Compendium on Comprehensive Risk Management Approaches

VOL. 2

United Nations
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The Warsaw International Mechanism for
LOSS AND DAMAGE
Executive Committee

Acknowledgments

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1 Available at https://unfccc.int/sites/default/files/resource/TEG-CRM_PoA.pdf

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Introduction

1.1. Rationale

Relevant initiatives have emerged in recent years that anticipate and respond to loss and damage from climate change impacts, signalling a renewed effort to collect case studies and relevant experience.

Climate change is having an increasing impact on the lives and livelihoods of millions of people, with front-line communities suffering the most. Climate change and the disaster events it causes not only destroy assets and infrastructure, but also disrupt vital supply chains, resulting in significant economic consequences, particularly for vulnerable countries. Beyond negative economic impacts, climate change also causes non-economic losses, affecting both people and ecosystems.

New approaches are needed to comprehensively and coherently manage the impacts observed so far, and the projected future risks, arising from a changing climate. Decision makers must be equipped with the tools and instruments they need to navigate potential risk–benefit trade-offs and select appropriate climate risk management and response options. Approaches to addressing climate-related loss and damage should be designed to enhance the overall resilience of vulnerable countries, populations and communities.

In 2019, the UNFCCC secretariat, at the request of the Executive Committee of the Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts (WIM), published the first volume of the Compendium on Comprehensive Risk Management Approaches.[2] The document brings together good practices and lessons learned relating to comprehensive risk management at different levels, highlighting actions for risk assessment, reduction, transfer and retention, as well as social protection instruments and transformational approaches. The second volume of the Compendium builds on the first volume by taking recent developments in science, policy and practice into consideration to update the first volume, recognizing that:

- Loss and damage have become more pronounced in recent years. At the same time, averting, minimizing and addressing loss and damage has become increasingly established in policy and practice at both the national and the international level. Relevant initiatives have emerged in recent years that anticipate and respond to loss and damage from climate change impacts, signalling a renewed effort to collect case studies and relevant experience.

- There has been significant progress on the work on loss and damage under the UNFCCC and Paris Agreement processes, notably the establishment of the Santiago network for averting, minimizing and addressing loss and damage associated with the adverse effects of climate change,[3] the Fund for responding to Loss and Damage and other funding arrangements.[4] New perspectives on loss and damage have been firmly established following landmark decisions on loss and damage associated with the impacts of climate change by the Conference of the Parties (COP) at its twenty-fifth, twenty-seventh and twenty-eighth sessions and by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement at its second, fourth and fifth sessions. These new perspectives include highlighting the "mosaic of solutions"[5] relevant to averting, minimizing and addressing loss and damage and the term

2 Compendium on Comprehensive Risk Management Approaches: https://unfccc.int/sites/default/files/resource/FINAL_AA3_Compendium_September_2019%28revised%29.pdf.

3 See decisions 2/CMA.2, 19/CMA.3 and 11/CP.27.

4 See decisions 2/CP.27 and 1/CP.28.

5 The term was articulated by Maldives' Environment Minister Aminath Shauna at COP 27.

"responding to loss and damage", the latter of which is embedded in decision 2/CP.27 and is further validated by being featured in the name of the Fund for responding to Loss and Damage. These developments in the conceptualization of loss and damage require the broader involvement of stakeholders in comprehensive risk management, including actors from the humanitarian sector, as well as emergency responders and planning entities related to risk management and post-disaster reconstruction. Similarly, the 2023 midterm review of the Sendai Framework for Disaster Risk Reduction 2015–2030 – the premier global agreement on disaster risk reduction – calls, among other things, for a more coherent and integrated 'all of society' approach to risk management.[6]

- There has been increased attention by the academic community of the concepts of comprehensive climate risk management. Examples are contained in, inter alia, the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), as well as work by individual researchers and groups. These conceptual advances in the framing of loss and damage are captured in this second volume of the Compendium.

1.2. Target group

The Compendium is targeted at both the growing body of UNFCCC negotiators and at relevant communities of practice.[7] It provides guidance on comprehensive risk management to decision makers and stakeholders, specifically to organizations, bodies, networks or experts catalysing technical assistance to developing countries,[8] national-level decision makers, as well as national loss and damage contact points,[9] and stakeholders involved or interested in the Fund for responding to Loss and Damage and the funding arrangements.

1.3. Approach and method

This second Compendium highlights potential interventions which could better link methods for averting, minimizing and addressing specific types of loss and damage with the different approaches, measures and tools within comprehensive risk management.

This second Compendium highlights potential interventions which could better link methods for averting, minimizing and addressing specific types of loss and damage with the different approaches, measures and tools within comprehensive risk management. Building on recent advances in the literature on averting, minimizing and addressing loss and damage, the first Compendium on Comprehensive Risk Management Approaches has been updated and extended by several elements to form the comprehensive risk and response management framework, as described in chapter 2 below. In 2023, the WIM Executive Committee invited relevant organizations, networks and experts to submit information on actions, measures and approaches responding to loss and damage from

6 See United Nations Office for Disaster Risk Reduction (UNDRR) (2023). The Report of the Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015–2030.

7 See the target group definition from the second plan of action of the TEG-CRM, available at https://unfccc.int/sites/default/files/resource/TEG-CRM_PoA.pdf.

8 Decision 2/CMA.2.

9 COP 22, by decision 4/CP.22, para. 4(d), invited Parties to establish a loss and damage contact point with a view to enhancing the implementation of approaches to addressing loss and damage. Currently 57 national contact points are listed on the UNFCCC website. See https://unfccc.int/loss-and-damage-contact-points.

the impacts of climate change,[10] which resulted in 19 submissions to the TEG-CRM.[11] An additional 50 submissions responding to calls by the expert group on non-economic losses,[12] as well as 38 submissions made to the Transitional Committee[13] on the operationalization of the new funding arrangements for responding to loss and damage and the fund[14] were considered in this Compendium. The submissions have been coded and summarized and can be found in the annex.

The main components of the comprehensive risk and response management framework are pre-emptive action, contingency arrangements, managing impacts, transformative action and governance. These are linked to sub-actions described in chapter 2.2.ii. Instead of listing all the different programmes, initiatives and policies submitted under each component of the comprehensive risk and response management framework, chapter 4 below demonstrates how specific risk management tools across the comprehensive risk and response management framework might be used to address the four dominant forms of loss and damage, called loss and damage signatures. In alignment with the climate-related representative key risks of the IPCC, the signatures describe a combination of a specific type of potential or materialized loss and damage and the particular hazard that is caused. This approach aims to be more applicable and to provide the reader with more clarity when seeking the appropriate risk management tools and instruments for their individual situation. The selected loss and damage signatures are (1) food insecurity due to drought; (2) impacts on human health due to heatwaves; (3) infrastructure damage due to floods; and (4) impacts on coastal socio-ecological systems due to sea level rise.

Chapter 5 below investigates each of the four loss and damage signatures. For every signature, each of the main phases of the comprehensive risk and response management framework approach (pre-emptive action, contingency arrangements, managing impacts, transformative action and governance) is illustrated by an individual case study, examining how that phase was applied in that particular scenario. The case studies have been chosen from the submissions mentioned above and were selected on the basis of how representative they are in terms of the climate risk, type of loss and damage and the risk management instrument they are illustrating. Case studies were selected so that each sub-action under the main phases is represented at least once. They do not represent comprehensive coverage of how loss and damage is being treated in the country or region referenced. The selection covers a broad range of geographical locations as well as submitting organizations. If no suitable example was submitted, case studies have been added from desk research. Finally, chapter 6 below considers the conclusions and recommendations from the case studies and the comprehensive risk and response management framework in order to reflect on how best to promote comprehensive risk management and more varied and effective approaches to averting, minimizing and addressing loss and damage.

10 The call for submissions is available https://unfccc.int/process/bodies/constituted-bodies/WIMExCom/TEG-CRM#Call-for-information-on-actions-measures-and-approaches-that-respond-to-loss-and-damage-from-the-impacts-of-climate-change

11 The submissions are available at https://unfccc.int/process/bodies/constituted-bodies/WIMExCom/TEG-CRM#Compendium-on-CRM-Approaches-Vol2

12 Submissions made in 2024 are available at https://unfccc.int/WIM-ExCom/NELs/2024_case_studies submissions made in 2023 are available at https://unfccc.int/process-and-meetings/bodies/constituted-bodies/executive-committee-of-the-warsaw-international-mechanism-for-loss-and-damage/expert-group-on-non-economic-losses/submissions-on-the-information-sources-related-to-averting-minimizing-and-addressing-non

13 Transitional Committee established by Decisions 2/CP.27, para. 3, and 2/CMA.4, para. 3

14 Submissions are available at https://unfccc.int/process-and-meetings/bodies/constituted-bodies/transitional-committee/case-studies.

2

Framing comprehensive risk management to avert, minimize and address loss and damage from climate change impacts

2.1. Conceptual frameworks on comprehensive risk management to address loss and damage

Climate risk management has received substantial attention under the UNFCCC process, particularly during the establishment of the WIM. Consequently, risk management concepts and frameworks have been introduced and incorporated into mandated work, including into the first volume of the Compendium.

A suite of conceptual frameworks and definitions has been suggested by scholars and practitioners to guide work on comprehensive risk management. It includes three classes of frameworks:

Frameworks for portfolio optimization: Relevant concepts include the disaster risk layering approach, which involves structuring risk management and risk financing instruments according to levels of risk (see, for example, Mechler et al., 2006; German Agency for International Cooperation (GIZ), 2019). The disaster risk layering approach has been recognized in UNFCCC and Paris Agreement language related to comprehensive risk management through mentions of eligible risk assessment, risk reduction and risk retention actions. It also provided the organizational structure for the first volume of the Compendium. Nassef (2020) added the concept of loss acceptance to traditional risk layering frameworks and recommends giving equal consideration to pre-emptive action, contingency measures and loss taking.

Frameworks for operational phases: The second family of frameworks relates to aspects of climate risk management in the disaster management and disaster risk management cycles. The disaster management and disaster risk management cycles are widely referenced and involve a cyclical process of activities, including pre-disaster actions such as disaster mitigation and preparation, as well as post-disaster actions like response and recovery. Authors such as Le Quesne et al. (2017) have combined traditional disaster management cycles with concepts like climate risk screening, risk transfer and finance to prepare integrated climate risk management frameworks. GIZ (2021) suggests combining the disaster management cycle with decision-making options when addressing slow onset events.

Frameworks for conceptual clarifications: The last family of frameworks aims to clarify the relationships between loss and damage concepts and other processes, topics and institutions. Examples include Roberts and Pelling (2016), whose comprehensive risk management framework clarifies the relationship of loss and damage to adaptation, risk reduction and sustainable development, as well as commentary by Kreienkamp and Vanhala (2017), who explore the process from risk analysis to curative action. Qi et al. (2023) depict comprehensive risk management as the connective tissue between averting, minimizing and addressing loss and damage, and situating respective indicative actions that avert, minimize and address loss and damage.

Further conceptual work exists that combines elements from different frameworks or includes additional innovative aspects. For instance, chapter 17 of the contribution of Working Group II to the IPCC Sixth Assessment Report (IPCC, 2022b, p.2555)

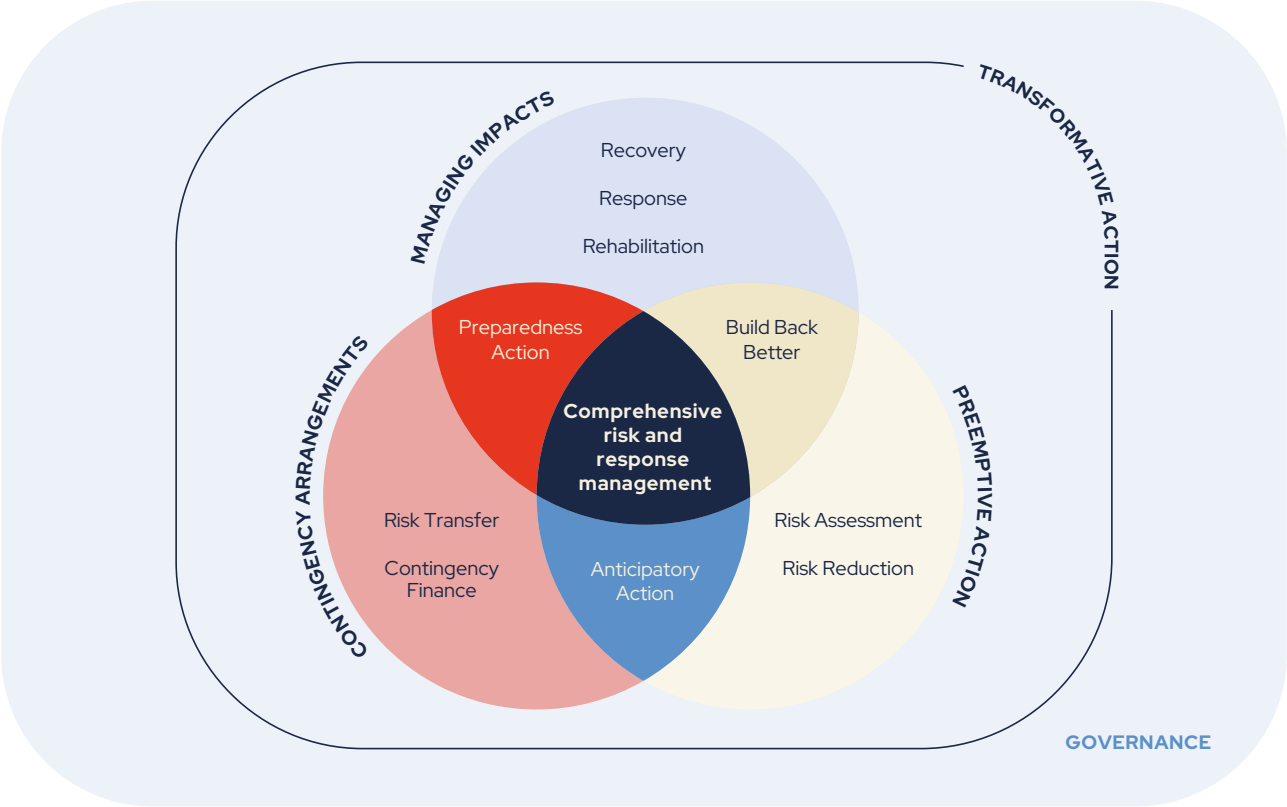
combines layered risk management with risk characteristics (avoided, unavoided and unavoidable)[15] and introduces risk governance concepts. Additionally, the *Technical Guidance on Comprehensive Risk Assessment and Planning in the Context of Climate Change* (UNDRR, 2022) features comprehensive risk and hazard scoping and includes perspectives on cascading impacts of climate change.

These different frameworks have different purposes. However, when it comes to categorizing and streamlining action in the Compendium, these frameworks have limitations. Firstly, many frameworks focus on disasters from rapid onset events. In recent years, it has become clear that loss and damage from slow onset events is a major concern. Therefore, a framework is needed that works with both rapid and slow onset events. Secondly, early comprehensive risk management frameworks focused on ex-ante activities (before an event or impact is realized). Since COP 27 and COP 28, the focus has shifted towards ex-post activities (activities after climate impacts are realized) and building national response capacities, making it necessary to include response actions specifically in the framework. Thirdly, there is an emerging discourse on transformative action in the context of averting, minimizing, and addressing loss and damage, including what it means operationally. Lastly, for the purpose of preparing a systematic compendium of actions for comprehensive risk management, the conceptual framework also needs to deliver a limited, methodical typology that will allow for organizing different initiatives and activities and extracting relevant lessons.

In response to these challenges, the Compendium introduces the comprehensive risk and response management framework, which is described in greater detail in chapter 2.2 below.

15 Avoided loss and damages refers to impacts that have or could be averted or minimized, unavoided loss and damage are those impacts that could not or have not been avoided due to existing constraints, unavoidable loss and damages refers to those impacts that go beyond existing adaptation and mitigation measures.

2.2. The categories of actions in the comprehensive risk and response management framework



Source: Adapted from UNFCCC (2024), IPCC (2022b) and MCII (2018).

The comprehensive risk and response management framework (see the figure above) aims to align policy and project goals with strategies to systematically reduce and manage loss and damage.

The concept combines the three clusters of 'pre-emptive action', 'contingency arrangements' and 'managing impacts', and clarifies respective transformative actions and governance approaches to comprehensive risk and response management. The framework promotes a systematic and strategic approach to combining and working with different indicative actions on comprehensive risk management. The aim is to inspire and empower different actors, including entities and focal points who establish national response systems, to avert, minimize, and address loss and damage.

2.1.i Categories of actions: pre-emptive action, contingency arrangements and managing impacts

The first action cluster describes pre-emptive action – this includes adaptation and risk reduction measures implemented through planned interventions, such as national adaptation plans (NAPs) and related subnational or sectoral plans. These measures

Transformative actions can generate new options for adapting to climate change by modifying the fundamental attributes of a social-ecological system to secure actors objectives or systems needs from intolerable risks.

range from soft approaches like regulatory and fiscal incentives, awareness-raising and capacity-building to specific actions such as flood structures, water harvesting and mangrove protection (Nassef, 2020, p.3).

The second cluster deals with contingency arrangements, which are activated when a climate change impact occurs and can involve mechanisms like risk transfer, capital market instruments and contingent credit, as well as planned relocation. These arrangements may include various forms of insurance (parametric, microinsurance and reinsurance), financial instruments (bonds and derivatives), reserve funds and other contingent credit options such as forecast-based financing, along with government guarantees and subsidies (Nassef, 2020, p.4).

The third cluster addresses direct impacts – both rapid and slow onset – of climate change. It covers aspects of short-, medium- and long-term recovery and other strategies to deal with loss and damage.

In addition to the three clusters, governance is an important factor when it comes to different policy processes working together. Furthermore, transformative actions can generate new options for adapting to climate change by modifying the fundamental attributes of a social-ecological system to secure actors objectives or systems needs from intolerable risks.

2.1.ii Indicative actions and sub-actions in comprehensive risk and response management

This subchapter provides operational descriptions of the sub-actions under the comprehensive risk and response management framework. It builds on relevant definitions from the UNFCCC (2024), Nassef (2020), the Glossary of Working Group II of the IPCC (IPCC, 2022a) and the UNDRR (2023), as well as the Anticipation Hub (2023).

Governance: the structures, processes and actions through which private and public actors interact to address societal goals. This includes formal and informal institutions and the associated norms, rules, laws and procedures for deciding, managing, implementing and monitoring policies and measures at any geographic or political scale. From a comprehensive risk management perspective, this emphasizes understandings and processes forging linkages between different components of risk and response management, respective actors, institutions and governmental levels.

Governance approaches also need to link to climate mitigation processes, since limiting the impacts of climate change is necessary for keeping climate change risks at manageable levels and avoiding the escalation of economic and non-economic losses.

Risk assessment: a qualitative or quantitative approach to determining the nature, extent and impact of a potential disaster by analysing potential hazards and evaluating existing conditions for exposure and vulnerabilities that together could harm people, property, services and livelihoods and the environment they depend on. Decision makers need information on the characteristics of the hazard, exposure and vulnerability in order to choose appropriate approaches for comprehensively managing risks.

Risk reduction: systematic effort to analyse and manage the causal factors of disasters (UNDRR, 2009) in order to reduce loss and damage. Risk reduction measures can

be structural (to do with physical constructions, retrofitting of existing structures or engineering techniques) or non-structural (such as legislative measures, planning, early warning systems (EWS), awareness-raising, training and education). Adaptation involves reducing the risks specific to the impacts of climate change. Risk reduction is a fundamental objective of comprehensive risk and response management.

Anticipatory action: forecast-based finance and anticipatory action refer to actions taken to reduce the humanitarian impacts of a forecast hazard before it occurs, or before its most acute impacts are felt. The decision to act is based on a forecast, or collective risk analysis, of when, where and how an event will unfold. Early action can unlock additional risk prevention and response capacities or help minimize financial and other knock-on effects.

Contingency finance: implicit or explicit measures to help absorb the impacts of climate-related hazards. Examples include contingency planning, contingent credit, contingency budgets and reserve funds, social protection and savings. Arranging ex ante and prearranged finance is an especially integral part of comprehensive risk and response management. Contingency finance is sometimes termed risk retention.

Risk transfer: formally or informally shifting the financial consequences of a particular risk from one party to another, for instance through insurance and reinsurance (indemnity-based insurance, parametric/index-based insurance and micro-insurance), sovereign risk financing, regional risk pooling and risk-linked securities (catastrophic risk bonds). Risk transfer action under a comprehensive risk and response management approach might also include building an environment that enables risk transfer and insurance.

Preparedness action: preparedness aims to build the capacities and readiness needed to efficiently manage all types of emergencies, minimize human and economic impacts from disasters and achieve orderly transitions from response to sustained recovery. EWS are a crucial component of preparedness action, together with contingency planning, the stockpiling of equipment and supplies, the development of arrangements for coordination, evacuation and public information, and associated training and field exercises. These actions must be supported by formal institutional, legal and budgetary capacities.

Response: immediate response describes actions to save lives, reduce impacts such as those on health, ensure public safety and meet the basic subsistence needs of the people affected by a climate-induced disaster event – for example, emergency relief (food, shelter, medical and psychological care), search and rescue, access control and damage assessment.

Recovery: short- and medium-term recovery deals with restoring or improving the livelihoods and health, as well as the economic, physical, social, cultural and environmental assets, systems and activities, of a disaster-affected community, society or ecosystem.

Rehabilitation: medium- to long-term rebuilding, for example of physical and social infrastructure, resettling, managing injury or trauma, reintegrating survivors, and restoring ecosystems, livelihoods and income-generating activities.

Build back better: using the post-disaster recovery, rehabilitation and rebuilding phases to increase the resilience to climate change of nations and communities by integrating disaster risk reduction measures into the restoration of physical infrastructure and societal systems, and into the revitalization of livelihoods, economies and the environment.

Transformative actions: altering the fundamental attributes of a system to be resilient to new kinds of risk. Such attributes include value systems, regulatory, legislative or bureaucratic regimes, financial institutions and technological or biological systems. Transformative actions can include significant changes in structure or function that go beyond simply adjusting existing practices: they can lead to deep and long-term societal changes that influence sustainable development (including people's values and worldviews). Transformative action can apply to all clusters of comprehensive risk management and governance. When adaptation goals cannot be achieved through existing solutions, deliberate transformation may be needed. Transformative actions can include completely novel activities or their application to new locations; the application of existing activities at a much greater scale or much greater intensity; major changes in the governance structures that frame adaptation, and; reconfigurations of social values and social relations in adaptation (Few et al., 2017).

3

Loss and damage signatures

Climate-related representative key risks are either already severe, or have the potential to become so, owing to changes in climate-related hazards, exposure, the vulnerability of natural and human systems or the adverse consequences of adaptation or mitigation responses to the risk.

A comprehensive risk management strategy does not always need to target a specific hazard or type of loss, but, depending on the strategy's context and goals, it often benefits from such a focus. Demonstrating how different interventions can complement each other is easier when examples share a common characteristic, such as a specific risk or a climate impact that has already occurred. This combination of a specific type of potential or materialized loss and damage caused by a particular hazard is called a loss and damage signature.

Loss and damage signatures are based on the concept of climate-related key risks identified in the contribution of Working Group II to the IPCC Sixth Assessment Report. These key risks include a subset of climate risks called representative key risks. Representative key risks are either already severe, or have the potential to become so, owing to changes in climate-related hazards, exposure, the vulnerability of natural and human systems or the adverse consequences of adaptation or mitigation responses to the risk. Representative key risks have been identified and assessed across sectors and regions, with a focus on the conditions under which they would become severe. The assessment of representative key risks considers factors such as average levels of global warming, socioeconomic development pathways and levels of adaptation. Severe risks are often the result of a combination of conditions, rather than a single determinant, and can have significant impacts on critical infrastructure, human health, food security and more (IPCC, 2022b, pp.2415, 2450, 2466, 2471 and 2473). The eight representative key risks are shown in the table below.

Four representative key risks (in bold) have been selected to exemplify two economic losses and two non-economic losses, recognizing the close interlinkages and overlaps between these categories. The representative key risks have been further narrowed down to loss and damage signatures by specifying a hazard that can lead, or has already led, to the impact. Two sudden onset hazards, floods and heatwaves, and the slow onset process of sea level rise have been chosen alongside drought, which has been classified as both a sudden onset and a slow onset event in the past (see, for example, Staupe-Delgado, 2019). The selection of signatures is intended to portray different types of loss and damage and select framing relevant for different groups of countries. The selected signatures are (1) food insecurity due to drought; (2) impacts on human health due to heatwaves; (3) infrastructure damage due to floods; and (4) impacts on coastal socio-ecological systems due to sea level rise.

Table 1: Climate-related representative key risks

REPRESENTATIVE KEY RISK	SCOPE
 **RISK TO LOW-LYING COASTAL SOCIO-ECOLOGICAL SYSTEMS**	**Risks to ecosystem services, people, livelihoods and key infrastructure in low-lying coastal areas, and associated with a wide range of hazards, including sea level changes, ocean warming and acidification, weather extremes (storms, cyclones), sea ice loss, etc.**
 RISK TO TERRESTRIAL AND OCEAN ECOSYSTEMS	Transformation of terrestrial and ocean/coastal ecosystems, including change in structure and/or functioning, and/or loss of biodiversity.
 **RISKS ASSOCIATED WITH CRITICAL PHYSICAL INFRASTRUCTURE, NETWORKS AND SERVICES**	**Systemic risks due to extreme events leading to the breakdown of physical infrastructure and networks providing critical goods and services.**
 RISK TO LIVING STANDARDS	Economic impacts across scales, including impacts on gross domestic product (GDP), poverty and livelihoods, as well as the exacerbating effects of impacts on socioeconomic inequality between and within countries.
 **RISK TO HUMAN HEALTH**	**Human mortality and morbidity, including heat-related impacts and vector-borne and waterborne diseases.**
 **RISK TO FOOD SECURITY**	**Food insecurity and the breakdown of food systems due to climate change effects on land or ocean resources.**
 RISK TO WATER SECURITY	Risk from water-related hazards (floods and droughts) and water quality deterioration. Focus on water scarcity, water-related disasters and risk to indigenous and traditional cultures and ways of life.
 RISKS TO PEACE AND TO HUMAN MOBILITY	Risks to peace within and among societies from armed conflict as well as risks to low-agency human mobility within and across state borders, including the potential for involuntarily immobile populations.

Source: Table 16.6. (IPCC, 2022b, p. 2455).

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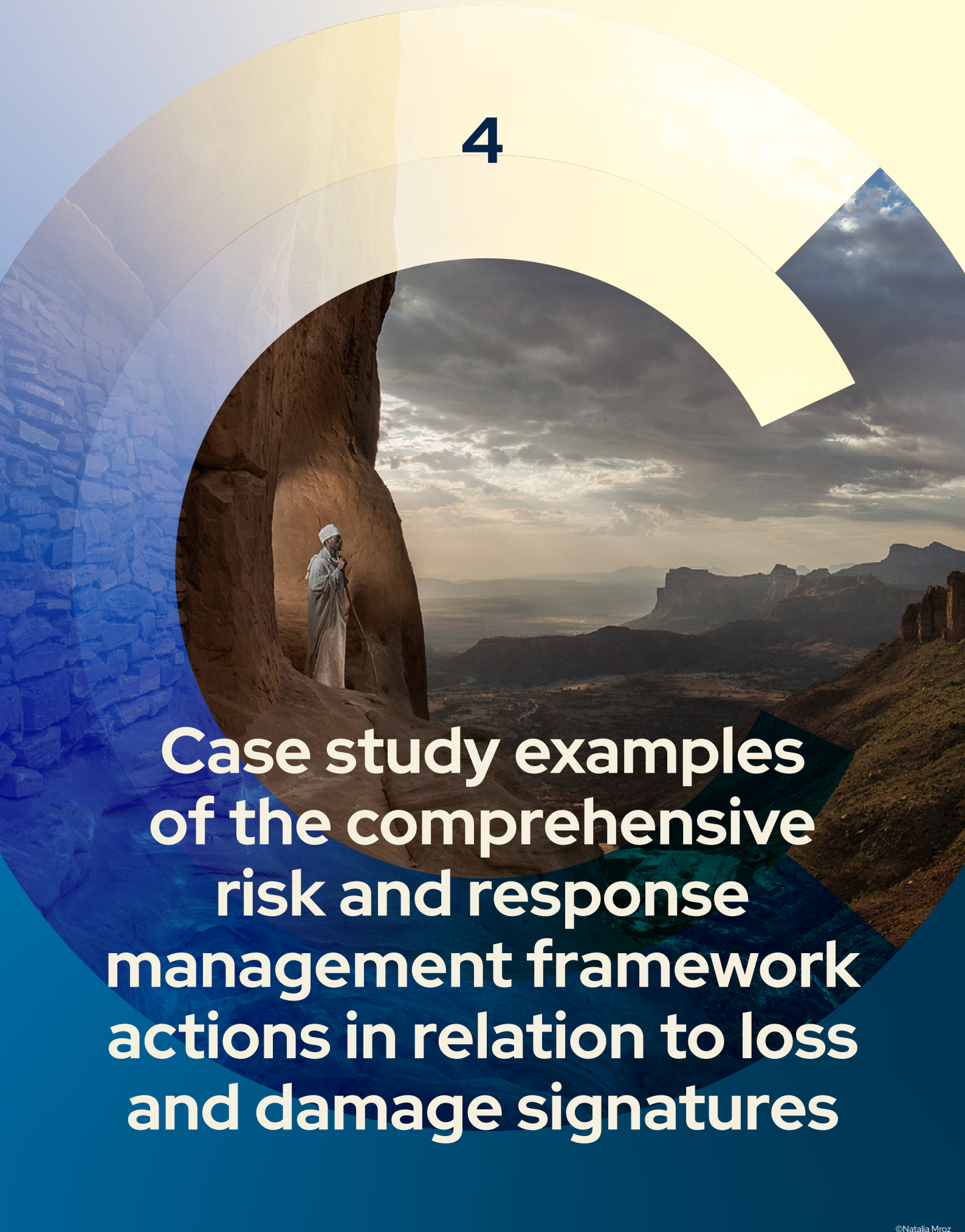


Case study examples of the comprehensive risk and response management framework actions in relation to loss and damage signatures

Following the methodology described in chapter 1 above, this chapter will introduce 20 case studies selected from the different submissions under the process of the TEG-CRM, the expert group on non-economic losses and the Transitional Committee, or, if no suitable case study could be identified, supplemented by desk research. Summaries of all case studies can be found in the annex.

The case studies are presented for each loss and damage signature under one of the five main categories of the comprehensive risk and response management framework: pre-emptive action, contingency arrangement, managing impacts, transformative action and governance. For each signature, a summary table is provided, with the main category under which the signature is applicable marked in a dark shade. Many case studies combine actions across different categories; these additional categories are marked in medium-light shade. The case studies for each signature are from a broad range of submitters and geographical areas as well as from local, regional, national and international levels. This chapter aims to give the reader an understanding of the different types of actions that are possible and necessary to comprehensively manage risks and impacts from climate change, as a comprehensive and strategic approach covering all categories of actions is still lacking in most cases. The case studies revealed several common characteristics, which are marked with the following icons. Each case study is marked with the relevant icons.

4.1. Loss and damage signature 1: Food insecurity due to drought

Droughts significantly contribute to food insecurity by reducing physical and economic access to food, increasing food prices, and compounding the underlying conditions of food insecurity and malnutrition. This is particularly evident in regions such as Africa, Asia and the Pacific, where severe drought conditions have been increasing since 2005 (IPCC, 2022b, p.795). In India, women often experience greater workloads and stress during drought events, which can exacerbate food insecurity (IPCC, 2022b, p.794). In Central America's Dry Corridor, drought conditions have led to a growing dependence on food imports, making the region more vulnerable to price variability, climatic conditions and food insecurity (IPCC, 2022b, p.1736). In 2015, a drought in Central America caused a loss of up to 80 per cent of beans and 60 per cent of maize, leaving 2.5 million people food insecure (IPCC, 2022b, p.1699). Droughts induced by the 2015–2016 El Niño, worsened by climate change, caused acute food insecurity in various regions, including Eastern and Southern Africa and the Dry Corridor of Central America (IPCC, 2022b, p.717).

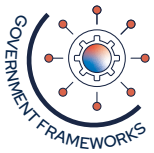
4.1.i Case study 1.A: Adapting to drought through the Local Climate Adaptive Living Facility in the Gambia (United Nations Capital Development Fund, 2024)

Pre-emptive Action	Contingency Arrangements	Managing Impacts	Transformative Action	**Governance**

The Local Climate Adaptive Living Facility (LoCAL) catalyses risk reduction through performance-based climate resilience grants for local governments to address the adverse impacts of climate change at the community level. LoCAL employs a multi-pronged approach involving climate risk assessments, performance-based climate resilience grants channelled through existing fiscal systems, and capacity-building. This approach helps local governments implement tailored adaptation strategies.

In Kataba Omar, the Gambia, a solar irrigation project funded by LoCAL for water conservation and agricultural sustainability has transformed a 3,600 m2 area from dusty dry land to a luscious green field of tomatoes, okra and other crops, increasing crop yields and improving food security. This has improved nutrition levels and provided additional income for local women, fuelling entrepreneurial growth.

The success of Kataba Omar illustrates the importance of integrating local knowledge and needs into climate adaptation planning. By bolstering local capacities and leveraging national systems for fund disbursement, the project ensures sustainability and replicability. Furthermore, the participatory approach to assessing needs and vulnerabilities has proven essential in creating effective and sustainable climate resilience strategies.



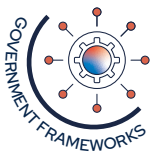
4.1.ii Case study 1.B: Providing access to livestock insurance for pastoralists in the Somali region of Ethiopia (World Food Programme (WFP), 2023a)

Pre-emptive Action	Contingency Arrangements	Managing Impacts	Transformative Action	Governance

In the Somali region of Ethiopia, the Satellite Index Insurance for Pastoralists in Ethiopia, implemented by WFP, uses risk transfer to build (agro-) pastoralist communities' resilience and mitigate food insecurity caused by drought: in exchange for their contribution to the construction and rehabilitation of community assets, these communities receive an innovative insurance product. The scheme uses satellite technology to monitor vegetation levels and predict potential shortages in pasture and fodder. When vegetation falls below set thresholds, the system triggers automatic insurance payouts. These funds, delivered via mobile money, enable households to purchase fodder, pay for veterinary services or buy water, preventing livestock loss and distress sales. The target group is graduating participants in the Ethiopian Government's productive safety programme, given the programme is a social protection entry point. The resilience-building activities also benefit communities in years when drought does not trigger the index-based insurance.

Between August 2021 and February 2022, over 28,000 households received payouts totalling USD 1.8 million, reflecting the programme's scale and impact. The payouts helped households reduce their reliance on negative coping strategies, such as reducing meal sizes or selling assets, with the number of families adopting such strategies significantly decreasing from 2020 to 2022.

The project highlights the importance of local engagement in programme design to ensure that the insurance products meet the specific needs of the target communities. Ongoing capacity-building and policy advocacy are essential for the sustainability and scalability of such insurance schemes, and should be integrated into broader national risk management frameworks.



4.1.iii Case study 1.C: Quantifying agricultural loss and damage from extreme climate events in Uruguay through application of the damage and loss methodology of the Food and Agriculture Organization of the United Nations (FAO, 2024)

Pre-emptive Action	Contingency Arrangements	Managing Impacts	Transformative Action	Governance

In Uruguay and more than 40 other countries, the FAO damage and loss methodology, developed with UNDRR, assesses direct loss of agriculture from disasters. The methodology standardizes disaster impact assessments across agriculture subsectors (such as crops, livestock and fisheries) to ensure consistent reporting at a global level, such as for the Sendai Framework and the Sustainable Development Goal indicators. In Uruguay, agricultural damage and loss were highest during drought years, and the

recent 2022–2023 drought accounted for direct losses equivalent to 3 per cent of Uruguay's GDP. Uruguay has adapted and implemented the existing loss and damage methodologies (post-disaster needs assessment (PDNA) and damage and loss assessment in the productive sectors of the economy and in 2022 made it an obligation to report all disaster loss and damage experienced by people, property and environment. Uruguay also uses the FAO methodology to estimate crop loss due to extreme climatic events in the context of its NAP and its nationally determined contribution (NDC). Additionally, these systematic evaluations support climate risk management through the creation of risk assessments and maps and inform the design of adaptation actions and financial protection instruments.

Uruguay's experience showcases the necessary but challenging way diverse information systems can enhance disaster risk assessments and management. While the geographical scale and inclusion of non-governmental data sources such as the private sector can be enhanced, the collaboration between different government agencies highlights opportunities for more informed policymaking and targeted resource allocation, fostering a resilient agricultural sector.

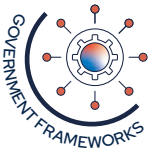
4.1.iv Case study 1.D: Climate-resilient entrepreneurship in Sri Lanka (SLYCAN Trust, 2024)

Pre-emptive Action	Contingency Arrangements	**Managing Impacts**	**Transformative Action**	Governance

In Sri Lanka, SLYCAN Trust has initiated the EthicalX: Climate and Innovation Hubs which support ethical, sustainable, climate-friendly and resilient entrepreneurship at the local and national level to transform livelihoods, including in the context of human mobility caused by climate impacts. The Hubs provide capacity-building, technical support, mentoring and support to raise seed funding for entrepreneurs with a special focus on women and youth in order to address and prevent both economic and non-economic losses related to climate change. Droughts, which threaten agricultural livelihoods and food security, have been named as a main driver of internal migration in agricultural communities in Sri Lanka.

Entrepreneurs receive the opportunity to integrate into the social fabric of their communities, preserve their cultural heritage and traditional knowledge and engage in climate-resilient livelihoods that sustainably use natural resources and ecosystems, protecting them from future cycles of mobility and loss. EthicalX is being implemented in multiple countries and can be scaled up using in-depth mapping, stakeholder engagement and adjustments to the local context, available resources, cultural heritage and identified needs and priorities. Climate-affected communities and migrants often prioritize skill development for resilience-building and livelihood diversification.

To be most effective, entrepreneurship support should be connected to local and national planning and policy environments, as it spans sectors such as health, education and training, risk management and the environment. Hubs have grown and adapted to different contexts, overcoming challenges related to macroeconomic circumstances, data scarcity and profound capacity-building needs.



4.1.v Case study 1.E: Building systems to anticipate drought in Mozambique: An impact assessment of capacity-strengthening interventions on national systems (WFP, 2023b)

Pre-emptive Action | **Contingency Arrangements** | **Managing Impacts** | Transformative Action | **Governance**

Institutional capacity-building from WFP supported Mozambique in strengthening its EWS and policies for disaster risk management focused on drought. Since 2020, WFP has partnered with key institutions in Mozambique, including the National Institute of Meteorology and the National Disaster Risk Management Institute, to establish an integrated drought EWS. WFP has provided technical training, staffing support and climate data tools, enabling institutions to improve drought monitoring, forecasting and anticipatory action implementation. The National Institute of Meteorology now produces national and subnational seasonal forecasts using satellite and station data, with established drought trigger thresholds to enhance early responses.

These activities have improved stakeholders' ability to operationalize drought anticipatory action through better climate data access and defined drought triggers. These efforts have shifted national policies from reactive to proactive disaster risk management, incorporating drought mitigation into national priorities. Additionally, institutional capacity has increased, enabling better drought monitoring, forecasting and coordination of government-owned drought anticipatory action programmes.

This programme highlights collaborative efforts in governance between national stakeholders and advancements in disaster risk management legislation. The 2020 Law on Disaster Risk Management and Reduction has been critical in fostering proactive drought management and mitigating food insecurity.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4.2. Loss and damage signature 2: Impacts on human health due to heatwaves

Heatwaves have significant impacts on human health, including increased mortality and morbidity rates. It has been estimated that on average 37 per cent of warm-season heat-related deaths can be attributed to anthropogenic climate change (IPCC, 2022b, pp.51 and 1074). These impacts are particularly severe for vulnerable groups such as the elderly, pregnant women, small children, people with pre-existing health conditions and low-income groups (IPCC, 2022b, p.1891). Heatwaves have been linked to increased discomfort, elevated anxiety and depression, and reductions in physical activity, social interactions, work attendance, tourism and recreation. They also have negative impacts on mental health, well-being, life satisfaction, happiness, cognitive performance and aggression (IPCC, 2022b, p.1,045). Heatwaves can also affect labour productivity, especially for those working outdoors and doing manual labour (IPCC, 2022b, p.51). In urban areas, the effects of heatwaves on human health are exacerbated by microclimates due to buildings and infrastructure, urban heat island effects and air pollution (IPCC, 2022b, p.1860). During heatwaves, communication and public information targeted at people and social care providers is critical, particularly for the most vulnerable citizens. Governments and non-governmental organizations play an important role in informing people about how to prepare and what to do to avoid health impacts and reduce mortality (IPCC, 2022b, p.1891).

4.2.i Case study 2.A: Medellín is beating the heat with green corridors (Gouvea de Andrade, 2023)

Pre-emptive Action	Contingency Arrangements	Managing Impacts	Transformative Action	**Governance**

The Colombian city of Medellín combats the urban heat island effect and improves air quality on a city-wide scale through the strategic implementation of green corridors and considered urban planning. In 2016, Medellín launched an initiative to strategically enhance urban greenery to cool the city and filter air pollutants, initially planting 120,000 plants and 12,500 trees. In 2021 this expanded to 2.5 million smaller plants and 880,000 trees in more than 30 green corridors across the city.

The cooling effects are significant, with a notable 2 °C decrease in temperature, directly enhancing the city's livability and reducing the urban heat island effect. The corridors also act as natural air filters, with species like the mango tree (Mangifera indica) proving particularly effective at absorbing a prevalent air pollutant, particulate matter PM2.5. Local wildlife has also returned to the city. The impact on health is profound, with the green infrastructure reducing pollution-related respiratory issues and heat-related health risks.

Medellín's approach illustrates the importance of community involvement in urban environmental projects. The positive reception and proactive participation of local communities, for example by volunteering as gardeners, have been crucial. Additionally, internally displaced people were hired for permanent jobs as gardeners through a specific programme, which helped to reduce their social vulnerability. The city's initiative demonstrates that integrating natural elements in urban planning not only addresses immediate environmental challenges but also fosters a sustainable and resilient urban environment.

4.2.ii Case study 2.B: Women's climate shock insurance and livelihoods initiative cushions against adverse health impacts (Climate Resilience for All, 2024)

Pre-emptive Action | **Contingency Arrangements** | Managing Impacts | Transformative Action | Governance

In response to the growing hazard of extreme heat in India, an innovative financial product offers both insurance and cash payments, targeting 50,000 informal women workers across different states of India, to cushion against severe health and economic impacts. The Women's Climate Shock Insurance and Livelihoods Initiative provides crucial financial support when work is no longer safe due to extreme heat. Designed by Climate Resilience for All in collaboration with the Self-Employed Women's Association and underwritten by Swiss Re, the risk transfer product is currently offered to women working across the informal sector, whose outdoor work, when conducted in extreme heat, can lead to heath impacts such as chronic rashes, dizziness, burns, infections, miscarriage and even death, as well as loss of crops or merchandise resulting in economic hardship at a household level.

In districts in the states of Rajasthan, Maharashtra and Gujarat, where temperatures reached critical levels, the parametric product disbursed almost USD 600,000 in insurance and direct cash payments in June 2024, significantly alleviating the financial burden on participating women. All members received cash assistance of approximately USD 5.00 as temperatures exceeded 40 °C/104 °F in every district. Additionally, 92 per cent of the participants in 16 districts received insurance payments. The quick financial support enabled recipients to cover essential medical and household expenses, thereby reducing the acute stress associated with extreme weather conditions.

The success of the Women's Climate Shock Insurance and Livelihoods Initiative highlights the importance of targeted financial products in response to climate impacts, particularly for vulnerable populations. It can serve as a model for similar initiatives in other regions prone to climate shocks, advocating for expanded geographic and demographic coverage to amplify positive outcomes on health and livelihood resilience.

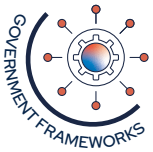
4.2.iii Case study 2.C: Ahmedabad heat action plan and the City Resilience Toolkit (Ahmedabad Municipal Corporation et al., 2016; Ahmedabad Municipal Corporation, 2019)

Pre-emptive Action	Contingency Arrangements	**Managing Impacts**	Transformative Action	**Governance**

The heat action plan (HAP) is a comprehensive strategy to minimize and address impacts from extreme heat. The HAP includes an EWS and the activation of emergency measures during heatwave alerts. If activated, the plan triggers a city-wide communication network to disseminate heat alerts and safety tips through various media, including text messages and social media. During heatwaves, the city deploys temporary cooling centres in public buildings and increases public access to potable water. Moreover, special training is provided to healthcare professionals to treat heat-related illnesses effectively.

The city has also implemented the Cool Roofs Programme, which involves applying high-reflectivity materials to roofs, reducing indoor temperatures and energy costs. Additionally, the HAP features extensive public education to mitigate heat-related health impacts. Since its inception, these strategies have significantly decreased heat-related mortalities, with a study estimating that around 2,380 deaths were prevented from 2014 to 2015.

Developed on the basis of the lessons learned from the HAP, the City Resilience Toolkit serves as a guide for other rapidly urbanizing areas, offering a structured approach to enhancing resilience against extreme heat health risks. The toolkit includes a manual on developing heat action plans, reflecting on Ahmedabad's pioneering strategies.



4.2.iv Case study 2.D: Seville transforms urban design and communication to get ahead of heatwaves (Bloomberg.com, 2022; Climate Resilience Center, 2023)

Pre-emptive Action	Contingency Arrangements	**Managing Impacts**	**Transformative Action**	**Governance**

The Spanish city of Seville is turning to transformative urban design and communication actions to address extreme heat. It has traditionally used a 'policy of shade', covering public spaces with awnings to shield people from direct sunlight, and is employing many other adaptation strategies. But as the city is expecting a temperature increase of between 2.4 and 2.7 °C by the end of the century and several consecutive days above 50 °C within the next 5–10 years, these strategies will not be enough.

Cartuja Qanat is a pioneering urban redevelopment initiative aimed at transforming urban spaces into cooler, more accessible and socially engaging environments. Using ancient Persian qanat technology, underground canals are constructed to lower street temperatures by up to 10 °C, using renewable energy to keep the water moving. The innovative system also includes water-cooled porous walls and specialized benches

to enhance outdoor comfort. The technology will be used to create 'comfort rooms' to provide relief from extreme heat, and a similar system for transportation hubs is under discussion. The project represents a futuristic approach to urban design, promoting environmental sustainability and social well-being.

Additionally, Seville is the world's first city to name a heatwave, taking communication on heatwave risk to a new level. Supported by The Atlantic Council's Climate Resilience Center (formerly known as The Arsht-Rock Resilience Center), the project introduced a health-based heat warning system, integrating local meteorological and mortality data to assess and categorize heatwaves based on potential health impacts. The innovative system not only categorized heatwaves but also named severe ones to enhance public awareness and prompt protective responses, improving public safety and response strategies against extreme heat.

4.2.v Case study 2.E: Occupational health and safety (International Labour Organization (ILO), 2024a, 2024b)

Pre-emptive Action	Contingency Arrangements	**Managing Impacts**	Transformative Action	**Governance**

Over 70 per cent of all workers are exposed to excessive heat, and every year, heat stress – the often referred to as the "silent killer at work" - causes 22.85 million occupational injuries and 18,970 work-related deaths. In 2022, the International Labour Conference recognized "a safe and healthy working environment" as a fundamental principle, compelling governments to enact workplace safety laws. Although some countries have implemented laws and guidelines to address excessive heat in the workplace, a comprehensive and updated legislative approach, commensurate to the extent of the challenge, is needed to integrate heat stress into occupational safety and health frameworks, risk assessments and preventive measures.

Governments should consider ratifying and implementing relevant international labour standards (i.e. C.155 and C.187),[16] adopting regulations for maximum workplace temperatures, adjusting building standards and providing for specific measures to protect workers from high temperatures. ILO is planning a tripartite consultation in 2025 to issue guidance for governments on regulations for extreme heat.

Social dialogue between governments, employers, workers and experts is crucial for developing practical and adaptable policies. Coordinated government efforts, capacity-building, and knowledge transfer are vital for effective implementation. Public health campaigns should also include occupational health and safety initiatives: raising awareness among workers and employers will help foster a culture of prevention, and measures such as hydration, rest breaks, mechanization and breathable clothing are essential for reducing health risks.

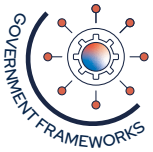
16 C.155 from the Occupational Safety and Health Convention, and C.187 from the Promotional Framework for Occupational Safety and Health

4.3. Loss and damage signature 3: Infrastructure damage due to floods

Infrastructure can be broadly categorized in three key domains: i) social infrastructure (housing, health, education, livelihoods and social safety nets, security, cultural heritage/institutions, disaster risk management and urban planning); ii) ecological infrastructure (clean air, flood protection, urban agriculture, temperature, green corridors, watercourses and riverways); and iii) physical infrastructure (energy, transport, communications, built form, water and sanitation and solid waste management) (IPCC, 2022b, p. 930).

Infrastructure damage due to floods can have significant impacts on cities and settlements affecting provision of energy, communications, housing, water and sanitation. Not only is physical infrastructure at risk of flood damage, but chronic flooding can erode social infrastructure over time, affecting livelihoods, health and education services, and reducing city tax income (IPCC, 2022b, p.916). Floods also impact ecological infrastructure. Hurricane Sandy in 2012, for example, damaged New York City region's low-lying salt marshes and beaches, which act as protective barriers against hazards, leading to a loss of ecosystem services estimated at up to USD 6.5 million (IPCC, 2022b, p.935). In some countries, the expected annual damages from flooding equate to 0.5–1 per cent of GDP, which is especially significant for countries such as Fiji which already spend 30 per cent of their government budget on transport (IPCC, 2022b, p.933).

Physical infrastructure measures, such as dikes and seawalls, may be cost-effective for large settlements, but they can be expensive or inaccessible for smaller or poorer communities (IPCC, 2022b, p.957).



4.3.i Case study 3.A: Supporting comprehensive resilience-building in the Chimanimani and Chipinge districts of Zimbabwe (United Nations Educational, Scientific and Cultural Organization (UNESCO), 2024)

Pre-emptive Action	**Contingency Arrangements**	**Managing Impacts**	Transformative Action	Governance

UNESCO employs the Climate Risk Informed Decision Analysis (CRIDA) methodology to implement pre-emptive actions aimed at protecting infrastructure from flood damage caused by severe weather events in Zimbabwe. The Chimanimani and Chipinge districts are highly vulnerable and severely impacted by drought, tropical cyclones and flooding. The Comprehensive Resilience-Building in the Chimanimani and Chipinge Districts project, launched in 2021, integrates CRIDA to manage the water-related risks and climate change impacts faced by the country. It also further developed a medium- to long-term water and environmental vulnerability assessment. By identifying flood-prone areas and

establishing evacuation routes, the project enhances emergency preparedness. It maps landslide risk hotspots so that actions can be identified which prevent further destruction of roads, homes and public infrastructure. Stakeholders were involved in hands-on workshops to identify vulnerabilities, and a climate stress test was used to guide local adaptation actions.

The success of this project highlights CRIDA as a powerful tool for identifying stakeholder-supported adaptation interventions that address multiple risk drivers and generate community co-benefits. Partners were able to identify and develop locally led, nature-based interventions that not only reduce disaster risk but also promote socioeconomic development and livelihoods.

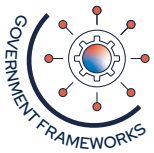
4.3.ii Case study 3.B: Loss and damage related to floods in Morocco (Moroccan Alliance for Climate and Sustainable Development, 2023)

Pre-emptive Action	**Contingency Arrangements**	Managing Impacts	Transformative Action	Governance

Morocco's use of contingency funds and insurance schemes demonstrates the importance of pre-emptive financial mechanisms in reducing the long-term economic impact of floods. Morocco faces frequent flooding, affecting both coastal and inland regions. The National Flood Prevention Program is investing USD 1.5 billion between 2016 and 2036 in flood resilience, identifying high-risk areas and strengthening community and infrastructure protection. Risk matrices have identified over 400 vulnerable sites across rural and urban Morocco, such as Casablanca and Guelmim.

The Fund to Combat Natural Disasters was established in 2009 and mobilized internal and external resources to be spent over four years. The Fund covered infrastructure reconstruction, allocating USD 65.6 million for rebuilding roads, schools and irrigation systems, and USD 31 million for improving disaster response capacities. Additionally, USD 90 million have been used for weather forecasting and flood monitoring systems. These efforts have helped Morocco quickly restore vital infrastructure after floods and improve flood resilience through preventive measures. Morocco's catastrophic risk insurance scheme includes premium support for insured households through private insurers and the Solidarity Fund against Catastrophic Events providing basic compensation for uninsured individuals.

These case studies submitted by the Moroccan Alliance for Climate and Sustainable Development (i.e. the network of Moroccan non-governmental organizations) emphasize that while contingency funds and insurance schemes have enabled the implementation of prevention, relief and restoration measures, there is still a need for stronger EWS, better public preparedness and long-term reconstruction planning to improve disaster response.



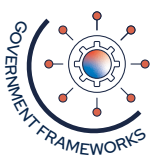
4.3.iii Case study 3.C: Addressing loss and damage at a local level in Malawi (Scottish Catholic International Aid Fund and Trócaire Malawi and the Civil Society Network for Climate Change in Malawi, 2023)

Pre-emptive Action	Contingency Arrangements	**Managing Impacts**	Transformative Action	**Governance**

In Malawi, response to loss and damage after Cyclones Ana, Gombe and Freddy was driven by locally led efforts funded by the Scottish Government and implemented by local partners. The response was based on community-led needs assessments to establish the extent of loss and damage experienced (economic and non-economic) and the identification by participants of key areas of action, which included borehole restoration, flood defence rehabilitation, home reconstruction, graveyard restoration and psychosocial support. The interventions combined immediate recovery efforts with longer-term risk reduction measures that were also prioritized, such as afforestation and additional flood defences. This 'build back better' approach helped communities prepare for future disasters while recovering from past events.

The project also highlighted gaps in disaster response which the Malawian Government is addressing through legislation like the Disaster Risk Management Act, designed to speed up emergency declarations and international support. Cyclone Freddy revealed further gaps in funding, leading to a government response plan aimed at addressing the immediate needs of 1.64 million people. The localized approach emphasized cash transfers and community-driven decision-making, fostering resilience at both the local and national level.

In the aftermath of Cyclone Freddy in 2023, the programme's efforts were seen as crucial for both immediate and future loss and damage response strategies, but also highlighted gaps in funding and response strategies. The programme shows that locally led approaches, combined with sustained financial and technical support, are key to addressing both immediate and long-term loss and damage in an integrated way.



4.3.iv Case study 3.D: Rotterdam committed to designing a flood-proof city (C40, 2016; Rubin, 2022)

Pre-emptive Action	Contingency Arrangements	Managing Impacts	**Transformative Action**	**Governance**

Rotterdam's comprehensive climate adaptation strategy serves as a model for transformative action through advanced infrastructure, integrated flood defences, urban resilience and water management to tackle sea level rise, heavy rainfall and other climate risks. Rotterdam, with its low-lying geography, is threatened by sea level rise, storm surges, river flooding and heavy rainfall. Recognizing that it cannot entirely eliminate these threats, the city has changed its strategy in order to actively live with, and on, the rising water. The city is implementing urban planning strategies, such as innovative sponging, and a water storage method that uses every space available.

Squares are set lower than street level to hold water, and underground parking areas can act as water storage facilities. To transform its flood resilience, the city has built advanced infrastructure, such as the Maeslantkering storm surge barrier and a system of dikes, and is now exporting these technologies. Green roofs are also widely used to absorb rainwater and reduce flooding, and houses are systematically storm-proofed. These measures are part of a broader effort to transform the city into a climate-resilient and adaptive urban space. The city is also home to the world's first floating urban farm, which is part of a floating neighbourhood.

Rotterdam's experience highlights the importance of integrating long-term water management into urban planning to address climate risks effectively. Proactive governance, with strong political commitment and financial planning, has been key to advancing climate adaptation. The city's ability to combine traditional flood defence infrastructure with innovative solutions demonstrates the value of blending old and new technologies. Rotterdam also shows that adaptation efforts can go beyond risk reduction to create opportunities for improving urban living, enhancing biodiversity and fostering economic growth.

4.3.v Case study 3.E: Safeguarding rural communities and their physical assets from climate-induced disasters in Timor-Leste (Green Climate Fund (GCF), 2019)

Pre-emptive Action	Contingency Arrangements	Managing Impacts	Transformative Action	**Governance**

The project aims to develop climate-resilient small-scale infrastructure in six municipalities and strengthen local governance systems, which enhance resilience to climate-induced disasters. Approved and funded by the GCF, the project was submitted by the United Nations Development Programme (UNDP) and is being implemented by the Ministry of Commerce, Industry and Environment (General Directorate for Environment) of Timor-Leste.

Timor-Leste faces various climate-related hazards, such as floods, landslides and droughts, causing frequent loss of lives and livelihoods. These events damage critical small-scale infrastructure, particularly water supply and drainage systems. The project addresses the root causes of infrastructure vulnerability and enhances institutional capacity to assess and manage climate risks, while ensuring the implementation, financing and maintenance of local infrastructure services. It provides additional district, municipal and village-level investments to scale up efforts to make transformative change across the country.

The project directly benefits 175,840 people, approximately 15 per cent of the population, by increasing the resilience of small-scale infrastructure and rehabilitating 300 ha land to buffer against climate disasters. Long-term resilience is supported by (1) embedding climate resilience standards into infrastructure planning, design, construction and overall governance processes, and (2) improving climate hazard assessment capacity and access to climate risk information with a strong capacity development plan.

The project underscores the importance of integrating climate risk management into local governance and investment frameworks. Addressing the limitations of decentralized investment frameworks fosters greater local participation and promotes sustainable development, ultimately strengthening the resilience of vulnerable communities. Moreover, the project adopts a multi-hazard, integrated approach aligned with national climate policies, such as NDCs and NAPs. Developed with the support of the National Directorate for Climate Change (a GCF national designated authority), it ensures country ownership through robust community engagement.

4.4. Loss and damage signature 4: Impacts on coastal socio-ecological systems due to sea level rise

The effects of sea level rise on coastal socio-ecological systems include increasing stress on coastal and marine systems from climate and non-climate impact drivers, contributing to trends in extreme coastal high-water levels. Mangroves, salt marshes and seagrass beds may decline unless they can move inland, while coastal freshwater swamps and marshes will be vulnerable to saltwater intrusion from rising sea levels. Sea level rise is already impacting ecosystems, livelihoods, infrastructure, and food security on the coasts. It interacts with various factors like shoreline erosion, storm surges, wave action, saline intrusion and coastal flooding, and threatens the existence of cities and settlements in low-lying areas, as well as some entire island nations and their cultural heritage. Climate change mitigation and coastal adaptation are essential for addressing this challenge (IPCC, 2022b, pp.477 and 1962). But, as sea level rise accelerates beyond 2050 depending on the warming scenario, the current adaptation strategies may not provide the long-term adjustments needed, posing existential risks for some species and locations. Nature-based interventions like wetlands and salt marshes can reduce impacts and costs while supporting biodiversity and livelihoods, but their effectiveness is limited in the face of excessive warming and rapid sea level rise. (IPCC, 2022b, p.94). The WIM Executive Committee and the Technology Executive Committee issued a policy brief focusing on technologies for managing loss and damage in coastal areas, highlighting risk assessment, protection methods, resilience-building and recovery strategies. It highlights the increasing impact of climate change on coastal zones and underscores the use of a mix of technologies for comprehensive risk management.

4.4.i Case study 4.A: Nature-based solutions to combat biodiversity and territory loss due to sea level rise in Alexandria, Egypt (United Nations Economic and Social Commission for Western Asia (ESCWA) and the United Nations Economic Commission for Latin America and the Caribbean)

Pre-emptive Action	Contingency Arrangements	Managing Impacts	Transformative Action	Governance

Stakeholders in Alexandria, Egypt, are implementing nature-based solutions (NbS) regionally to reduce the risks of sea level rise, with a focus on biodiversity and territory conservation. The Multi-Stakeholder Platform for Protecting Biodiversity, launched in 2023 by ESCWA and the Swedish Government, aims to enhance coordination among regional stakeholders in biodiversity conservation efforts. It is currently doing this by preparing concept notes and project proposals on NbS for climate resilience. Among other things, the Adaptation to Climate Change in the Nile Delta through Integrated Coastal Zone Management project, implemented by UNDP and supported by the Global Environment Facility, utilizes reed fencing to encourage sand dune formation, which not only preserves biodiversity but also protects agricultural lands and human settlements from flooding. The approach adapts local and traditional techniques to contemporary challenges.

The Alexandria case study highlights the the role of NbS to combat the exacerbating impacts of sea level rise on non-economic losses in the future. Multi-stakeholder platforms can leverage finance and play a significant role in enhancing the adaptive capacity of vulnerable regions such as the Nile Delta.

4.4.ii Case study 4.B: Role of comprehensive climate safety nets in reducing multi-dimensional vulnerabilities for adolescents due to climate change (Public Health Foundation of India and Cornell College of Agriculture and Life Sciences Department of Global Development, 2024)

Pre-emptive Action	**Contingency Arrangements**	**Managing Impacts**	Transformative Action	**Governance**

In the Sundarbans, the largest mangrove delta shared by India and Bangladesh, comprehensive climate safety nets focusing on vulnerable populations and ecosystem health have been proposed to address the impacts of sea level rise and other hazards. The Centre for Environmental Health at the Public Health Foundation of India proposes climate safety nets which integrate traditional safety nets with climate-sensitive features. They include conditional cash transfers contingent on keeping adolescents in school and delaying marriages. These initiatives also focus on vocational training in climate monitoring and environmental management. Community involvement is crucial, with efforts to integrate safety nets with local groups, such as farmer and women's self-help groups. These networks support each other through shared resources like drought-resistant crops and financial tools like credit and loans.

Strengthening these groups and offering cash transfers or matching funds through these savings groups has the potential to improve resilience against losses related to health and livelihoods in an area that is rich in biodiversity but highly susceptible to the impacts of climate change.

The impact of these safety nets can be profound. For instance, similar initiatives have shown promise in other regions; the Productive Safety Net Programme in Ethiopia significantly mitigated food consumption issues related to rainfall shocks. In India, the Odisha Rural Livelihood Programme helped mitigate the economic effects of Cyclone Phailin on non-food expenditures. In Sundarbans, the introduction of these comprehensive safety nets, linked to state- and national-level programmes, could similarly help offset the socioeconomic and environmental setbacks caused by sea level rise and other climate-related challenges. Participation of community-based stakeholders will increase effectiveness and accountability and can support comprehensive evaluation.

4.4.iii Case study 4.C: Addressing non-economic losses due to sea level rise (Marshall Islands, 2023)

Pre-emptive Action	Contingency Arrangements	**Managing Impacts**	Transformative Action	**Governance**

The Marshall Islands has developed culturally tailored small-scale projects to address non-economic losses due to sea level rise. These initiatives focus on integrating cultural knowledge and environmental awareness into national education systems and community awareness programmes. A smaller part of the UNDP Ridge to Reef project, a five-year project to strengthen natural resource management, livelihoods and protect biodiversity in atoll communities, partners with local youth organization Jo-Jikum. Through this partnership, Marshallese youth travel to an outer island to collect traditional legends and compile these into booklets for the Marshallese Language Arts curriculum. The legends are analysed for their links to environmental issues and cultural values and are submitted through the Ministry of Education's curriculum division to be distributed to teachers, as well as to the Council of Iroij for cultural approval, with a total cost per booklet and atoll of USD 50,000.

In another example, the Historic Preservation Office has mapped locations of significant and important Marshallese legends on Majuro atoll. Partnering again with Jo-Jikum, a small pilot project of USD 10,000 is underway to create kiosks marking four of the seven of these legendary landmarks to increase public awareness of the legends. The kiosks are painted depictions of each of the legends by youth artists, connecting youth to and promoting cultural knowledge.

Identifying and accessing finance to preserve cultural knowledge and to address non-economic losses is a challenge. Another example from the Marshall Islands involves developing mental health institutions which specialize in culturally relevant forms of mental health support. This will be necessary to help community members process the ongoing impact of losses relating to land and identity.

4.4.iv Case study 4.D: Fiji's national planned relocation arrangements (Government of Fiji, 2023)

Pre-emptive Action	**Contingency Arrangements**	**Managing Impacts**	**Transformative Action**	**Governance**

The Fijian Government has established a comprehensive policy framework to guide the planned relocation of vulnerable communities experiencing loss and damage due to sea level rise and other climate impacts. Starting with the Planned Relocation Guidelines in 2018, the framework emphasizes a demand-driven approach, ensuring communities have access to relocation options when in situ adaptation becomes unviable. The Climate Relocation of Communities Trust Fund, created in 2019, is the first national trust fund in the world that is linked to a government-legislated, community-driven process for the planned relocation of communities, settlements and groups as a last-resort means of proactive retreat. The Fund not only addresses physical displacement but also non-economic losses such as loss of cultural and spiritual connections to ancestral lands. This fund is sustained through domestic revenue streams like the Environment and Climate Adaptation Levy and is designed to integrate international financial support.

Fiji's proactive legislative efforts, including the Climate Change Act of 2021, offer a legal foundation for planned relocation as a last-resort option. The intragovernmental Taskforce on the Relocation and Displacement of Communities Vulnerable to the Impacts of Climate Change oversees relocation assessments and implementation arrangements. The Taskforce is supported by the fact that the government is legally required to produce Standard Operating Procedures for Planned Relocation which help define a consultative, evidence-based and demand-driven process for moving communities, settlements and vulnerable groups in a safe, orderly and equitable way. In 2023, the first iteration of Fiji's Standard Operating Procedures for Planned Relocation was endorsed by the Cabinet of the Government of Fiji. The comprehensive governance and financing approach highlights Fiji's commitment to safeguarding communities' rights while managing difficult trade-offs and building resilience in response to the ongoing impacts of sea level rise.

4.4.v Case study 4.E: Vanuatu's multifaceted governance approach to addressing loss and damage (Waiwai et al., 2023)

Pre-emptive Action	Contingency Arrangements	Managing Impacts	Transformative Action	Governance

Vanuatu is employing a multifaceted national governance and international advocacy approach to addressing loss and damage caused by sea level rise. Nationally, Vanuatu is establishing a National Loss and Damage Fund, modelled on the Green Energy Fund, to provide equitable and rapid financial support to affected communities. This Fund intended to channel investments from various sources, including international donors. The Government aims to utilize existing financial disbursement systems to address climate impacts locally, avoiding parallel structures. Internationally, Vanuatu is actively advocating for increased climate action and has proposed several instruments with which to increase climate finance, which the country aims to channel through its national architecture.

To quantify its losses and financing needs, Vanuatu revised and enhanced its NDC in 2022 with 12 loss and damage targets, with estimated costs. PDNAs are being used to calculate the economic impact of disasters, and the Government has issued a holistic analysis of biodiversity and ecosystem impacts, revealing a true cost of over USD 1 billion. Vanuatu has plans to address non-economic losses through measures such as livelihood diversification, biodiversity rehabilitation and documentation of Indigenous knowledge, pending available funding.

5

Promoting comprehensive risk management of different types of losses and at different scales

An integrated approach reduces the gaps and overlaps which can arise when applying singular or separated risk management strategies. Additionally, initiatives to build general resilience and activities in the different comprehensive risk and response management categories can often be designed to address different impacts and risk drivers simultaneously, making them more cost-effective.

The comprehensive risk and response management framework provides the conceptual categories to promote comprehensive risk management. The case studies presented in chapter 4 above, which focus on four loss and damage signatures, along with the broader selection in the annex, provide insights into and inspiration for implementing comprehensive risk management strategies for specific impacts or hazards. This chapter identifies entry points and pathways to promote comprehensive risk management of different types of loss and damage at different scales.

5.1. Overall approach

When managing risks from climate change, an integrated approach that spans across different hazards and impacts has many benefits. However, the complexities produced by such an approach call for purposeful management of the trade-offs of combining actions.

Cross-cutting approach: most interventions cover more than one category of the comprehensive risk and response management framework and generate additional benefits such as contributing to the Sustainable Development Goals. When taking stock and mapping out the different categories of interventions and policies, potential remaining gaps within and between different interventions become clear and can be addressed.

Multi-hazard approach: many examples of loss and damage occur in a multi-hazard environment with interacting, compounding or cascading hazards. Water-related hazards, such as droughts and floods, often exacerbate each other and can be addressed holistically, as in case study 3.A by UNESCO 2024 and case study 3.E by the GCF. An integrated approach reduces the gaps and overlaps which can arise when applying singular or separated risk management strategies. Additionally, initiatives to build general resilience and activities in the different comprehensive risk and response management categories can often be designed to address different impacts and risk drivers simultaneously, making them more cost-effective. Approaches related to adaptive social protection, as proposed, for example, for the Sundarbans in case study 4.B, are a good example of a broad approach with many co-benefits. An integrated multi-risk approach also reduces the risk of maladaptation, where actions to reduce one risk inadvertently exacerbate other risks. While an integrated or multi-risk approach can enhance overall effectiveness, it also increases planning complexity and can slow down implementation. This is because it involves more stakeholders and sectors, each of which may have competing priorities. Additionally, decision makers adopting a multi-risk approach must be careful not to overlook groups that may be particularly vulnerable to certain risks. Targeted interventions, such as the insurance offered to women working in the informal sector during periods of extreme heat and presented in case study 2.B, may be necessary when such a group is identified.

Considering non-economic losses: considering different types of loss and damage is also crucial. Currently, most examples of non-economic losses are small in scale. There are methodological gaps in assessing and addressing non-economic losses, which require further work. When planning interventions in comprehensive risk management, efforts should be made to recognize and address non-economic losses (Martyr-Koller et al., 2021, p.255) either in single or combined interventions. Several case studies call for more funding for action, such as for NbS in case study 4.A and for mental health support in case study 4.C, or for research addressing non-economic losses, highlighting a prominent gap.

Data matters: data are essential for comprehensive risk management because it provides the foundation for assessing climate-related hazards, vulnerabilities and exposures. Accurate climate information, such as real-time data, forecasts and projections, enables better decision-making and planning. By understanding risks, as well as past and potential impacts, stakeholders can take informed action to mitigate disasters and adapt to changing conditions, ultimately enhancing resilience and reducing uncertainties. As seen in case study 1.C, accessing data from different sources and across different scales is a challenge, but it will ultimately improve planning and help match appropriate responses with climate change impacts. Technical guidance on this matter has been published by UNDRR and the World Meteorological Organization (2023) and UNDRR (2022).

5.2. Institutionalizing comprehensive risk management

One of the biggest challenges to managing risk comprehensively is the fact that action has been scattered across different policy institutions and mandates and will need to be brought together to address loss and damage comprehensively and collectively.

One of the biggest challenges to managing risk comprehensively is the fact that action has been scattered across different policy institutions and mandates and will need to be brought together to address loss and damage comprehensively and collectively. To provide a meaningful governance platform, different perspectives should be included.

Stakeholder platform: a broad range of actors and stakeholders needs to be involved in comprehensive risk management: for instance, relevant line ministries, subnational governments, international organizations, affected communities, academia and the private sector. Examples that demonstrate such collaboration include the Multi-Stakeholder Platform for Protecting Biodiversity in case study 4.A and the social dialogue advocated by ILO in case study 2.E; many case studies work across stakeholder groups to achieve a shared better outcome.

Responsibilities under the comprehensive risk and response management framework: comprehensive risk management requires the establishment of mandates with clear roles and responsibilities. This includes setting up coordination mechanisms that involve relevant actors from disaster risk, climate adaptation, national finance and planning ministries and response agencies. Explicit institutional capacity-building and coordination, such as in case study 1.E, might be required. The UNDRR (2021) is taking action to reduce the gaps in climate adaptation for Disaster Risk Reduction (DRR) communities, such as by aligning NAPs and DRR strategies.

Inclusion of local perspectives: allowing the participation of vulnerable and frontline communities and ensuring the participation of at-risk populations in the planning and execution of actions in risk management is a prerequisite. This has proven successful in many case studies, some of which (e.g. 3.A or 3.C) took an explicit participatory approach.

Political leadership: institutionalizing comprehensive risk management should include the highest political echelon and possibly institutionalize relevant processes under a privileged legal mandate.

Multi-level governances: loss and damage is localized, and local governments and cities are often leaders in climate action and innovative approaches. Often facing considerable financial constraints, it is important to channel sufficient funding to these stakeholders either by dedicated funding mechanisms (such as by LoCAL in case study 1.A) or through well-functioning multi-level governance.

5.3. Identifying key interventions in comprehensive risk management

While comprehensive risk management calls for a process oriented and programmatic approach, it is also necessary to promote specific interventions.

Risk reduction: almost all case studies include an element of risk reduction or adaptation. Pre-emptive action is crucial for keeping climate risks manageable and making action to address loss and damage cost-effective: research has shown that investing in DRR saves, on average, about four times the cost of that investment in avoided and reduced losses. This is particularly evident for frequent events like floods, where mitigation efforts prove highly cost-effective (Mechler, 2016, p.3). Non-structural measures, such as knowledge transfer, capacity-building and building codes, are on average, more cost-efficient than their structural counterparts and should therefore receive sufficient attention (Hugenbusch and Neumann, 2016, p.14).

EWS: many case studies include EWS elements. In 2022, the Early Warning Systems for All Initiative was launched by the United Nations Secretary-General to ensure that, by the end of 2027, everyone is protected from hazardous weather, water or climate events through EWS. EWS are a proven, efficient and cost-effective way to save lives, jobs, land and infrastructure and support long-term sustainability, and must be scaled up urgently. Budimir et al. (2023) outline principles of EWS and early action to minimize loss and damage, endorsed by the WIM Executive Committee.

Comprehensive risk management is not only an exercise in coordination, but also involves optimizing different types of intervention which focus on managing impacts, while maximizing preventive action. This requires the mobilization and streamlining of different sources of funding.

Adaptive social protection systems: adaptive social protection is gaining recognition as a valuable strategy for enhancing community resilience by combining elements of social protection, disaster risk management and climate change adaptation. This approach involves adapting existing social protection programmes, such as health or unemployment insurance, and existing cash transfer programmes so that they also address impacts from natural hazards and climate change (Solórzano and Cárdenes, 2019, p.6; Anderson, 2021, p.15). Case study 4.B suggests that such an approach can also be combined with resilience-building measures. Participants who graduate from social protection schemes but are still vulnerable to climate shocks can be included in targeted programmes such as in case study 1.B.

Transformative actions: when adaptation goals cannot be achieved within an existing solution space, deliberate transformation may be necessary. The case studies demonstrating transformative action include actions such as re-skilling when jobs are no longer viable (1.D), fundamentally changing urban planning and communication strategies (2.D), embracing innovative urban planning and water storage (3.D) and relocating communities (4.D). The IPCC (2022b, p.2436) considers the levels of transformative potential of adaptation actions (low, medium or high) and the different categories (including depth, scope, speed and limits) of the interventions. Few current responses to climate change are widespread, rapid and deep simultaneously (which would qualify them as highly transformative), while achieving high transformation in all four categories may be particularly challenging or even involve trade-offs. As these interventions imply fundamental change, special care needs to be taken to avoid negative impacts or exclusion of already marginalized groups. Close community engagement, cross-sectoral consultation and a rights-based approach are necessary.

Mainstreaming and integration in governmental policies: many case studies highlight the importance of adjusting or setting up new policies, plans and legislation. Governance is a key element in this process, as it forms the foundation for most interventions. Policymakers at different governmental levels can spearhead comprehensive risk management and create vertically and horizontally aligned strategies. Strong governance enhances a country's capacity to implement and sustain climate action, making it a crucial enabling factor for long-lasting success. This is also linked to the integration of climate policies, such as NDCs and NAPs, as highlighted in case studies 3.E and 4.E.

5.4. Establishing financing strategies for comprehensive risk management

Comprehensive risk management is not only an exercise in coordination, but also involves optimizing different types of intervention which focus on managing impacts, while maximizing preventive action. This requires the mobilization and streamlining of different sources of funding.

Risk layering approach: to ensure meaningful mobilization of finance for comprehensive risk management action it is advisable to mobilize both national and international resources, and to use risk layering frameworks when establishing finance

strategies for different clusters in the comprehensive risk and response management framework. While it is sometimes necessary to create new financing instruments, such as in the case of Vanuatu (case study 4.E), working with existing financing strategies can be just as efficient and reduces the risk of duplicating structures and effort.

Enabling environments: there is a need to develop enabling environments that will empower households, companies and the private sector to participate in pre-emptive action, contingency finance and addressing loss and damage. Creating enabling environments also means adjusting mechanisms to match the capacities and needs of the target groups. Morocco, in case study 3.B, shows how it adjusted its insurance scheme for low-income and insured households.

The emerging finance landscape: several case studies show that comprehensive risk management actions are sometimes contingent on external finance. To avert, minimize, and address loss and damage in the future, countries will need to work with emerging financing systems, including the Fund for responding to Loss and Damage and associated funding arrangements.

5.5. Building up joint learning and accountability mechanisms

Establishing comprehensive risk and response management as a guiding framework for implementing policies, processes, projects and initiatives to respond to loss and damage will also require the necessary learning mechanism to be set up, as well as accountability processes to be monitored and evaluated.[17]

Monitoring and evaluation: in order to implement a systematic approach to comprehensive risk management, the success criteria for different categories of actions must be defined and relevant monitoring, evaluation and learning systems created.

Effective redress mechanisms: affected groups and populations should be able to raise concerns on actions related to risk management. This calls for the establishment of grievance systems accessible to affected communities.

Establishing the comprehensive risk and management framework as a guiding framework for implementing policies, processes, projects and initiatives to respond to loss and damage will also require the necessary learning mechanism to be set up, as well as accountability processes to be monitored and evaluated.

Open learning: as part of the comprehensive risk management process an open learning system should be developed, involving relevant actors from the development, climate and humanitarian sectors, among others. Best practices and lessons learned should be shared and disseminated through channels such as the City Resilience Toolkit in case study 2.C. Comprehensive risk and response management involves bringing together strategies and measures to reduce disaster and climate risks. Rather than a series of individual measures, it combines both tried-and-tested and innovative instruments from the fields of climate change mitigation and adaptation, disaster risk management, disaster management and social protection into a single holistic approach.

Lastly, for comprehensive risk and response management to be truly effective, the most extreme impacts of climate change will need to be kept at bay and projections for global warming kept from spiralling out of control. Merging risk and response management with meaningful actions to decarbonize energy systems and mitigate greenhouse gas emissions has received little attention in the case studies included in this Compendium. For risk management to be truly comprehensive, addressing the use and impacts of fossil fuels and the greenhouse gases they emit should become an essential part of transformative action as well.

17 Various relevant monitoring, evaluation, accountability and learning frameworks exist and can be applied in the context of comprehensive risk and response management, for instance Sphere Project (2004).

6

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Annex

Information submitted on actions, measures and approaches responding to loss and damage from the impacts of climate change, that informed the development of the second volume of the Compendium

TITLE	ACTIONS, MEASURES AND TOOLS DESCRIBED	HAZARD	GEOGRAPHIC COVERAGE	GEOGRAPHIC SCALE	SUBMITTER
Damage and Loss Methodology Assessment in Uruguay	Damage and loss assessment[3]	Drought	Uruguay	National	FAO
PDNA in Pakistan	PDNA to inform recovery of agri-food systems in Pakistan[3]	Flooding, heatwave, land and forest degradation and glacial retreat	Pakistan	National	FAO
Livelihood Protection Policy supported by the Climate Risk Adaptation and Insurance in the Caribbean project	Parametric climate risk insurance[2]	Tropical cyclone and flooding	Belize, Grenada, Jamaica, Saint Lucia and Trinidad and Tobago	Regional	UNU-EHS and MCII
Meso-level Anticipatory Insurance in Fiji	Parametric climate risk insurance and anticipatory action[1,2]	Tropical cyclone	Fiji	Local, national	UNU-EHS and MCII
Case Studies on Comprehensive Risk Management Approaches	Disaster risk reduction, EWS, financial instruments for addressing loss and damage, partnerships, data collection and tracking[1,2,3,5]	Multi-hazard	Global	Global	UNDRR
Area Based Risk Assessment in Sri Lanka	Area-based risk assessment[1]	Drought, tropical cyclone, storm surge, flooding, land and forest degradation and loss of biodiversity	Sri Lanka	Local	IMPACT Initiatives
School Safety First: How Adapted Education Information Systems are Playing a Key Role Towards Ensuring School Safety in the Philippines	Comprehensive school safety assessment suite[1]	Multi-hazard	Philippines	National	Save the Children International
Story Report: Safeer, A 12-year-old from Khairpur, Pakistan	Empowering children with disabilities	Flooding	Pakistan	Local	Save the Children International

Types of actions, measures and tools described: 1=Pre-emptive action, 2=Contingency arrangements, 3=Managing impacts, 4=Transformative action, and 5=Governance

TITLE	ACTIONS, MEASURES AND TOOLS DESCRIBED	HAZARD	GEOGRAPHIC COVERAGE	GEOGRAPHIC SCALE	SUBMITTER
Strategic Framework for Water, Sanitation and Hygiene Climate-Resilient Development: Support to Cambodia, Papua New Guinea and Uganda	Strategic Framework for the water sanitation and hygiene sector, and risk assessment[1]	Drought, tropical cyclone, storm surge, heatwave, flooding and rising sea level	Cambodia, Papua New Guinea and Uganda	National	Sanitation and Water for All partner organizations, UNICEF and Stockholm International Water Institute
Supporting Comprehensive Resilience-Building in the Chimanimani and Chipinge Districts of Zimbabwe	Climate risk informed decision analysis, vulnerability assessment and locally led adaptation[1,5]	Drought, tropical cyclone and flooding	Zimbabwe	Local	UNESCO
Networks Reinforce Municipalities' Work on Climate Adaptation	Local level action and the regional climate adaptation network[1,5]	Floods, heatwaves and landslides	Sweden	Local	Swedish Ministry for Foreign Affairs
Anticipatory Actions to Mitigate Flash Flood Impact in Bangladesh	Anticipatory action[1,2]	Flooding	Bangladesh	Local, national	WFP
Anticipatory Actions to Mitigate El Nino's Flood Impact in Somalia	Anticipatory action[1,2]	Flooding	Somalia	Local, national	WFP
Calm Before the Storm: Anticipatory Action Strengthens Disaster Risk Management in the Philippines	Anticipatory action[1,2]	Multi-hazard	Philippines	Local, national	WFP
Dial A for Anticipate: WFP Helps Families in Somalia as Floods Hit Food and Drive Hunger	Anticipatory action[1,2]	Flooding and drought	Somalia	Local, national	WFP
Building Systems to Anticipate Drought in Mozambique: An Impact Assessment of WFP's Capacity Strengthening Interventions on National Systems	Anticipatory action[1,2,5]	Drought	Mozambique	Local, national	WFP
WFP Activates Anticipatory Action to Support Communities Ahead of the Impacts of Drought in the Dry Corridor, Guatemala	Anticipatory action[1,2]	Drought	Guatemala	Local, national	WFP

Types of actions, measures and tools described: 1=Pre-emptive action, 2=Contingency arrangements, 3=Managing impacts, 4=Transformative action, and 5=Governance

TITLE	ACTIONS, MEASURES AND TOOLS DESCRIBED	HAZARD	GEOGRAPHIC COVERAGE	GEOGRAPHIC SCALE	SUBMITTER
Global Mapping of Humanitarian Disaster Risk Finance	Mapping of humanitarian disaster risk finance[1]	Multi-hazard	Global	Global	United States Agency for International Development Climate Adaptation Support Activity/ Tetra Tech
Windows of Opportunity for Risk-Informed Humanitarian Assistance	Mapping of humanitarian disaster risk finance, anticipatory and early action[1,2]	Multi-hazard	Global	Global	United States Agency for International Development Climate Adaptation Support Activity/ Tetra Tech
African Shifts: The Africa Climate Mobility Report, Addressing Climate-Forced Migration and Displacement	Overview of climate-forced migration in Africa and possible scenarios for future climate displacement. Provides policy recommendations to address the issue at different levels of governance[1,3]	Multi-hazard	Africa	Regional	Global Centre for Climate Mobility
Set of Seven Case Studies and Field Research	Initiative supports evidence-based, regional approaches to planning for climate-forced migration and displacement[1,5]	Multi-hazard	Africa	Regional	Global Centre for Climate Mobility
Internation Union for Conservation of Nature (IUCN) World Heritage Outlook 3	Regular conservation assessment of all natural World Heritage sites, the threat of climate change and related effective protective management[1]	Multi-hazard	Global	Global	IUCN
IUCN World Heritage Outlook 2	Regular conservation assessment of all natural World Heritage sites, the threat of climate change and related effective protective management[1]	Multi-hazard	Global	Global	IUCN

Types of actions, measures and tools described: 1=Pre-emptive action, 2=Contingency arrangements, 3=Managing impacts, 4=Transformative action, and 5=Governance

TITLE	ACTIONS, MEASURES AND TOOLS DESCRIBED	HAZARD	GEOGRAPHIC COVERAGE	GEOGRAPHIC SCALE	SUBMITTER
IUCN World Heritage Outlook	Regular conservation assessment of all natural World Heritage sites, the threat of climate change and related effective protective management[1]	Multi-hazard	Global	Global	IUCN
World Heritage Glaciers: Sentinels of Climate Change	Glacial retreat and climate change, including monitoring of glacier ice losses, action taken by UNICEF and recommendations[1,5]	Glacial retreat	Pakistan	Local	Save the Children International
Disappearing World Heritage Glaciers as A Keystone of Nature Conservation in A Changing Climate	Inventory of glaciers present in natural World Heritage sites and projected wastage of cumulative ice volume by 2100[1]	Glacial retreat	Global	Global	IUCN
Adapting to Climate Change: Guidance for Protected Area Managers and Planners	Guidelines on climate adaptation and protected areas, including actions related to planning, risk and vulnerability assessments, selection of appropriate adaptation options and related implementation and monitoring[1]	Multi-hazard	Global	Global	IUCN
Climate Change Resilience and Adaptation Planning Tool	Climate Change Resilience and Adaptation Planning Tool for marine protected areas and other effective area-based conservation measures[1]	Multi-hazard	Pakistan	Local	Save the Children International
National Wildlife Federation Climate-Smart Conservation Guide	Guide for conservationists and resource managers for incorporating climate change considerations into their work[1]	Multi-hazard	Global	Global	IUCN
IUCN Species Survival Commission Guidelines for Assessing Species' Vulnerability to Climate Change	Overview of approaches for climate vulnerability assessments for species, and guidelines for selecting the appropriate approach[1]	Multi-hazard	Global	Global	IUCN
Climate Change Vulnerability Assessment of Species	Climate change vulnerability assessment approaches[1]	Multi-hazard	Global	Global	IUCN

Types of actions, measures and tools described: 1=Pre-emptive action, 2=Contingency arrangements, 3=Managing impacts, 4=Transformative action, and 5=Governance

TITLE	ACTIONS, MEASURES AND TOOLS DESCRIBED	HAZARD	GEOGRAPHIC COVERAGE	GEOGRAPHIC SCALE	SUBMITTER
Climate Change Vulnerability Index	The Climate Change Vulnerability Index, described as a rapid, cost-effective means of estimating plant or animal species' relative vulnerability to climate change[1]	Multi-hazard	Global	Global	IUCN
Assessing Protected Area Vulnerability to Climate Change in a Case Study of South African National Parks	Framework for assessing the vulnerability of protected areas to climate change, based on potential climate change impacts on species, their habitats and resource use[1]	Multi-hazard	Pakistan	Local	Save the Children International
Shifting the Conservation Paradigm: A Synthesis of Options for Renovating Nature under Climate Change	Typology for ecological management and nature conservation actions that actively allow for environmental change.[1]	Multi-hazard	Global	Global	IUCN
Application of A Trait-based Climate Change Vulnerability Assessment to Determine Management Priorities at Protected Area Scale	Climate change vulnerability of amphibian and reptile species at South Africa's Table Mountain National Park[1]	Multi-hazard	South Africa	Local, national	IUCN
World Wide Fund for Nature -United States Wildlife Adaptation Innovation Fund	Wildlife Adaptation Innovation Fund which supports the piloting/testing of new ideas that have the potential to reduce the vulnerability of wildlife to climate change	Flooding	Pakistan	Local	Save the Children International
Submission to Inform the UNFCCC's Non-Economic Losses Technical Paper 2023	22 case studies focused on non-economic loss and damage and a list with relevant literature, including on types of non-economic loss and the disproportionate impact on vulnerable groups[1,3]	Multi-hazard	Global	Global	Loss and Damage Collaboration
Human Mobility and Non-economic Loss and Damage	Lists 49 case studies on human mobility and non-economic loss and damage, which are analysed and key findings presented1	Multi-hazard	Global	Global	Platform on Disaster Displacement, Loss and Damage Collaboration

Types of actions, measures and tools described: 1=Pre-emptive action, 2=Contingency arrangements, 3=Managing impacts, 4=Transformative action, and 5=Governance

TITLE	ACTIONS, MEASURES AND TOOLS DESCRIBED	HAZARD	GEOGRAPHIC COVERAGE	GEOGRAPHIC SCALE	SUBMITTER
Turning The Tide on Internal Displacement: A Development Approach to Solutions	Provides recommendations for governments and development partners to address forced displacement and build resilience, including by ensuring equal access to rights and basic services, promoting socioeconomic integration, restoring security, building social cohesion, and better data and research.1[3,5]	Multi-hazard	Global	Global	UNDP
UNDP's PDNA	PDNA tool, used following a major disaster[3]	Multi-hazard	Global	Global	UNDP
Toolkit for Value Chain Analysis and Market Development Integrating Climate Resilience and Gender Responsiveness	Toolkit for selecting value chains for climate resilience and improved gender equality[1]	Multi-hazard	Global	Global	UNDP
Framework for Resilient Development in the Pacific: An Integrated Approach to Address Climate Change and Disaster Risk Management	Framework for Resilient Development in the Pacific, for reducing the exposure of Pacific Island Countries to climate and disaster risk, supporting low carbon development and improving disaster response and reconstruction[1,5]	Multi-hazard	Pacific	Regional	UNDP
Human Rights and Loss and Damage: Key Messages	Recommendations for applying a human rights-based approach to averting, minimizing and addressing loss and damage[5]	Multi-hazard	Global	Global	United Nations High Commissioner for Human Rights
The 2022 Report of the Lancet Countdown on Health and Climate Change: Health at the Mercy of Fossil Fuels	Report on impacts of climate change on health, including extreme events and slow onset processes[1,3]	Multi-hazard	Global	Global	University of Washington
Climate Loss and Damage: Practical Action	Recommendations to address loss and damage, including through needs and vulnerability assessments, mobilization of finance, and enhanced understanding of the loss and damage landscape[1,5]	Multi-hazard	Global	Global	WFP

Types of actions, measures and tools described: 1=Pre-emptive action, 2=Contingency arrangements, 3=Managing impacts, 4=Transformative action, and 5=Governance

TITLE	ACTIONS, MEASURES AND TOOLS DESCRIBED	HAZARD	GEOGRAPHIC COVERAGE	GEOGRAPHIC SCALE	SUBMITTER
Preserving Indigenous Peoples' Cultural Heritage through Resilience-building in Bolivia	Project on strengthening resilience to climate change of the Indigenous Uru Murato community, through livelihood diversification, improved access to water resources and preserving their culture and traditions. Emphasis on community engagement[1]	Drought	Bolivia	Local, national	WFP
Restoring Ecosystems to Build Resilience to Climate Shocks in Malawi	Integrated resilience package with a focus on community participation. It makes use of food assistance for assets, village savings and loans, farmers' insurance against shocks and smallholder agriculture market support[1]	Drought, floods and tropical cyclone	Malawi	Local, national	WFP
Tuungane Project, and Ntakata Mountains Forest Protection Programme	Forest conservation to prevent/combat deforestation (e.g. Village Land Forest Reserves) and carbon trading to improve socioeconomic community outcomes[1]	Forest fires and deforestation	Tanzania	Local, national	Pathfinder Initiative
Poverty Alleviation and Environmental Restoration in Humbo	Land regeneration and carbon trading[1]	Drought and flood	Ethiopia	Local, national	Pathfinder Initiative
Enclosures and Communal Grazing Lands	Land regeneration and carbon trading[1]	Drought, flood and deforestation	Ethiopia	Local, national	Pathfinder Initiative
Water Entrepreneurship for Women's Empowerment Approach Empowers Women with Water Entrepreneurship Model in Climate-vulnerable Communities	Water Entrepreneurship for Women's Empowerment model to improve access to clean water facilities[1]	Sea level rise, cyclones, storm surge and salinization	Bangladesh	Local	WaterAid
Water Justice Fund: Last-mile Women at the Forefront of Climate Action	Pooled fund that supports and empowers women and girls at the forefront of climate action through the provision of grants for local adaptation measures	Cyclones, heatwaves, salinization, drought and river erosion	Bangladesh	Local	Simavi
Biodiversity and Territory Loss due to Sea Level Rise in Alexandria	Programmes and initiatives in place to address sea level rise (e.g. regional multi-stakeholder platform for protecting biodiversity and a programme on integrated coastal zone management)[1,5]	Sea level rise	Egypt	Local, national	ESCWA and ECLAC

Types of actions, measures and tools described: 1=Pre-emptive action, 2=Contingency arrangements, 3=Managing impacts, 4=Transformative action, and 5=Governance

TITLE	ACTIONS, MEASURES AND TOOLS DESCRIBED	HAZARD	GEOGRAPHIC COVERAGE	GEOGRAPHIC SCALE	SUBMITTER
Creating Markers for Detecting Non-economic Loss and Damage in Coastal Communities in the Philippines (La Union)	Government initiatives to inform populations in high-risk areas of related hazards and risks, conservation efforts and research at the local level on the impacts of climate change on their communities[1]	Sea level rise, desertification, ocean acidification and salinization	Philippines	Local, national	Manila Observatory
Autonomous Responses to Non-economic Losses in North-central Bangladesh	Community response to the economic and non-economic impacts of climate change[1,3]	Floods, drought, rising temperatures and river erosion	Bangladesh	Local	UNU-EHS
Using Country Systems for Addressing Non-economic Losses at the Local Level: Experience with the LoCAL	Support for local government authorities to build capacity to respond to, and build resilience to, climate change, LoCAL, (standard international mechanism for climate finance, capacity-building, and technical support)[1,5]	Rising temperatures, soil erosion, desertification and reduced rainfall	The Gambia	Local, national, global	UNCDF
Responding to Loss and Damage in Drought-affected Pastoralist Communities in Kenya	Adaptation initiatives at the community level to anticipate and respond to loss and damage[1]	Drought	Kenya	Local	Platform on Disaster Displacement and Global Network of Civil Society Organizations for Disaster Reduction
Navigating Waters of Change: The Cogea Village Relocation	Community-led planned relocation[4]	Cyclones and Floods	Fiji	Local	Unitarian Universalist Service Committee
Resilience Amidst Relocation – The Journey of Nabavatu Village	Community-led planned relocation[4]	Cyclones and Floods	Fiji	Local	Unitarian Universalist Service Committee
Rising Tides, Resilient Lives: Malaupaina's Mastery of the Elements	Locally led adaptation, e.g. improving water access and storage solutions[1,5]	Sea level rise and salinization	Solomon Islands	Local	Unitarian Universalist Service Committee

Types of actions, measures and tools described: 1=Pre-emptive action, 2=Contingency arrangements, 3=Managing impacts, 4=Transformative action, and 5=Governance

TITLE	ACTIONS, MEASURES AND TOOLS DESCRIBED	HAZARD	GEOGRAPHIC COVERAGE	GEOGRAPHIC SCALE	SUBMITTER
A Bird's-Eye View on Non-economic Losses and Damage: A Case of Maseya Community in Chikwawa District, Malawi	Planned relocation of communities and related economic and non-economic losses experienced[4,5]	Cyclones and floods	Malawi	Local	Catholic Development Commission in Malawi (previously Caritas)
Role of Comprehensive Climate Safety Nets in Reducing Multi-dimensional Vulnerabilities for Adolescents due to Climate Change	Climate sensitive safety nets, which make use of cash transfers combined with vocational training and capacity-building targeted at adolescent boys and girls[1,2]	Sea level rise, salinization and soil erosion	Bangladesh, India	Regional	Public Health Foundation of India and Cornell University Department of Global Development
Climate-resilient Entrepreneurship as a Solution to Non-economic Losses Related to Human Mobility	Entrepreneurship support (e.g. capacity-building, technical support and funding) for persons and communities affected by climate-induced human mobility. Local-level climate and innovation hubs[1,3,4]	Drought and heat	Pakistan	Local	Save the Children International
Innovative Approaches to Addressing Cultural Loss Through Documentation and Preservation in the Fashion Sector	Documentation, preservation and exhibition of cultural heritage in the fashion sector, working closely with entrepreneurs, artisans, vulnerable communities and young designers[1,3]	Multi-hazard	Pakistan	Local	Save the Children International
Developing Climate and Health Systems Maps for Building Shared Understanding and Identifying Priority Actions	Development of systems-based mapping tools to enhance understanding on climate and health interconnections and feedback relationships[1]	Drought, disease and heat	Colombia, Somalia and Viet Nam	National, global	Save the Children
Loss of Territory and Related Losses	Internal displacement and humanitarian response[3]	Drought, flooding and rising lake levels	Kenya	Local, national	Climate Refugees
Loss of Territory, Biodiversity and Cultural Heritage	Internal displacement of vulnerable Indigenous Peoples and communities. Support for climate-smart agroecology farming that incorporates drought-resistant crops and tubers[3]	Drought, flooding and rising lake levels	Kenya	Local, national	Climate Refugees

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TITLE	ACTIONS, MEASURES AND TOOLS DESCRIBED	HAZARD	GEOGRAPHIC COVERAGE	GEOGRAPHIC SCALE	SUBMITTER
Human Rights Losses and Development Setbacks	Displacement, with reference to loss of schools, health facilities and homes due to rising lake levels, and the coping strategies adopted by affected communities[3]	Flooding and rising lake levels	Kenya	Local, national	Climate Refugees
Environmental Degradation: The Case of Prosopis Juliflora or Mathenge in Kenya	Efforts towards controlling the spread of Prosopis juliflora, an invasive species that destroys natural ecosystems and is exacerbated by climate change. Efforts include reforestation[1,3]	Deforestation, desertification and drought	Kenya	Local, national	Climate Refugees
Non-economic Loss and Damage to Vanuatu's Coastal Ecosystems and Community Livelihoods from Slow Onset Events	National Loss and Damage Fund, cash transfers, microinsurance and PDNA[1,2,3,5]	Rising temperatures, ocean acidification and tropical storms	Vanuatu	National	Vanuatu
Tropical Cyclone Evan – Samoa	PDNA, damage and loss assessment, recovery and rehabilitation[3]	Tropical cyclone	Samoa	National	Samoa
Prolonged Drought in Borana	Impacts from drought and the humanitarian response plan[3]	Drought	Ethiopia	Local, national	Ethiopia
The Development of Fiji's National Planned Relocation Arrangements and Associated Financing Mechanism	Planned relocation, governance arrangements, innovative multi-source financing (Climate Relocations of Communities Trust Fund)[1,2,3,4,5]	Sea level rise, storms, cyclones, landslide, extreme rainfall and flooding	Fiji	Local, national	Fiji
Marshall Islands Loss and Damage Transitional Committee Submission	National adaptation planning, Ridge to Reef project, actions to preserve cultural heritage (e.g. curriculum development and landmark kiosks)[1,3]	Sea level rise and storms	Marshall Islands	National	Marshall Islands
Visual Evidence Generation and Showcasing to Support the Mobilization of Finance for Addressing Climate-induced Loss and Damage	Photographic evidence of climate-induced loss and damage[3]	Multi-hazard	Ghana, Maldives, Niger, Sri Lanka and Uganda	Global	SLYCAN Trust
Loss and Damage Related to Floods in Morocco	World Bank Macrostructural Model, flood prevention programme and fund to combat the effects of natural disasters[1,2,5]	Flooding	Morocco	National	Moroccan Alliance for Climate and Sustainable Development

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TITLE	ACTIONS, MEASURES AND TOOLS DESCRIBED	HAZARD	GEOGRAPHIC COVERAGE	GEOGRAPHIC SCALE	SUBMITTER
Climate Bridge Fund: A Funding Mechanism Enabling Locally Led Action on Loss and Damage for Climate-vulnerable Communities in Bangladesh	National climate change fund (Climate Bridge Fund) which supports locally led adaptation[1,2]	Rising temperatures, drought, flooding, waterlogging, river erosion, cyclones, storms and sea level rise	Bangladesh	Local	Save the Children International
Forest Fires in Europe	Policies and institutional arrangements for the protection of forests[1,5]	Wildfires	European Union	Regional	European Union
Delivery of Anticipatory Actions to At-risk Communities Ahead of Worsening Drought Conditions in Ethiopia	Anticipatory action[1,2]	Drought	Ethiopia	Local, national	WFP
Loss and Damage Related to Floods, Droughts and Storms in Cambodia	Cambodia Disaster Damage and Loss Information System, national contingency planning for floods, coordination through the Humanitarian Response Forum, cash transfers[1,2,3,5]	Flooding, droughts, lightning and typhoon	Cambodia	National	DanChurchAid and ACT Alliance
Beyond Adaptation: Restoring Ecosystems and Livelihoods After Climate-related Events in the Philippines	Response, recovery and rehabilitation following super Typhoon Haiyan, including ecosystem restoration[1,3]	Typhoon	Philippines	Local	Philippines
A Triple Disaster Event Series in Vanuatu: Cascading and Compounding Impacts of Climate Change. Supplementary Content for the Case Study Submitted by the Government of Vanuatu	Response, recovery[3]	Tropical cyclones, sea level rise and flooding	Vanuatu	National	Australia
State of the Sea	Adaptation to coastal erosion, tourism development and enterprise[1]	Sea level rise, coastal erosion, storms, flooding and rising temperature	Senegal	Local	Save the Children International
Melting Glaciers and Changing Snow Cover	Adaptation, disaster risk reduction and EWS[1]	Glacial retreat, flooding and rising temperature	Nepal, Bhutan	Regional	Nepal
Loss and Damage Associated with Tropical Glaciers in Peru: Importance of the National Inventory of Glaciers	Monitoring and data system (i.e. National Inventory of Glaciers)[1]	Glacial retreat	Peru	National	Peru

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TITLE	ACTIONS, MEASURES AND TOOLS DESCRIBED	HAZARD	GEOGRAPHIC COVERAGE	GEOGRAPHIC SCALE	SUBMITTER
Malawi's Major Loss and Damage Over 5-10 Years due to Cyclones and Climate Change Factors	Response, recovery and rehabilitation[3]	Cyclones	Malawi	National	Malawi Centre for Community Water Resources Management and Sanitation
Locally Led Loss and Damage Programming in Malawi: How Scotland Spent its COP26 Pledge to Loss and Damage	Local-led programming, response, recovery and rehabilitation[1,3]	Cyclones	Malawi	Local	Scottish Catholic International Aid Fund, Trócaire Malawi and Civil Society Network for Climate Change
Akshvi: Digital Wallets to Record Climate Loss and Damage. Meeting Loss and Damage Funding Gaps, Improving Delivery of Needs Based Assistance at the Local Level	Climate-related loss and damage data platform, which hosts an e-disaster wallet allowing people to track and assess their own related losses[1]	Multi-hazard	India	National	Sustainable Environment and Ecological Development Society, India
Incorporating Consideration of Climate Impacts on Human Rights into the Design of the Loss and Damage Fund: Insights from Vanuatu	Human rights frameworks and findings from research on how locals from Vanuatu experience loss and damage in daily life and human rights considerations[3,5]	Multi-hazard	Vanuatu	National	Vanuatu
Funding Needs for Addressing Human Mobility in the Context of Loss and Damage in West African Cities	Social protection and integration of migrants	Sea level rise, flooding and heat stress	West Africa	Regional	German Institute of Development and Sustainability
Case Study on Financing Loss and Damage – Experiences from DanChurchAid and Partners in Mali	Supporting locally led adaptation, humanitarian coordination	Droughts and floods	Mali	Local	DanChurchAid and Act Alliance
Rapid Case Study on Financing Loss and Damage in Uganda	Economic assessment of the impacts of climate change, loss and damage assessment[1]	Drought	Uganda	National	Uganda
The Sámi in Finland and Climate Change	Traditional/Indigenous knowledge supporting adaptation and resilience[1]	Increasing temperature and extreme cold	Finland	National	Finland

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TITLE	ACTIONS, MEASURES AND TOOLS DESCRIBED	HAZARD	GEOGRAPHIC COVERAGE	GEOGRAPHIC SCALE	SUBMITTER
Climate-Driven Loss and Damage in Kenya	Internal displacement from the impacts of climate change and the disproportionate impact on marginalized groups (e.g. women and Indigenous Peoples)[3]	Floods, drought, landslides and locust infestations	Kenya	Local, national	Climate Refugees
Community Perspectives: Loss and Damage in Cahuita, Costa Rica	Local research on community vulnerability to climate change, traditional/Indigenous knowledge used to promote nutrition, national database of natural phenomena related loss starting from 1988 and emergency response[1,3]	Sea level rise, increasing temperature, coastal erosion, ocean acidification, deforestation, drought, landslides, flooding and heat stress	Costa Rica, Cahuita	Local	Oxfam America and La Ruta del Clima

List of acronyms used in the Annex

ECLAC United Nations Economic and Social Commission for Latin America and the Caribbean

ESCWA United Nations Economic and Social Commission for Western Asia

EWS Early Warning System

FAO Food and Agriculture Organization

IUCN International Union for Conservation of Nature

LoCAL Local Climate Adaptive Living Facility

MCII Munich Climate Insurance Initiative

PDNA Post-Disaster Needs Assessment

UNCDF United Nations Capital Development Fund

UNDP United Nations Development Programme

UNDRR United Nations Office for Disaster Risk Reduction

UNESCO United Nations Educational, Scientific and Cultural Organization

UNFCCC United Nations Framework Convention on Climate Change

UNICEF United Nations Children's Fund

UNU-EHS United Nations University - Institute for Environment and Human Security

WFP World Food Programme

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