessary to help address those losses and damages that have not been averted or minimised and will require policy attention to coordination across actors and with those countries and communities affected. The involvement of non-UNFCCC actors is already apparent and important within this space, and will continue to be critical as UNFCCC technical assistance and financing arrangements are agreed. However, explicit discussions of the role of non-UNFCCC actors in the longer term will be important for clarity in the field of Loss and Damage going forward. These can for instance be linked to the Glasgow Dialogue and deliberations on the design of the Santiago Network.

GAP 2: FURTHER DEVELOPMENT OF KNOWLEDGE OF UN- OR UNDER-ADDRESSED LOSSES AND DAMAGES

The 'extent and magnitude' of climate change impacts is greater than previously assessed (IPCC 2022: 9), with 'widespread, pervasive impacts to ecosystems, people, settlements, and infrastructure' (ibid.). We are therefore in a situation where realities on the ground have in many ways outpaced our projections and knowledge of the extent and severity of changes and their implications within and across complex systems.

Specific types of losses and damages, e.g. slow-onset, NELs, and existential losses, are especially un- or under-addressed, as are efforts to address losses generally. In order to support an informed response across policy and practice, improved knowledge and understandings of these are urgently needed.

Potential ways forward:

- Slow onset events, NELs, losses and existential losses are increasingly evident, but remain under-addressed. While these may in some cases occur incrementally, they should not be underestimated. For instance, losses and damages in relation to slow onset events can be unprecedented in their scale, their accumulated effect, or when triggering a tipping point or cascading effects across systems. Further research is particularly needed on these types of losses and damages including their nature, i.e. types and characteristics, and their implications within diverse communities and across ecological contexts.
- There is also increasing need for government officials and practitioners to recognise and assess this type of losses and damages. This will require further development of assessment methods and related dissemination and training.
- Knowledge production and incorporating diverse forms of knowledge and epistemologies, as well as diverse existing knowledge bases, including from indigenous and local knowledge, expert and technical groups, e.g. those under the WIM, academic and research contributions, and insights from practitioners and organisations working with losses and damages.
- Policies and measures to address losses and damages are increasingly being implemented in practice, e.g. community remembrance, support to resettlement, training and support to new livelihoods, ecosystem restoration, climate-relevant social protection schemes, etc. A more robust knowledge base on such experience will be extremely valuable for further efforts. This can include tailored forms of monitoring and evaluation, or broader learning and sharing efforts, with

technical expertise and resources needed to produce, aggregate, and share this information among relevant actors. The Fiji Clearing House for Risk Transfer, the WIM's technical and expert groups, and the Santiago Network may all be relevant. A stocktake or other form of review process could also be options.

Further knowledge of the attribution of losses and damages to anthropogenic climate change can also help drive awareness and action on climate change through improved understandings of causal linkages between emissions and impacts (IPCC 2022: 149).

GAP 3: DESIGNING APPROACHES TO RESPOND TO LOSSES AND DAMAGES

Because of the unprecedented nature and scope of losses and damages, new approaches to respond to losses and damages, and especially address them, will likely be needed. This may require new modalities within the UNFCCC architecture as well as new approaches on the ground. Responses may also draw on tools or approaches used in development efforts, perhaps employed at new scales or in new ways. In addition, as with development and adaptation, while the tools employed on the ground may be similar, the underlying assessment of causal factors will be different, with implications for responsibility and support, including finance and technical assistance. Finally, development of governance and decision-making processes of what constitutes losses and damages, e.g. who decides this and how, will be crucial for action.

- For losses and damages associated with slow-onset events, ways forward can include existing solutions, processes and institutions as well as new or scaled-up approaches. This could entail existing solutions (e.g. relocations, livelihood trainings, etc.) redeployed in new ways or at new scales. It could also entail step-changes or pivots in planning and implementation processes (e.g. development of off-farm livelihoods and urban areas to absorb heightened labour migration, shifts away from climate-sensitive cash crops). The manner in which this is carried out would need to be localised, linked to existing institutions where possible, and linked to international processes where relevant.
- For non-economic losses and damages, greater attention is needed to the development of methods to address NELs and structures and modalities to support these. Some experiences from addressing collective losses and traumas exist, which may be instructive (Serdeczny et al. 2018). However, more specific tools can be developed and piloted to address context-specific NELs, with the

involvement of those affected and the recognition that NELs are unevenly distributed within populations.

- Particular attention to losses will be needed to address the full spectrum of losses and damages, as efforts to date have focused to a greater degree on damages. Further, there are few existing tools for addressing existential losses, which are already emerging and are projected to become increasingly acute at higher levels of warming. To address those existential losses which do occur, it will likely be necessary to develop novel approaches and tools.
- Transformative approaches can both minimise and address loss and damage, but require testing non-linear approaches in both policy and practice. This would require forms of support with room for unproven methods in high-risk environments and small-scale pilot projects, which can provide the basis for developing scaled-up or longer-term solutions.
- For the above to materialise, policy makers and practitioners will need to determine how these needs can be met through existing arrangements, perhaps with adjustments, and what additional arrangements, modalities or measures will be needed, including in regards to finance and technical assistance.

GAP 4: FINANCE, ESPECIALLY FOR ADDRESSING LOSSES AND DAMAGES

Although financial support is available for averting and minimising loss and damage, finance volumes remain insufficient. Moreover, finance for addressing loss and damage is highly limited and is increasingly becoming a matter of urgency as vulnerable communities facing slow and sudden-onset events lack the funds to address their impacts. Evidence also indicates that a number of gaps exist within the existing financial architecture, with existing climate funds and humanitarian aid being insufficient to address the full spectrum of losses and damages at the scale required. This is linked to the project-based model of existing climate finance with lengthy approval processes less suited for sudden onset events; long lag times in proposal development and finance delivery; stringent accreditation requirements and access challenges. Humanitarian assistance is already stretched and would need to be significantly scaled up for addressing loss and damage; it is also more suited for immediate recovery rather than longer term recovery, and less suited for addressing losses and damages from slow onset events or NELs. Overall, without significant steps in financial arrangements, efforts to address losses and damages, particularly in relation to slow onset events and non-economic losses, will largely remain unfunded.

Potential ways forward:

- Utilising existing climate finance funds, such as the GCF or Adaptation fund. One option could be a new window of the GCF that is specifically focused on addressing loss and damage. If the existing project-based model is followed, this new window could potentially be used for slow onset events and NELS. Sudden onset events may require an approach beyond traditional project-based models, which can have long lead times. Another option could be scaling up support through the Adaptation Fund, and ringfencing any additional support for addressing loss and damage. Utilising existing climate funds would have the benefits of: being a more timely solution than establishing a new mechanism, ensuring coordination with existing climate finance; not waiting for new structure to be established; and less administrative and capacity burden on recipient countries to comply with new structures and procedures. Drawbacks of existing climate funds include: some funds (e.g. AF) not having a mandate to address loss and damage; project-based model of funding not suitable for sudden onset events; access challenges due to long lag times in mobilising finance and stringent project approval and accreditation requirements; and limitations regarding non-economic losses, which may not be eligible for support (see e.g. IOM 2018).
- Scaling up humanitarian assistance for support following sudden onset events. Scaling up humanitarian aid would have the benefit of reaching victims of losses and damages very quickly, and drawing on lessons from the humanitarian sector on how to quickly and effectively reach communities in need. On the other hand, this would be less suited to fund medium and longer term recovery activities such as planned relocation and alternative livelihoods provision, and also less suited for NELS and slow onset events.
- A new financial mechanism/facility for addressing loss and damage, which could cover both economic and non-economic losses and damages and both sudden and slow onset events, with the latter likely requiring separate windows (see 4.1). A new facility could have the benefits of: ensuring dedicated support within the UNFCCC towards addressing loss and damage; openness of design to ensure alignment with climate justice principles; moving away from challenges within existing finance landscape; addressing different types of losses and damage to ensure additionality. However, drawbacks of a new facility could include: potentially increasing fragmentation of the finance landscape; adding burdens to recipient countries if they must adhere to new rules and requirements for accessing finance; and long and politically challenging processes of agreeing to and establishing the fund, meaning that finance needs would not be met with the urgency currently required.

- Additional and innovative sources of finance. Additional sources of finance would be needed for both a new funding window in the GCF or a new finance facility to avoid funding being diverted from adaptation and mitigation. This would require additional voluntary contributions or innovative finance mechanisms that could be scaled up domestically, such carbon taxation, airplane levies, shifting fossil fuel subsidies, taxing large corporations, debt for climate swaps, etc., as proposed by Parties and other stakeholders.
- Scaling up bilateral development assistance for addressing loss and damage. Scaling up bilateral development finance for loss and damage, for instance as some Nordic Countries have provided (see 4.1), would have the benefits of making up the shortfall from the climate finance arena and mobilising finance rapidly and without the political hurdles of the UNFCCC. However, this would be voluntary and would not ensure that dedicated finance is committed by countries at the scale required. It could also be an interim measure, before other finance arrangements are put in place.

GAP 5: ARRANGEMENTS FOR TECHNICAL ASSISTANCE THROUGH THE SANTIAGO NETWORK

Parties need to agree on the institutional and financial arrangements necessary to fully operationalise the Santiago Network. This will be critical to enabling the WIM to deliver on its third function: enhancing action and support, including finance, technology and capacity-building, to address loss and damage, to enable developing countries to undertake actions.

Potential ways forward:

- Arrangements should focus on a fit for purpose Santiago Network that addresses the needs of developing countries. In the short term this requires consensus to be reached on the Santiago Network's structure including governance arrangements, the secretariat/coordinating body and a process to select a host organisation.
- Clarity is also needed on the funding modalities and procedures and the finance needed for the Santiago Network to deliver its mandate.

GAP 6: CLARITY ON THE GOVERNANCE ARRANGEMENTS OF THE WIM

The WIM is the only UNFCCC mechanism directly mandated to address loss and damage, yet its unresolved governance arrangements hamper its ability to fulfil this mandate. Governance of the WIM is a polarising issue that is largely a political dispute with the US and other developed countries viewing Article 8 of the Paris Agreement as a compromise that included that the Paris Agreement would govern the WIM from that time. Dual governance of the WIM is otherwise supported by developing country Parties who consider it a logical option considering the different mandates of the Convention and the Paris Agreement and the need to ensure the WIM delivers on all its mandates comprehensively.

Potential ways forward:

- A potential way forward could be to adopt the governance arrangement that best serves the technical needs of the WIM, framed in a manner that explicitly excludes alignment with any of the various positions regarding financing for Loss and Damage. This could help avoid delaying progress on the issue of governance while waiting on progress on financing arrangements.
- In terms of timing, clarity on the governance arrangements of the WIM may not be as pressing as other loss and damage related deliberations at the coming COP. It may be desirable to focus negotiating efforts on other topics rather than potentially diluting negotiating efforts and progress by trying to reach agreement on multiple topics simultaneously.

GAP 7: COORDINATION AND INSTITUTIONALISATION ACROSS ACTORS AND SCALES

As in evident in the above points, averting, minimising and addressing losses and damages will require both coordination across actors and scales (e.g. local, national, regional, global) as well as institutionalisation of measures across these scales. In this way, international efforts can support action on losses and damages from global to national and sub-national measures and mechanisms; efforts at other scales can, in turn, feed into international processes, so that these reflect needs on the ground.

Potential ways forward:

• At the national level, developing in-country mechanisms to assess and address losses and damages will be necessary. These could usefully be linked to exiting

processes to adapt to climate change, i.e. minimise losses and damages, as well as disaster risk reduction and response processes. However, they should also be developed as an additional set of competencies and measures. Development of such mechanisms would need to be country-specific, both in relation to climate change impacts and the institutional environment. To be effective, they should include both national level and devolved mechanisms, and could draw from emerging experiences with devolved adaptation efforts (see e.g. Friis-Hansen et al. 2022). Specific steps could include needs assessments, sector planning, mainstreaming loss and damage considerations into development and sector planning, and donor coordination. These activities could be supported by the Santiago Network once operationalised.

- Sub-nationally, efforts will need to reflect the various types and manifestations of loss and damage, ensure input from affected populations, and feed back up to national processes. This may therefore include some functions within elected sub-national governments, for instance linked to development planning, as well as through line ministries responsible for land and resource management, health, social protection measures, disaster response institutions, etc. In addition, novel processes, for instance for addressing NELs, will likely be needed. Mainstreaming loss and damage considerations into the work of line ministries and development planning will again be important. This should draw on the latest science, as well as local community engagement and community-based approaches, e.g. participatory assessments and planning. Communication of community needs and priorities upwards to national planners and policy-makers will also be essential to inform policy and planning at higher levels, including international levels. This will require funding and resources, capacity building and technical assistance. Research also points to the need for discretion at sub-national levels to address localised needs and priorities regarding losses and damages, for instance through unallocated funds.
- For the experiences and needs gathered through the above efforts to be reflected in international knowledge generation and policy, in-country mechanisms need to be linked to UNFCCC processes. Many countries are, for instance, already including loss and damage in their NDCs. It could be considered if additional reporting would be desirable, without placing an inordinate burden on countries. In addition, specific input to the Global Stocktake could be considered – namely, in addition to 'mitigation', 'adaptation' and 'means of implementation', the next Global Stocktake could include 'loss and damage' as a fourth theme (Puig 2022b). Finally, support to finance, capacity building and technical assistance will be needed, including coordination of the same, with emphasis on speedy delivery, demand-driven approaches and south-south partnerships.

GAP 8: MAKING PROGRESS THROUGH THE POLITICS OF LOSS AND DAMAGE

Many aspects of Loss and Damage negotiations and dialogues are extremely politicised, as also comes out repeatedly in the report's analysis of policy developments. It is important that there is room for diverging perspectives and concerns in deliberations and also to acknowledge the political nature of topics within the Loss and Damage policy area. At the same time, the highly political nature of some aspects of Loss and Damage can pose a challenge to progress across the board, including on meeting needs in practice at a time when these needs are acute and growing. Along with attention to gaps and issues themselves, actors working in the policy sphere could therefore consider how to make progress through the politics of Loss and Damage and increase room for manoeuvre in Loss and Damage policy negotiations and dialogue.

Potential ways forward:

- A scientific, needs-based framing can be a useful point of departure. Growing research and assessments of realities of loss and damage around the world provide an improved evidence base of specific needs that Loss and Damage policy must attend to in order to 'avert, minimise and address' losses and damages. These can provide a more technical, rather than political, point of departure for discussions regarding Loss and Damage institutions and arrangements. Actors can draw on the most recent IPCC report, but more localised assessments will also be needed.
- De-linking issues may also support progress. In Loss and Damage, issues and positions often become bundled, where progress on one issue is linked to advancement on other issues, making headway difficult. De-linking deliberations across issues may allow for greater, though perhaps more incremental, progress, by avoiding deadlock across issues. It could, however, come at the cost of 'balanced' progress across issues.

NOTES

- See "Tender Specifications for Advertising of a project within the auspices of the Nordic Working Group for Climate and Air (NKL) regarding Loss and Damage Associated with the Adverse Effects of Climate Change': https://www.norden.org/sites/default/files/2022-03/Tender%20specifications%20-%20 Research%20Study%20and%20Seminar%20on%20Loss%20And%20Damage_final%2022.03.2022.pdf
- 2 https://unfccc.int/sites/default/files/resource/AC_25%20Years%20of%20Adaptation%20Under%20 the%20UNFCCC_2019.pdf
- 3 Decision 1/CP.13, 1(c)(iii).
- 4 Decision 1/CP.16.
- 5 Decision 3/CP.18.
- 6 Decision 2/CP.19.
- 7 Decision 2/CP.19, para 5.
- 8 Decision 2/CMA.2 and 2/CP.25.
- 9 UNFCCC arts 3.1, 4.1.
- 10 Decision 1/CMA.3.
- 11 For a wider assessment of sources of financial support to both minimise and address, see the Technical paper *Elaboration of the sources of and modalities for accessing financial support for addressing loss and damage* (2019) prepared by the UNFCCC Secretariat.
- 12 Decision 2/CMA.2 para 43.
- 13 Decision 2/CMA.2 paras 44-45.
- 14 https://unfccc.int/sites/default/files/resource/Santiago%20Network%20Survey%20summary.pdf
- 15 Decision 17/CP.26; 19/CMA.3.
- 16 Decision 1/CMA.3, paras 67-70.
- 17 1. Operational modalities; 2. Structure; 3. Role of the Executive Committee and its expert groups, task force and technical expert group; 4. Role of Loss and Damage Contact Points (LDPCs) and other relevant stakeholders at the subnational, national and regional level; and 5. Possible elements for the terms of reference of a potential convening or coordinating body that may provide secretarial services to facilitate work under the Santiago Network.
- 18 https://www4.unfccc.int/sites/submissionsstaging/Pages/Home.aspx (in the search field, type 'Santiago network")
- 19 Decision 17/CP.26; Decision 19/CMA.3.
- 20 Decision 2/CP.19.
- 21 Decisions 2/CP.25; 2/CMA.2; 17/CP.26; 19/CMA.3.
- 22 See Vienna Convention on the Law of Treaties, opened for signature 23 May 1969, 1155 UNTS 331 (entered into force 27 January 1980);
- 23 D. Stabinsky, H. White and K. Raffety undertook this analysis of the Governance of the Warsaw International Mechanism to contribute to the UNFCCC negotiations.
- 24 This 'ordinary meaning' is explained as being on the basis that although Article 8.2 of the Paris Agreement uses governance language, namely that the WIM be 'subject to the authority and guidance of the [CMA]', it also uses the words 'enhance' and 'strengthen' which indicate that the COP mandates were intended to remain ongoing and this would include a mandate to govern. In addition, Article 8 does not use limiting language, such as the word 'solely', to qualify the authority given to the CMA. Finally, neither the PA nor other CMA decisions refer to any severing of the WIM's relationship with the COP.

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