Harnessing Nationally Determined Contributions to tackle loss and damage in Least Developed Countries

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Issue Paper
August 2022

Climate change; Policy and planning

Keywords:
Loss and damage, Least Developed Countries (LDCs), climate justice, climate finance, national climate change policies

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Produced by IIED's Climate Change Group

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Acknowledgements

We would like to thank Simon Anderson, senior fellow at IIED, and M Hafijul Islam Khan, co-coordinator of the Loss and Damage Team of the LDCs Climate Group at UNFCCC and member of the Executive Committee of Warsaw International Mechanism for Loss and Damage at UNFCCC, for their review and helpful feedback and comment on the issue paper. We would also like to thank Fiona Roberts and Martin Cummins for managing the issue paper's development.

This publication has been reviewed according to IIED's peer review policy, which sets out a rigorous, documented and accountable process (see www.iied.org/research-excellence-impact for more information). The reviewers are named above.

Published by IIED, August 2022

Bharadwaj, R, Addison, S, Chakravarti, D and Karthikeyan, N (2022) Harnessing Nationally Determined Contributions to tackle loss and damage in Least Developed Countries. IIED, London.

http://pubs.iied.org/21081IIED

ISBN 978-1-78431-988-5

Cover photo: Mekong River flooding, Vientiane, Laos, September 2018 (Credit: Guillaume Lacombe/Cirad via Flickr, CC BY-NC 2.0)

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Least Developed Countries (LDCs) are facing increasingly devastating impacts of climate change that are leading to loss and damage (L&D). As LDCs revise their climate action plans known as Nationally Determined Contributions (NDCs), they should provide concrete evidence about L&D. This can help LDCs make the case for additional climate finance, technology and capacity-building support needed by them to tackle L&D. This paper analyses how LDCs are currently reporting loss and damage in their NDCs and National Adaptation Plans, identifies gaps or issues in coverage, and suggests a framework for addressing these gaps.

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Acronyms

COP	Conference of the Parties
GDP	Gross domestic product
GST	Global Stocktake
L&D	Loss and damage
LDCs	Least Developed Countries
NAP	National Adaptation Plan
NDC	Nationally Determined Contribution
SDG	Sustainable Development Goal
SIDS	Small Island Developing States
SNLD	Santiago Network on Loss and Damage
UNFCCC	United Nations Framework Convention on Climate Change
WIM	Warsaw International Mechanism

Summary

Context

Rising sea levels have submerged many coastal areas. Floods are increasing in magnitude and breaching the existing barriers, destroying lives, livestock and property. And more intense and frequent cyclones are leaving communities unable to protect themselves.

Estimates of the financing needed to address these losses and damages in developing countries range from US$116 billion to US$435 billion in 2020 and could increase to US$1,132–1,741 billion in 2050. Other estimates consider the impacts of global temperature increase on gross domestic product (GDP), which finds that under current climate policies, GDP is expected to reduce on average by 19.6% by 2050 and by 63.9% by 2100.

In that context, this paper analyses how LDCs are addressing L&D in their NDCs and National Adaptation Plans (NAPs), identifies gaps or issues in coverage, and suggests a framework through which LDCs can address these gaps.

Key points for Nationally Determined Contributions

NDCs submitted by LDCs: 35 (78%) of NDCs available for analysis did not mention L&D even once. Only 10 NDCs (22%) mention L&D in their latest NDCs, but with varying detail.

Loss and damage definition/framing in the NDC: NDCs use terms like limits to adaptation (limited adaptive capacity, residual risk) and unavoidable climate change impacts to describe L&D. This was seen even in some NDCs that do not explicitly cite L&D.

Mention of geographical area vulnerable to climate change: 37 of 46 LDCs mentioned specific areas more vulnerable to climate change. Coastal regions are identified in 22 NDCs, while 13 countries identify rural regions and 6 identify river basins. Other vulnerable areas mentioned are forests, highlands and mountain regions, urban regions, islands and low-lying lands, savannah regions, delta regions, valleys and plains and plateaus.

Communities considered vulnerable: countries most often cited farmers, rural poor, coastal communities, women and urban poor as most vulnerable. Other groups were reported less often, including children, elderly people, people living in mountains and disabled people, people living in river basins and displaced people, adolescents and young people, people living near forests and people living in low-lying areas. While women are mentioned as a vulnerable group in 22 NDCs, gendered impact of loss and damage has not been covered.

Key impacts: droughts and floods are the most frequently mentioned hazards. Other impacts include reduction in agricultural and livestock yield, water scarcity, food and nutritional insecurity, wind storms, damage to infrastructure, loss of biodiversity, sea-level rise, pest-borne diseases to human beings, salinisation, erosion of land, loss of lives, deforestation, degradation of land and desertification, landslides, increased precipitation, cyclones/typhoons/hurricanes, forest fires, reduced fish catch, increased pests and weeds in agriculture, disaster displacement, disappearance of wetlands, flash floods, temperature rise, heat waves, social and political instability, glacier outbreak, other diseases to human beings, diseases to livestock animals, loss of islands, disruption of public services, migration, silting of rivers, river flow reduction, and snow fall.

Actions and support identified to address loss and damage: the most common support needed is for actions around capacity-building, systems, technology, infrastructure development, finance, and land, water and biodiversity conservation.

Tools and suggested interventions: early warning systems are the most popular tool, followed by disaster risk reduction. Other tools that find a mention are insurance, forecast-based finance, anticipatory action, humanitarian response and social protection.

Funding requirement/support mentioned for L&D action: except for Haiti, no country explicitly mentioned L&D as part of the funding requirement in the NDC.

Key points for National Adaptation Plans

NAPs submitted to the UNFCCC: of the 46 LDCs, 14 countries have submitted their NAPs to date.

Mention of L&D in NAPs: five countries mention L&D in NAPs. It is framed as economic losses and damages due to climate change, limited adaptive capacity, impacts of hydrometeorological hazards, losses and damages resulting from flooding and so on.

Geographical areas considered vulnerable: the most vulnerable areas are reported as coastal regions, rural regions, urban regions, valleys, plains, highland and mountain regions, river basins, islands, and low-lying lands.

Mention of vulnerable communities: 13 NAPs mentioned vulnerable population groups. The most frequently cited were women, followed by farmers, coastal populations, disabled people, children, rural poor, elderly people and Indigenous Peoples. The gendered impact of loss and damage on different vulnerable groups was not covered in detail.

Key impacts/hazards considered as L&D: all 14 NAPs mentioned impacts/hazards, although floods and drought/famine hazards appeared more frequently. Others cited were crop losses; biodiversity loss, high wind, saltwater intrusion and land erosion; heat waves and infrastructure; and water shortage.

Actions and support identified to address L&D: only Central African Republic and Kiribati refer to L&D directly in their NAPs, while mentioning action and support identified to address L&D. All others address L&D under adaptation. Other key areas are capacity development support, systems, finance, infrastructure and technology.

Types of tools/approaches/interventions suggested: among tools mentioned in NAPs, risk reduction appears most often followed by anticipatory action, risk management and risk reduction. Nearly all countries mentioned early warning systems as a way to address adaptation actions of which L&D is a part. Other tools included insurance, disaster risk reduction, research to estimate L&D, and humanitarian response and forecast-based finance.

Funding support for loss and damage: NAPs for Cambodia, Central African Republic and Nepal mention L&D and also propose actions to address it. Many NAPs do not mention any budget for L&D. Most countries that do mention L&D budget have committed to spending 40% of total budgeted funds from their own national resources.

Taking action

1. Define loss and damage in national contexts

L&D impacts are caused by a wide range of hazards — from extreme weather events to long-range slow-onset events. LDCs need to define L&D as they experience it in their NDCs and NAPs:

- Develop a framework for identifying climatic events causing L&D now and in the future
- Present the economic and non-economic impacts of L&D
- Integrate secondary and tertiary impacts into L&D framing.

2. Present multidimensional risk and vulnerability assessment

L&D challenges are far more complex in LDCs and Small Island Developing States (SIDS) than in other developing and developed countries. Climate change is a stress multiplier that compounds existing social, environmental, institutional, infrastructural and economic development deficits, making it difficult for these countries to anticipate, respond and recover from climate impacts resulting in L&D. A multidimensional risks and vulnerabilities regression analysis of 173 countries (comprising LDCs, developing and developed countries) shows how risks and vulnerabilities increase with the reduction of GDP per capita. This, in turn, makes LDCs more vulnerable. We identify three ways to capture these factors appropriately in the NDCs:

- Present a multidimensional vulnerability and risk assessment to show the range of factors that L&D management should address
- Make the case for finance and technical assistance through multidimensional vulnerability and risk assessment
- Incorporate risk assessment for a range of future hazards.

3. Present responses and support needed for managing L&D

LDCs could illustrate existing coping and adaptation measures — both traditional and innovative — and how these can help tackle L&D risks. They might also highlight the gaps and challenges in response measures and indicate what is needed to help communities to prepare, cope and recover from L&D. Finally, priorities for action on L&D can be set out at local and national levels to show how they fill these gaps. LDCs could share solutions and collaborate on accessing the finance and technical assistance needed. To achieve this, LDCs can highlight the following in their NDCs:

- Explain how they are managing risks.
- Highlight gaps, and where support (technology, finance and capacity) is needed.

Introduction

1

Loss and damage (L&D) resulting from climate change is an urgent concern, especially for Least Developed Countries (LDCs). L&D[1] refers to the adverse, unprecedented and compounding impacts of climate change that are beyond the limits of adaptation. Such impacts:

- Have already occurred
- Are inevitable because they are 'locked in' by global heating and now cannot be avoided by mitigation or adaptation
- Are highly likely to be unavoidable as adaptation will not be possible before L&D occurs, either due to lack of resources or because it is unviable, unaffordable or socially/technically difficult.

The complex nature of L&D makes it challenging to address. As LDCs revise their climate action plans — known as Nationally Determined Contributions (NDCs) — they should provide concrete evidence about L&D. LDCs can help make the case for additional climate finance, technology and capacity-building support by analysing and presenting the scale of current and expected L&D.

1.1 Why Nationally Determined Contributions are important for Least Developed Countries

Every country is expected to develop an NDC, or climate action plan, under the Paris Agreement.[2] NDCs outline targets, policies and measures of countries for reducing national emissions and adapting to the impacts of climate change. They are a key mechanism to quantify global targets, scale of action and support needed to manage climate action.

Under the Paris Agreement, NDCs are submitted every five years to the United Nations Framework Convention on Climate Change (UNFCCC) secretariat. New and updated NDCs were expected in 2020 and every five years thereafter until 2035. Given the COVID-19 pandemic, the delivery of the first round of revised/new NDCs was delayed to 2021.

The Glasgow Climate Pact, the formal outcome of COP26 in 2021, called on countries to further revisit and strengthen their commitments under NDCs by COP27. It further mentioned that NDCs need to be aligned with the global temperature rise to limit the impacts of climate change. This call for action creates an opportunity for LDCs.

LDCs can capitalise on this opportunity by producing more strategic NDCs. These can highlight the scale of their climate risks and the volume of climate finance, types of technology and capacity-building support needed to manage them. Estimates of the financing needed to address these losses and damages in developing countries range from US$116 billion to US$435 billion in 2020 and could increase to US$1,132–1,741 billion in 2050. Other estimates consider the impacts of global temperature increase on GDP, which finds that under current climate policies, GDP is expected to reduce on average by 19.6% by 2050 and by 63.9% by 2100.[3]

LDCs could present robust evidence based on local-level analysis. This could detail the scale of current climate impacts and those expected in future, their efforts to deal with them and the remaining gaps. Using this analysis, LDCs can harness NDCs to help make the case for additional finance, technology and capacity-building support to fill the gaps.

1.2 Why loss and damage needs to be included in NDCs

L&D concerns are urgent and driven by the increasingly harmful effects of climate change. Many countries are facing new types and forms of climate impact with higher intensity, which they are not equipped to handle. In 2017, for example, the Caribbean faced three category-5 hurricanes — an unprecedented event. In some countries, damage exceeded annual gross domestic product (GDP).[4]

With global temperatures increasing due to climate change, many of these impacts are already 'locked in' and unavoidable. Rising sea levels have submerged many coastal areas; floods are increasing in magnitude and breaching the existing barriers, destroying lives, livestock and property; and more intense and frequent cyclones are leaving communities unable to protect themselves. Even the most effective adaptation measures are not able to prevent all losses and damages.[5]

LDCs need to assess what strategies are working effectively in tackling L&D, and which ones need modification or even new approaches to manage diverse climate risks. But LDCs have limited capacity, resources and infrastructure to cope with these climate impacts and recover from them in the same way as developed countries. The Emergency Events Database (EM-DAT), for example, recorded US$2.97 trillion in losses from disasters between 2000 and 2019. As a percentage of GDP, losses to LDCs were three times higher (0.61%) than in high-income countries.[6]

For credit-rating agencies, higher climate risks create a greater risk of default. Consequently, poorer countries exposed to climate impacts also have to bear the

additional burden of higher interest rates. An assessment[7] for the member countries of the Climate Vulnerable Forum[8] shows that for every US$10 paid in interest by developing countries, an additional dollar will be spent due to climate vulnerability. This financial burden exacerbates the present-day economic challenges of poorer countries. The magnitude of this burden is expected to at least double over the next decade.

LDCs need resources to enable timely anticipatory action, response mechanisms and recovery support. But they need data to back up their demands for financing needs and technical assistance. Despite growing evidence about L&D impacts, there are major knowledge gaps for three key reasons:[9]

1. Most research has been theoretical, focused on conceptualisations of L&D from a variety of perspectives and links to other policy frameworks, with significantly less empirical research.
2. Not enough evidence is originating from the global South, particularly on how LDCs are suffering L&D, which could play a critical role in framing delivery and financing mechanisms for L&D.
3. The complexity and context-dependent nature of L&D presents a challenge to top-down thinking, which is more adept at 'one-size-fits-all' solutions.

Adaptation can help reduce climate impacts in communities, but complex multidimensional factors determine vulnerability to L&D.[10] These factors include physical exposure to climate hazards over time; rate and type of economic development; ecosystem health and biodiversity; poverty levels; social and economic inequalities; the state of institutions and governance; quality of infrastructure; and access to essential services. Thus, L&D responses and financing needs must be understood from a local context: the same financing or delivery model may not work for all countries.

NDCs are the key vehicle to communicate the need for national-level action. They provide an opportunity for LDCs to generate and use evidence on multidimensional vulnerability and risk factors. They highlight the scale of L&D and demand the finance and support needed to address it. Through NDCs, LDCs can demonstrate how ability to take bolder action depends on significant scaling-up of new and additional climate finance for L&D. NDCs can also help LDCs to raise their demands for 'means of implementation and support' under the Global Stocktake (GST)[11] and highlight the support received against their demand in NDCs.

1.3 A brief history of the L&D debate

The international policy debate on L&D began alongside establishment of the UNFCCC in the early 1990s. Discussions were formally institutionalised under the UNFCCC through the Warsaw International Mechanism (WIM) on Loss and Damages, adopted in 2013. These were given firm consideration in the Paris Agreement in 2015.

The WIM was tasked with addressing L&D associated with impacts of climate change through three areas by enhancing knowledge generation, coordination and technical support to vulnerable countries. Despite this remit, there are significant gaps in collective knowledge and understanding of L&D. There are similar gaps in identifying support needed (technology, capacity and finance) to address L&D in vulnerable countries and communities. Above all, international-level discourse suffers from lack of locally based knowledge that provides nuanced approaches.

In 2019, the Santiago Network on Loss and Damage (SNLD) was created at COP25 to support the work of the WIM. SNLD aimed to catalyse access to and organise the availability of technical assistance to climate-vulnerable developing countries. But, until 2021, the UNFCCC made little progress in making the SNLD operational.

The issue of L&D gained momentum during the COP26 in Glasgow, permitting progress on SNLD. But similar to the WIM, SNLD may suffer from lack of understanding about the technical support needed by LDCs and how to deliver it.

At COP26, the Glasgow Dialogue on L&D was also set up to discuss possible arrangements for L&D funding. This dialogue will run for two years in cooperation with the WIM and culminate in 2024.

In 2022, as we enter COP27, LDCs will have another chance to demand a mechanism to address L&D. They need a process to secure adequate, accessible, additional and fit-for-purpose financing by COP28 in 2023 at the latest. To bolster this demand, LDCs should collate knowledge and evidence on L&D in NDCs and increase demands for finance and technical assistance.

Unless LDCs explicitly identify these issues in their NDCs, they may not be formally recognised. NDCs must clearly articulate their needs, providing strong arguments for technical assistance that is country-owned and locally focused.

1.4 What this paper is trying to achieve

This analysis has two aims:

1. Understand how LDCs are addressing L&D in their NDCs and National Adaptation Plans (NAPs), especially how L&D has been defined or framed; geographical areas and communities considered vulnerable and the scale of impact; key impacts/hazards considered as L&D; actions and support identified to address L&D; and estimated scale of funding needed to address L&D.
2. Identify gaps or issues in coverage of L&D in the NDCs and NAPs and suggest a framework through which LDCs can address these gaps.

To date, the treatment of L&D in NDCs has not been comprehensively assessed. In a preliminary analysis in 2017,[12] only 14 of 47 NDCs mentioned L&D as a national priority, along with climate-adaptive measures. As LDCs revise NDCs in advance of COP27, they need to present stronger evidence about the impacts of L&D. In so doing, they can ensure L&D is higher on the agenda of the Glasgow Dialogue and SNLD.

At the same time, many countries also reference L&D (or an equivalent) in their NAPs. For that reason, we have included NAPs in our analysis.

BOX 1: WHY IS THIS ANALYSIS NEEDED NOW?

The revised NDCs expected to be submitted before COP27 will be an important means for LDCs to present a strong evidence base to influence the Glasgow Dialogue and SNLD. Information in NDCs — on the scale of impact; level of effort LDCs are already putting in to address it; and what is beyond their capacity — can help them to present a stronger case for a separate, additional and adequate funding, commensurate to their needs. There is no comprehensive assessment available on the financing, capacity and technical needs of LDCs for tackling L&D. NDCs can provide a firm basis for LDCs to demand finance and suggest delivery mechanisms in discussions at the Glasgow Dialogue and provide inputs on the nature of technical assistance needed through SNLD. The analysis in this report can help LDCs to understand the gaps in their existing NDCs and strengthen them before COP27.

NDCs and NAPs of Least Developed Countries

2

This section analyses references to L&D in the NDCs and NAPs of LDCs. After looking at how NDCs define and frame L&D, it identifies geographical areas considered vulnerable and the scale of impact. It then describes key impacts faced by vulnerable communities. Finally, it identifies action and support to address L&D, including tools and interventions.

2.1 NDC review

NDCs submitted by LDCs

The United Nations[13] recognises 46 countries as LDCs. These countries are deemed highly disadvantaged in their development process for structural, historical and geographical reasons. All of them have submitted their NDCs to the UNFCCC Secretariat. Our study analysed the latest submitted versions. Of the 46 countries, all but Yemen are 'active' on the UNFCCC NDC registry.[14] The NDC for Yemen, the oldest in the list, was extracted from an earlier version of the registry website.[15]

Of the 46 countries, 30 submitted their latest NDCs in English with the remainder submitting in French. For two countries, the French version is also available in an English translation (see Figure 1).

Many countries updated their NDCs in the run-up to the 2021 COP26 in Glasgow. While 28 countries submitted an updated first draft, 3 submitted their second version (Bhutan, the Gambia and South Sudan). Out of the 31 countries that submitted their updated NDC in 2021, 27 countries did so in the period January–October and 4 did so in November–December. Two countries submitted their latest NDCs in 2022: Central African Republic (January) and Haiti (June).

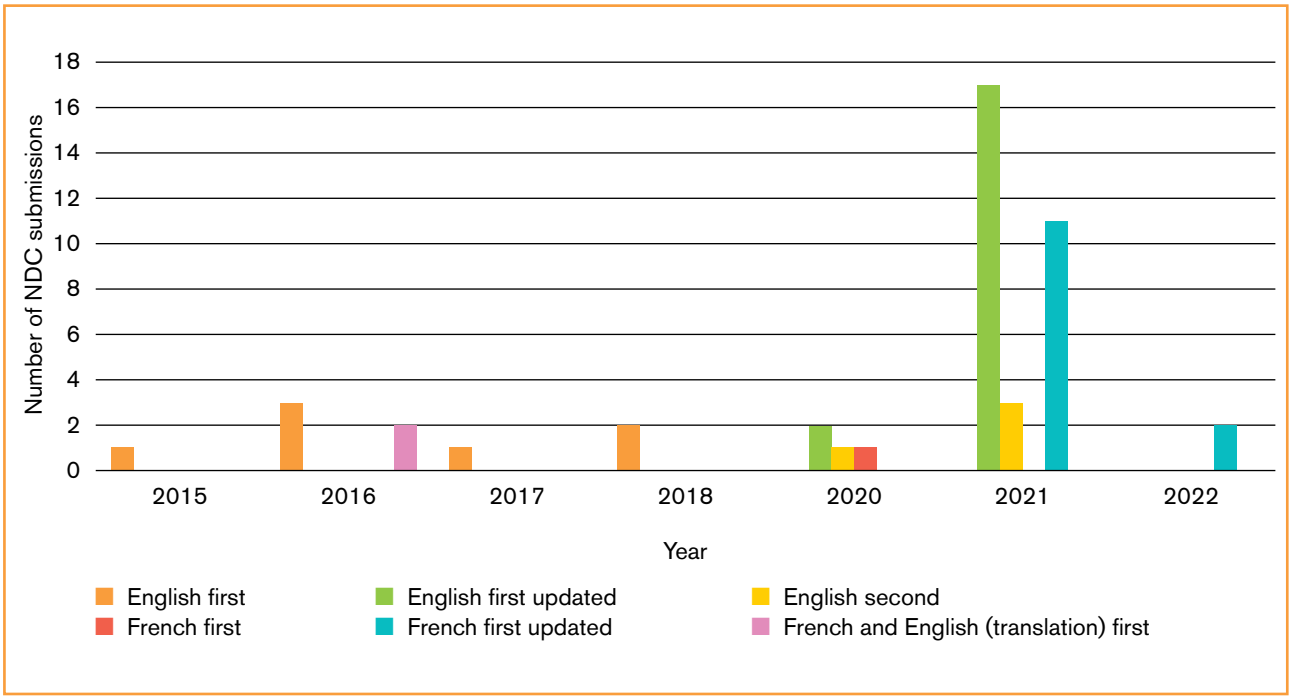
Mention of loss and damage in NDCs

Data availability. The NDC reports were available in an easily accessible format for 45 countries. The French versions were translated into English for the analysis. However, the NDC for Mali was protected from scans and the data could not be accessed.

Of the 45 LDCs whose NDCs are available for analysis, 35 did not mention L&D even once in their NDCs (see Figure 2). Ten countries mentioned L&D in their latest NDCs but with varying detail (see Table 1). Of these 10 countries, 7 submitted after December 2020. L&D features prominently in the submissions of countries with more frequent and intense climatic events. Such events have caused extensive damage to infrastructure, life and property. The remaining three NDCs — for Myanmar, Haiti and Cambodia — have detailed sections on L&D. All three countries have suffered from extreme climatic events in recent years.

Figure 3 shows the timeline of the countries that mention L&D in their NDCs. It notes the major climate events faced by countries in those years or the preceding one.

Figure 1. Most recent NDC submissions to UNFCCC by Least Developed Countries



Loss and damage definition/framing in the NDC

Framing of loss and damage. Table 1 analyses how the 10 countries that mention L&D in their NDCs have framed the issue.

Most NDCs mention L&D while detailing or quantifying impacts of extreme or slow-onset events or describing the country's vulnerability to climate change. L&D also features in the action plans and strategies for implementing NDCs.

- Myanmar discusses L&D objectively with detailed sectoral assessments. It is the only NDC to mention gender mainstreaming in its L&D response strategy.
- Haiti has a separate chapter on L&D that details both actions and proposed dedicated funding for L&D. It is the only NDC that mentions setting up a national fund for L&D.
- Nepal mentions L&D as a way to avoid residual risks. It is preparing a national strategy and action plan on L&D by 2025.

Figure 2. Mention of loss and damage in most recent submitted NDC of LDCs

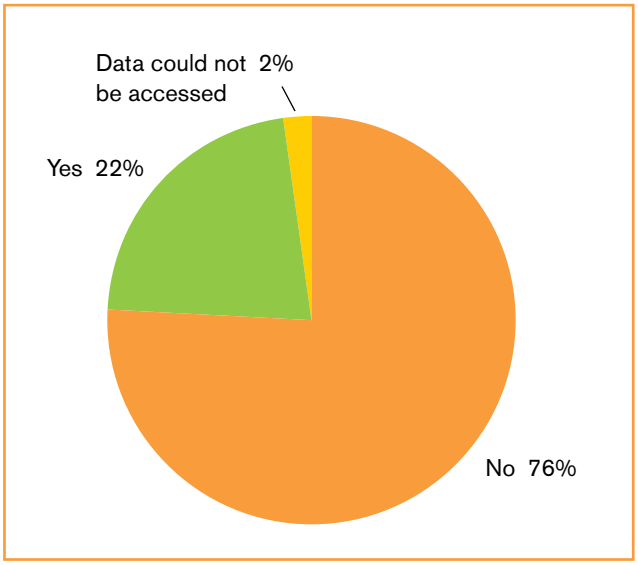


Figure 3. Timeline of when countries mentioned loss and damage in their NDCs and major climatic events suffered by them

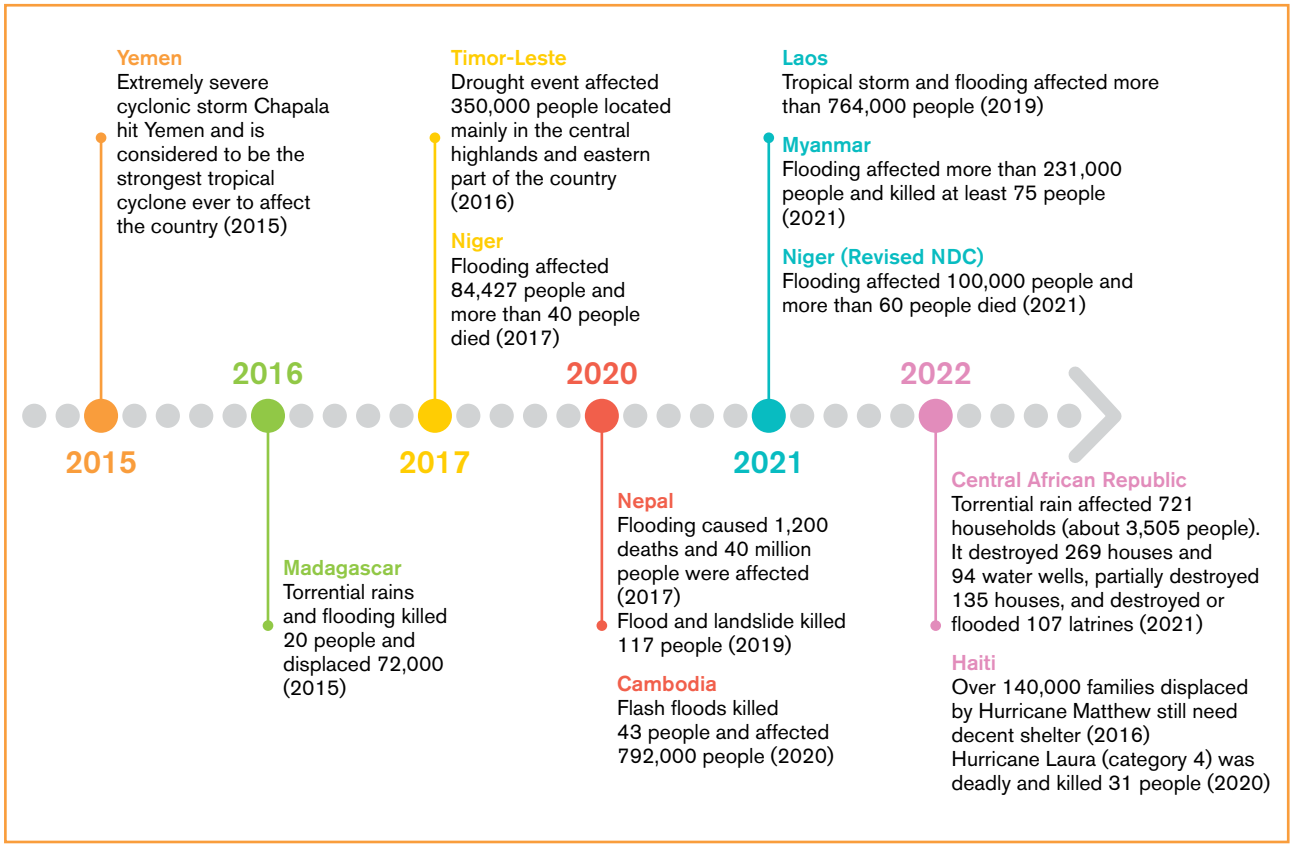


Table 1. Framing of loss and damage in NDCs

NO.	COUNTRY	FRAMING OF LOSS AND DAMAGE IN THE NDC
1	Cambodia	▪ L&D is mentioned while detailing the country's vulnerability to climate change ("The country's climate vulnerability results in loss and damage to human life, livelihoods and the national economy, as well as the degradation of her natural resources"). ▪ The Detailed Adaptation Action Plan also mentions L&D multiple times in the following sections: – Local government and climate change III (LGCC3) – Heat stress adaptation for industrial production – Repair and rehabilitate road infrastructure and ensure effective operation and maintenance systems – Strengthen flood resiliency capacity of communities around Tonle Sap (access to clean water, off grid renewable energy and waste management) – Build climate resilience for district and commune governance through policy and strategic development plan reform (focus on implementation) — this could be avoiding or reducing L&D to infrastructure like roads or strengthening climate-resilient strategies to prevent L&D. ▪ Some sections also mention the financial benefits of minimising L&D.
2	Central African Republic	▪ L&D is mentioned twice, in the section on "Infrastructure and housing/territorial development": – "Negative impact of annual damages and losses caused by recurrent floods on GDP: Average annual damages and losses estimated at FCFA 3.1 billion (USD 7 million)."
3	Haiti	▪ An entire chapter on L&D discusses a "non-exhaustive list of measures envisaged to deal with it (losses & damages), in particular to avoid, reduce and address the inevitable negative impacts of climate change." The list includes proposed solutions and cost estimates for vulnerable sectors, namely agriculture, breeding, fisheries, water resources, coastal areas, infrastructure and road, health, habitat and energy. ▪ L&D also figures in the summary table: – "Priorities in terms of solutions relating to loss and damage: Contribution of responses to losses and damages linked to climate change by: the implementation of insurance programs; the development and promotion of economics programs; the execution of reforestation and reforestation programs; the improvement of water availability and quality; the relocation of vulnerable and affected populations; the restoration and strengthening of infrastructure; and the creation of national funds dedicated to losses and damage." ▪ Additional funding for L&D is explicitly mentioned as "4.98 billion USD (90% conditional and 10% to be financed by the public treasury)."
4	Laos	▪ L&D mentioned while describing damages and losses from past flooding and for improving resilience of infrastructure to prevent L&D: – "The total damage and losses from 2018 flooding events that affected over 600,000 people across the country were estimated at USD 371 million or 2% of GDP." – "With dam collapse in Attapeu in 2018 due to storms and heavy rains, which incurred huge losses and damages, improving hydropower infrastructure resilience is high on the agenda."
5	Madagascar	▪ L&D is mentioned while quantifying impact of extreme events like floods and cyclones. – "During the last five years, losses and damages associated with floods and cyclone events are estimated at about 470–940 million of US dollars per year."

NO.	COUNTRY	FRAMING OF LOSS AND DAMAGE IN THE NDC
6	Myanmar	▪ L&D mentioned extensively, including in one of the objectives: – "One pathway is building resilience so that communities, ecosystems, the economy and all assets (whether industrial, urban, educational, domestic and so on) are adapted to current and projected climate change, in a way that allows them to continue to perform and thrive at maximum level under the adverse climate change scenarios where the impacts already being felt and those that are projected to intensify in the coming decades, and face minimum loss and damage once adaptation fails." ▪ It is mentioned as a strategy: "… and minimized loss and damages of economic and non-economic assets and social protection systems could help to secure and sustain Myanmar's social and economic development, putting it on a climate-resilient pathway." ▪ It is also an outcome for seeking international funding: "Myanmar will need international support to implement its MAPDRR [Myanmar Action Plan on Disaster Risk Reduction] and improve its forecasting, early warning systems and marine forecasting tools to minimize loss and damage." ▪ One entire section is on adaptation and L&D assessing loss and damage in different sectors such as: – Agriculture, fisheries, livestock – Resilient, inclusive and sustainable cities – Peoples' health and wellbeing. ▪ It is the only NDC that mentions mainstreaming gender in policy for climate hazards and L&D. ▪ An entire annex is dedicated to disaster risk reduction and L&D.
7	Nepal	▪ Nepal's NDC mentions funding to avoid residual risks of L&D and preparing a national strategy and action plan on L&D by 2025. It identifies L&D as an area for sources of finance under the NDC implementation plan: – "…Nepal aspires to avoid the residual risks caused by Loss and Damage and to receive financial and any other support for the risks that may still materialize." – "By 2025, a national strategy and action plan on Loss and Damage (L&D) associated with climate change impacts will be devised." – "……include a financing and investment framework that ensures efficient access to climate funds and evidence-based allocations and differentiates between sources of finance to be used in each area, including in adaptation, mitigation, and Loss and Damage."
8	Niger	▪ L&D is mentioned only while quantifying losses due to extreme events: – "Average losses due to drought: more than 70 million USD (World Bank. Climate risk assessment, Niger, 2012). Flood damage over the period 1990–2020 estimated at 3,115,290 people and 7,100 localities affected with more than 225,000 houses destroyed and losses of around 205,000 hectares of crops and 46,540 TLU (SAP, 2021)."
9	Timor-Leste	▪ A section in the NDC is dedicated to L&D, mentioning "enhancing understanding on the issue and also considering actions on areas including comprehensive risk assessment and management, risk insurance and transfer, rehabilitation, early warning systems, emergency preparedness, slow-onset events, risk insurance facilities like crop insurance, events involving permanent and irreversible loss and damage, non-economic losses, and resilience of communities, livelihoods and ecosystems."
10	Yemen	▪ The NDC mentions L&D with respect to: – Studies under NAP to determine the projected L&D of climate-induced disaster risks scenarios – L&D to infrastructure due to increased intensity of waves, cyclones – International support for helping the country to manage and reduce potential L&Ds.

NDCs that use similar terminology to loss and damage. NDCs that do not mention L&D use the following terminology, which is similar:

- **Description of climate vulnerability:** all NDCs describe the climate vulnerability context, analysing potential impacts of slow-onset events and extreme hazards. These include drought, late and heavy rains, torrential rains and floods, high winds, excessive heat and rising sea level and glacial lake outbursts. They note the existential threat of sea-level rise, as well as increased risks for adverse health impacts. This is with or without the mention of L&D in the NDC documents.
- **Limits to adaptation:** a few NDCs use words such as limited adaptive capacity, residual risk caused by climate change, unavoidable climate change impacts and so on, while not citing L&D.
- **Cost of climate change/climate inaction:** most NDCs have monetised losses due to climate change/climate inaction. They describe them in the following manner:
  - Mention of historical costs of losses and damages to slow-onset and rapid-onset extreme events
  - Mention of projected cost of the impacts of climate variability and change in key sectors in value terms and as percentage of GDP.
- **Description of damages** to infrastructure, and loss of lives and property, including crops, soil erosion, water pollution, and so on; destruction of socioeconomic infrastructures, settlements and property.
- **Description of losses:**
  - Loss of human lives (due to floods, extreme events and so on); loss of income from fish and crops; loss of livelihoods; environmental degradation; erosion and saltwater intrusion; impacts on communities and national economy; loss of habitats; decline in vegetation cover and loss of habitations and infrastructure due to flood damage; losses due to drought and so on.
  - Losses and/or damages were expressed in absolute values in dollars, percentage of GDP on an annual average basis or projected losses due to impact of climate change.

Specific geographical areas considered vulnerable and scale of impact

Of the 46 NDCs of the LDCs, 37 (81%) mention geographic areas vulnerable to climate change (see Figure 4).

While NDCs cover vulnerability across an entire country, 37 countries mentioned specific areas more vulnerable to climate change (see Figure 5). Coastal regions are identified in 22 NDCs (49%), while 13 countries (29%) identify rural regions and 6 identify river basins. Other vulnerable areas mentioned are forests (five countries), highlands and mountain regions (four countries), urban regions (four countries), islands and low-lying lands (three countries), savannah regions (one country), delta regions (one country), valleys and plains (two countries) and plateaus (one country).

LDCs reported the scale of impact as part of vulnerability assessments, usually at the country level. In numerous cases, impacts have been quantified as well. But some cover the larger impacts of climate rather than those related to L&D.

Only 19 countries reported the scale of impact in their NDCs (see Figure 6).

Figure 4. Mention of specific vulnerable geographics within a country in the NDC of LDCs

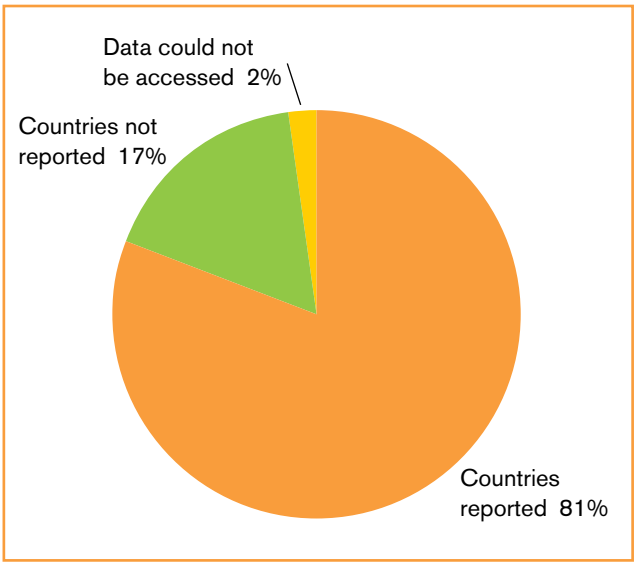


Figure 5. Vulnerable regions mentioned in NDCs of LDCs

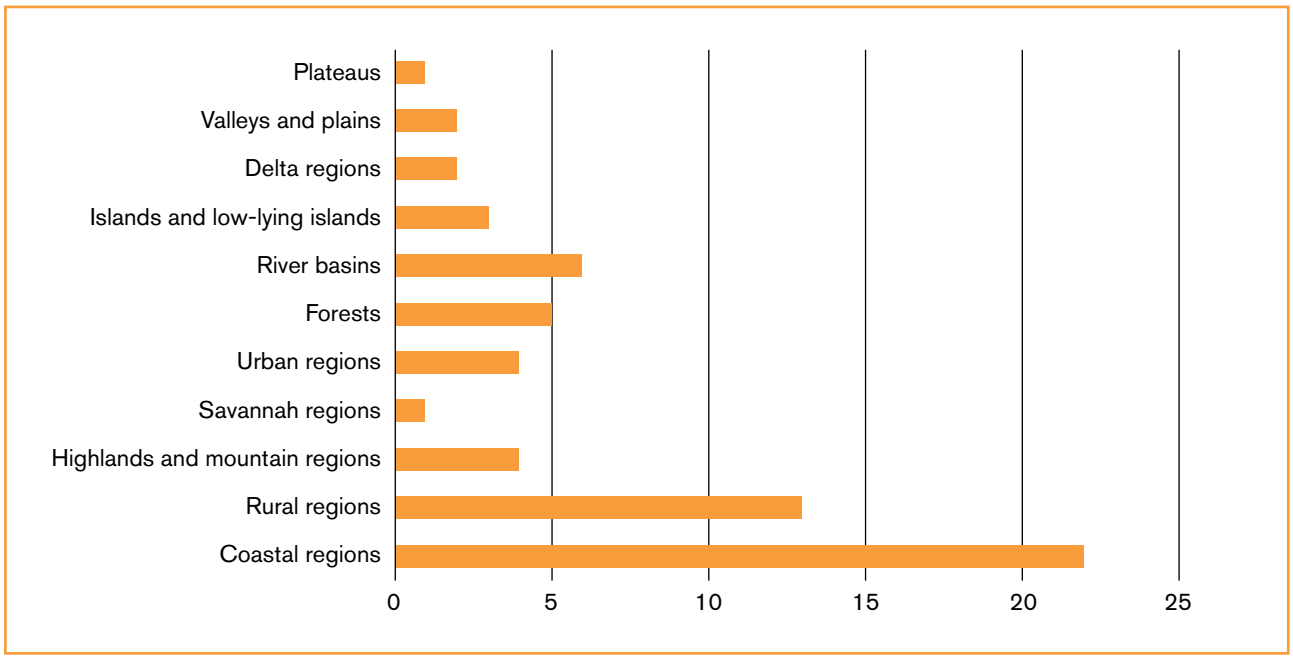
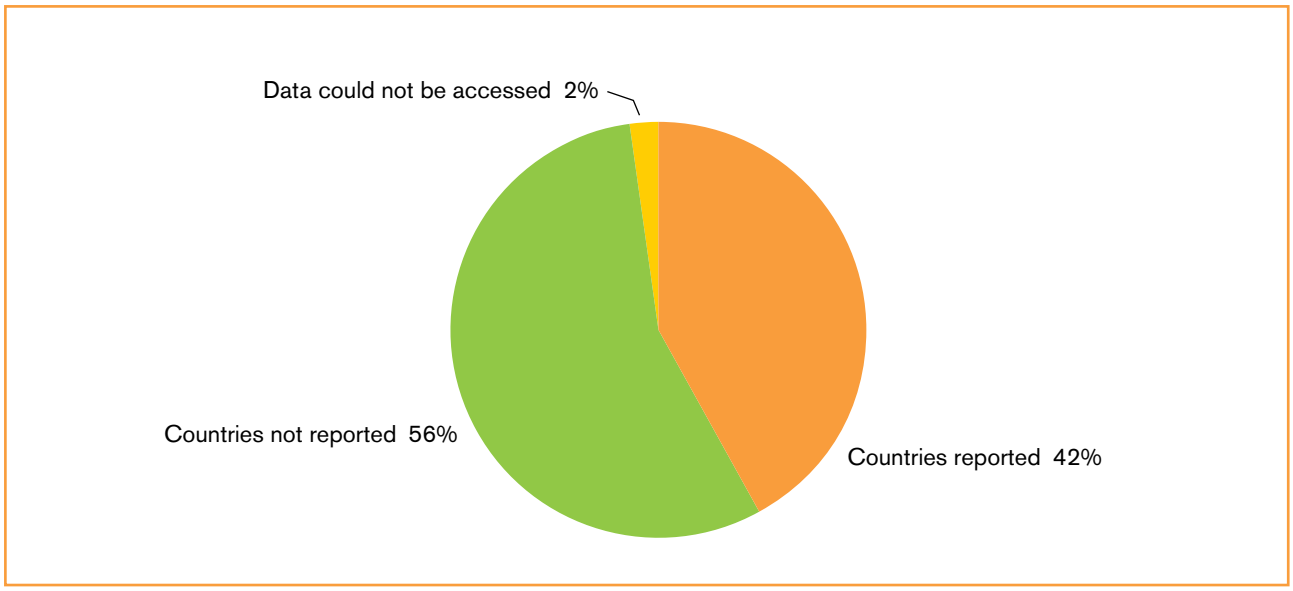


Figure 6. Percentage of LDCs reporting scale of impact in their NDCs



Communities considered vulnerable

While most countries mentioned that all communities are vulnerable, many NDCs mentioned specific communities to be highly vulnerable. They cited farmers (39 reports), rural poor (28 reports), coastal communities (24 reports), women (22 reports) and urban poor (15 reports). Other vulnerable groups were reported less often, including children (9 reports), elderly people (3 reports), people living in mountains, disabled people, and people living in river basins (2 reports) and displaced people, adolescents and young people, people living near forests and people living in low-lying areas (1 report) (see Figure 7).

The scale of impact is related to climate change and is not specific to L&D. Scale is defined in terms of losses to percentage of GDP and in some cases to the number of affected people. While women are mentioned as a vulnerable group in 22 NDCs, gendered impact of loss and damage has not been covered.

Key impacts

Droughts (32 reports) and floods (26 reports) are the most frequently mentioned hazards. Others noted are reduction in agricultural and livestock yield (20 reports); water scarcity (16 reports); food and nutritional insecurity (14 reports); wind storms (14 reports); damage to infrastructure (12 reports); loss of biodiversity (12 reports); sea-level rise (11 reports); pest-borne diseases to human beings (11 reports); salinisation and erosion of land (9 reports); loss of lives and deforestation (7 reports); degradation of land and desertification, landslides, and increased precipitation (6 reports); cyclones/typhoons/hurricanes, forest fires, and reduced fish catch (5 reports); increased pests and weeds in agriculture (4 reports); disaster displacement, disappearance of wetlands, flash floods, temperature rise, heat waves, and social and political instability (3 reports); glacier outbreak (2 reports); other diseases to human beings, diseases to livestock animals; loss of islands, disruption of public services, migration, silting of rivers, river flow reduction, and snow fall (1 report) (see Figure 8).

Figure 7. Vulnerable communities as percentage of NDCs reporting data (45 NDCs)

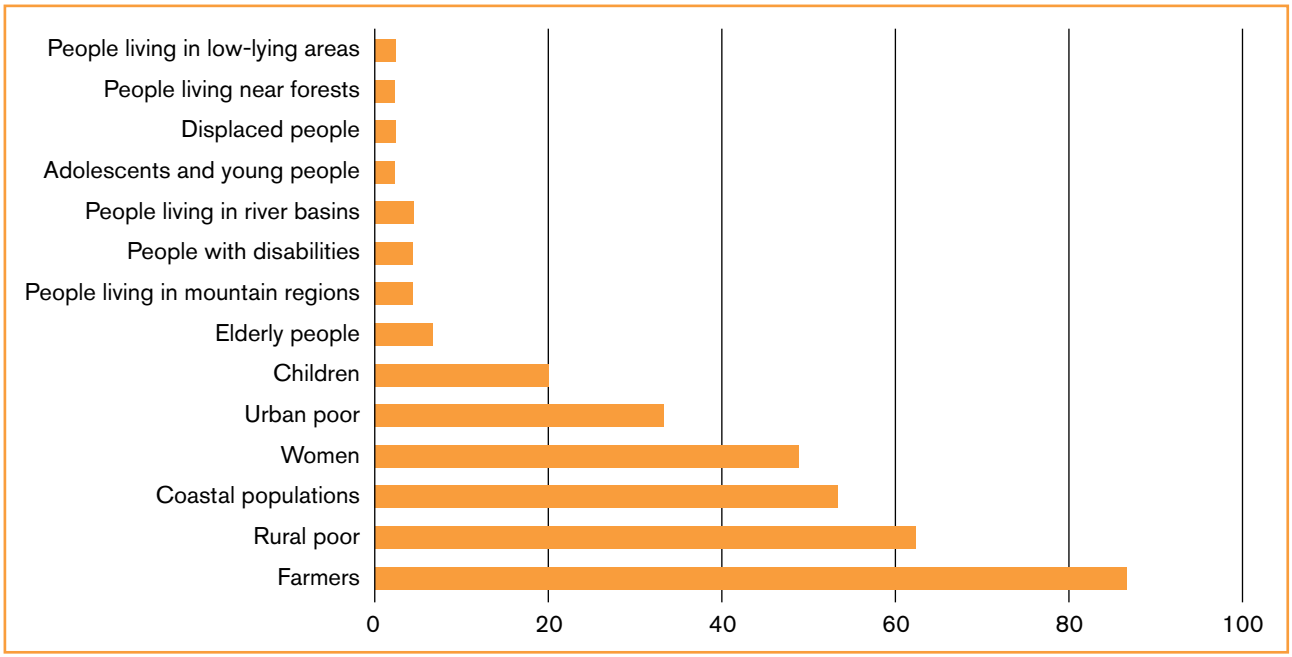
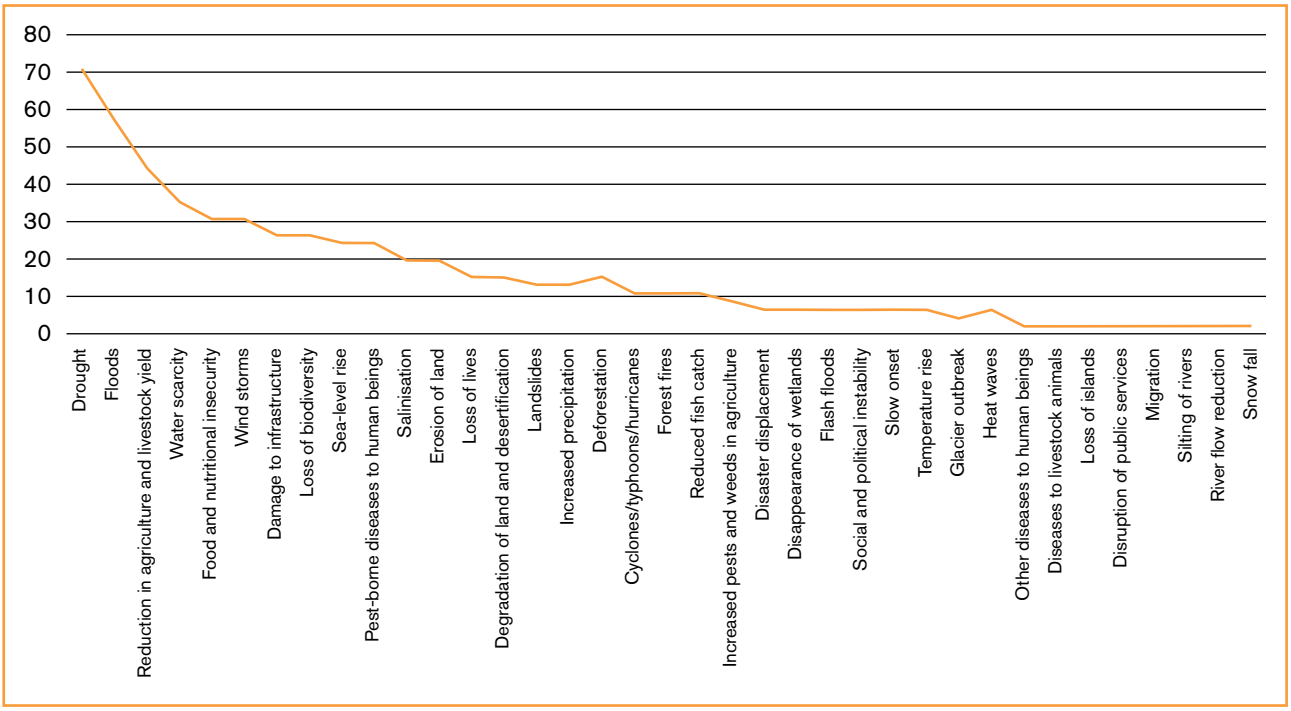


Figure 8. Key impacts of climate change reporting in NDCs of LDCs as percentage of total NDCs reporting data (36 NDCs)



Actions and support identified to address loss and damage

Except in the case of Haiti and Cambodia, no LDCs explicitly presented actions and support to manage L&D in their NDCs. Except for Haiti, no country had a dedicated section on L&D in the NDC. Table 1 provides details from Haiti; actions listed from other NDCs are extracted from the adaptation measures sections of the reports. This section identifies actions relevant to L&D reported in 38 NDCs.

The most common support needed is for actions around capacity building (30 NDCs), systems (26 NDCs), technology (26 NDCs), infrastructure development (21 NDCs), finance (14 NDCs) and land, water and biodiversity conservation (7 NDCs). Seven NDCs mentioned two of the above six categories, nine NDCs mentioned three categories, seven NDCs covered four categories and another seven NDCs covered five categories. Ethiopia and Malawi cover all categories (see Figure 9).

The actions proposed around capacity building are related to assessments, studies and awareness building on different aspects of climate change. The Timor-Leste NDC mentions enhancing understanding about the concept of L&D. Most NDCs propose setting up early warning systems for agriculture, health and natural hazards such as cyclones and floods. Infrastructure development actions are related to support for cyclone shelters, climate-proof transport, climate-resilient roads and drainage.

Initiating insurance for crops and livestock is a major action under finance (see Figure 10). But different NDCs propose many interesting actions under finance. These include preventing L&D due to hazards (Cambodia); setting up social protection programmes and a fund for L&D (Haiti); establishing a contingency fund for emergency needs after an extreme climate event (Uganda); and providing microfinance and insurance products for smallholder and commercial farmers at both national and subnational levels (Malawi).

Figure 9. Action categories covered by NDCs

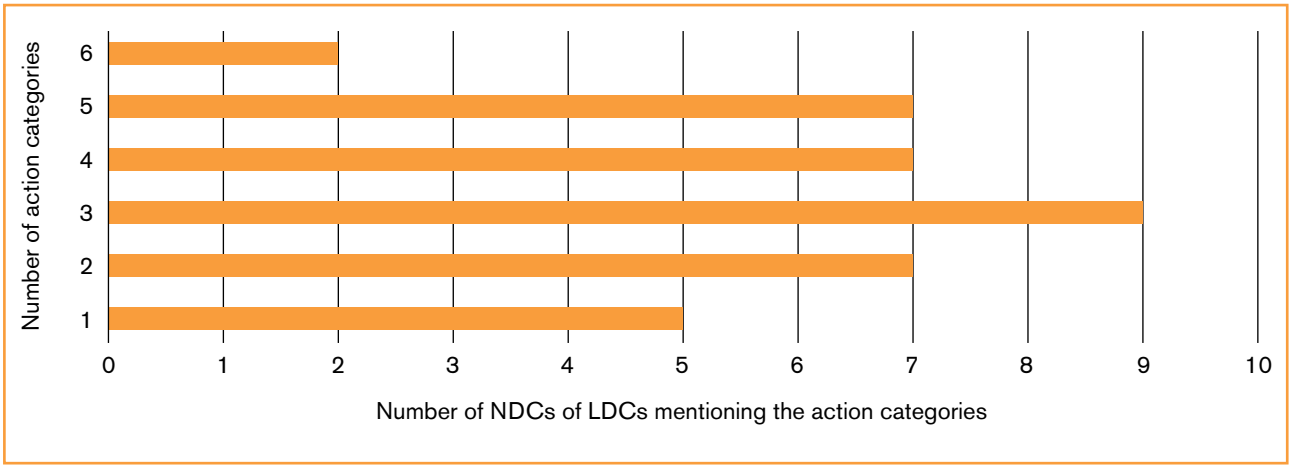
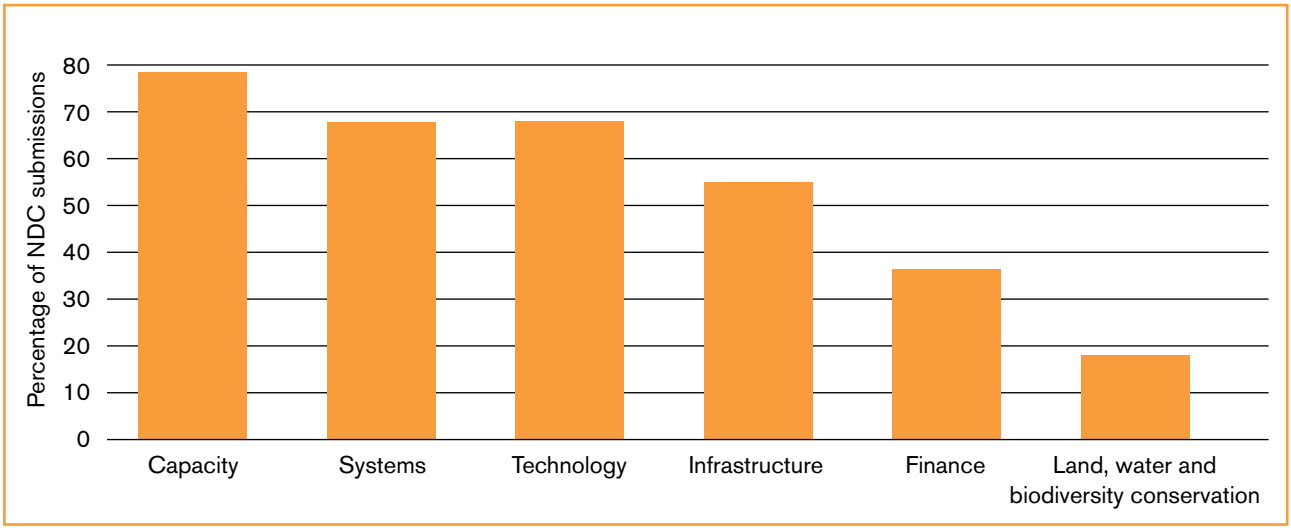


Figure 10. Actions and support identified in NDCs to address loss and damage as percentage of total NDCs reporting data (38 NDCs)



The actions centred around land, water and biodiversity conservation focus on improved forest management and degraded forest resources, biodiversity conservation, restoration of ecosystems, reforestation and afforestation, and land and water conservation.

Tools and suggested interventions

Of the 37 countries mentioning tools to address L&D, most countries (36) identified risk reduction. Other tools included anticipatory action (14 NDCs), risk management (5 NDCs) and risk prevention (2 NDCs) (see Figure 11).

In the NDCs, **risk management** covers actions mostly related to social protection; creation of national funds dedicated to losses and damage; and disaster risk management, including flood and drought management.

Risk reduction approaches in the NDCs cover setting up early warning systems for extreme events; disaster preparedness and construction of flood and cyclone shelters; strengthening climate road resilience to avoid L&D due to climate hazards; establishing or strengthening crop and livestock insurance systems; and improving forest management for degraded forest resources.

Risk prevention covers disease prevention in climate-sensitive areas.

Anticipatory action goes beyond risk management, reduction and prevention to address the challenge of L&D holistically through strategic planning. Anticipatory actions cover reforming policy and strategic plans in response to current and projected climate hazards; developing a harmonised and integrated spatial data management system for sustainable land use management; strengthening preventive measures and creating capacity to adapt to disease outbreaks; and establishing an integrated early warning system and disaster response plan.

Of the four categories of tools mentioned above, most NDCs proposed a single tool category (22 NDCs), while 13 proposed two categories. Timor-Leste and Chad proposed three categories, and Haiti proposed four categories (see Figure 12).

Figure 11. Actions to address loss and damage as percentage of total NDCs reporting data (37 NDCs)

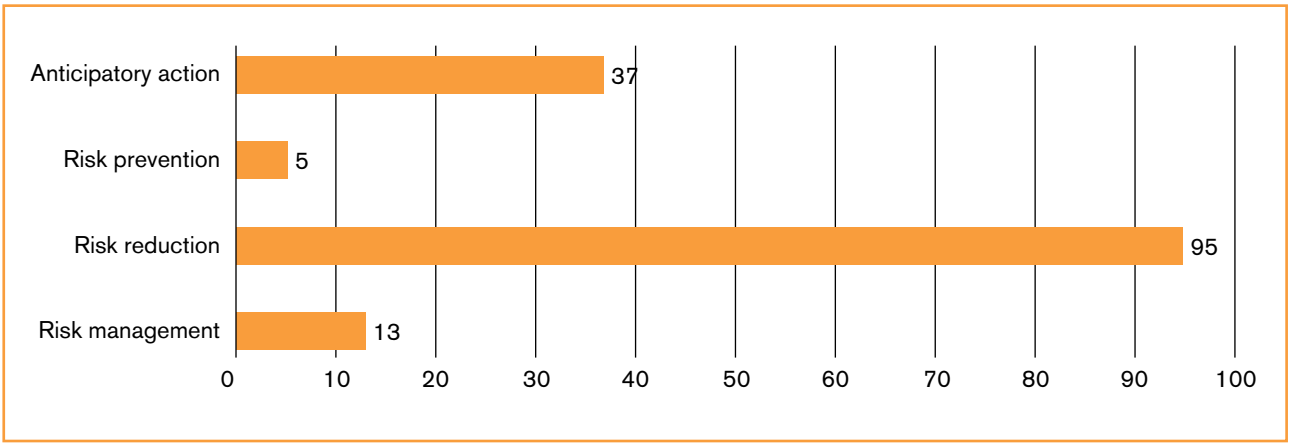
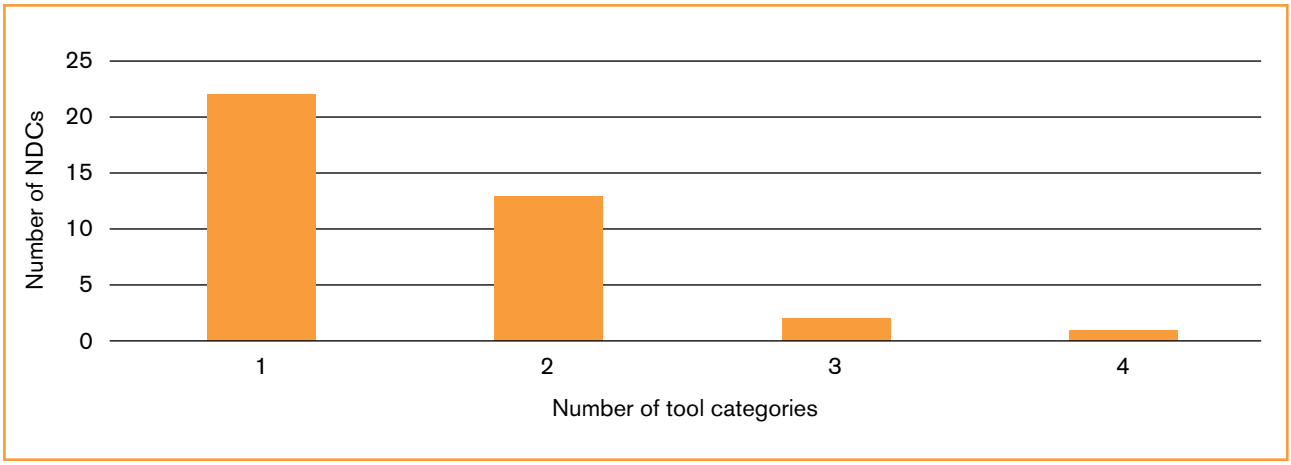


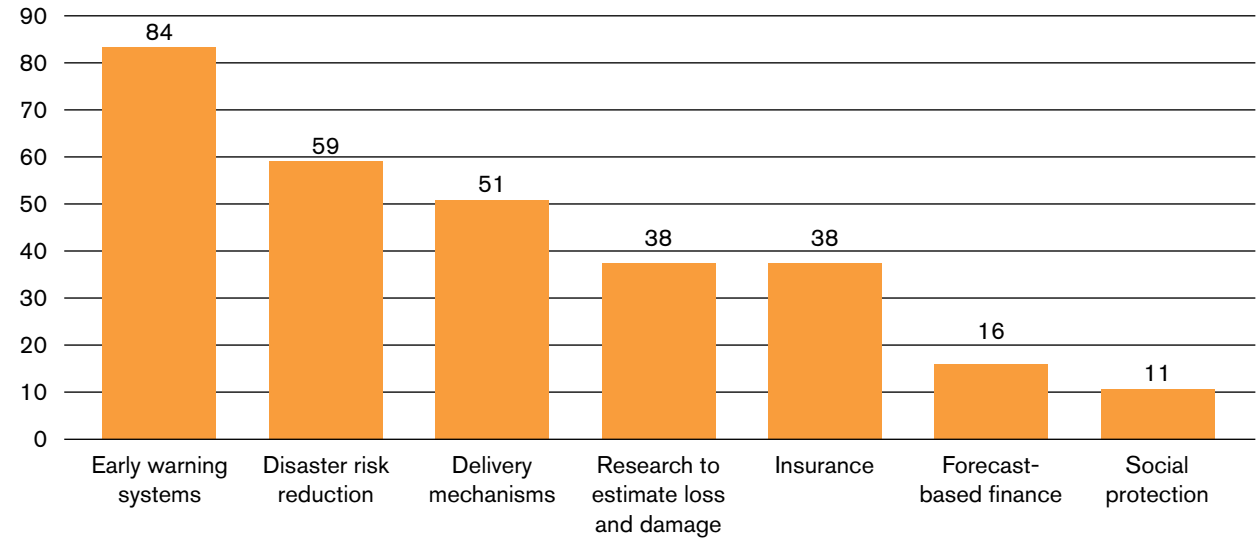
Figure 12. Tool categories covered by NDCs



None of the NDC reports, except for Haiti, have presented exclusive interventions to address L&D. Rather, many reports, under adaptation measures, have listed interventions that can alleviate effects of L&D from climate change. The analysis has captured such interventions.

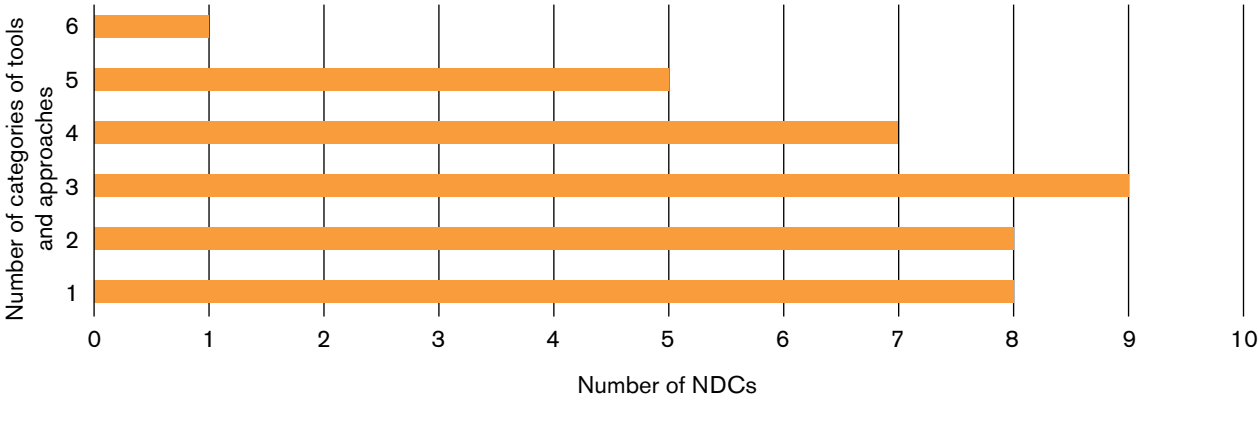
Early warning systems are the most popular tool mentioned by countries (31 NDCs), followed by disaster risk reduction (22 NDCs). Other tools mentioned are delivery mechanism (19 NDCs), research to estimate L&D (14 NDCs), insurance (14 NDCs), social protection (4 NDCs) and forecast-based finances (6 NDCs) (see Figures 13 and 14).

Figure 13. Tools and approaches for addressing loss and damage in NDCs as percentage of NDCs reporting data (37 NDCs)



Note: Not explicitly reported. Loss and damage components are reported as part of adaptation actions.

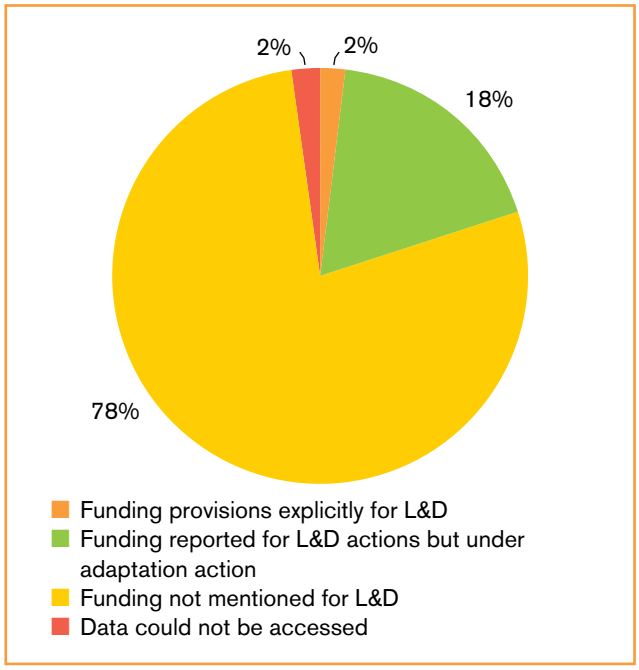
Figure 14. Number of tools and approach categories covered by NDCs



Funding requirement/support mentioned for L&D action. Except for Haiti, no country explicitly mentioned L&D as part of the funding requirement in the NDC. Actions pertinent to address L&D are part of adaptation actions in eight NDCs (Angola, Cambodia, Somalia, Niger, Madagascar, Rwanda, Nepal and Djibouti) (see Figure 15).

Most countries have earmarked their conditional contribution and unconditional contribution towards adaptation actions. Only Haiti has earmarked funds specifically for L&D.

Figure 15. Funding requirement for loss and damage in NDCs as percentage of all LDC NDCs (46)



2.2 NAP review

NAPs submitted to UNFCCC

Of the 46 LDCs, 14 countries have submitted their NAPs to date. Of these, five NAPs were submitted in 2021 and four in 2022. Among the island states, two — Timor-Leste and Kiribati — mentioned L&D in their NDCs (see Figure 16).

Mention of L&D in NAPs

L&D is mentioned in NAPs of five countries: Cambodia, Central African Republic, Kiribati, Nepal and Timor-Leste (see Figure 17).

It is framed as economic losses and damages due to climate change, limited adaptive capacity, impacts of hydrometeorological hazards, losses and damages resulting from flooding and so on (see Table 2).

Figure 16. Submission of NAPs by LDCs

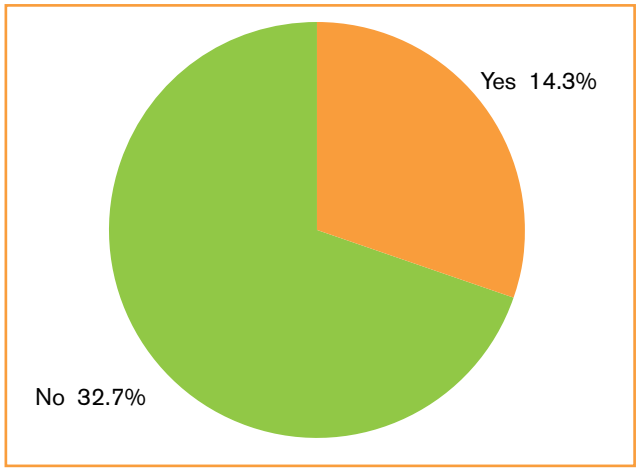


Figure 17. Timeline of the countries that mention loss and damage in their NAPs

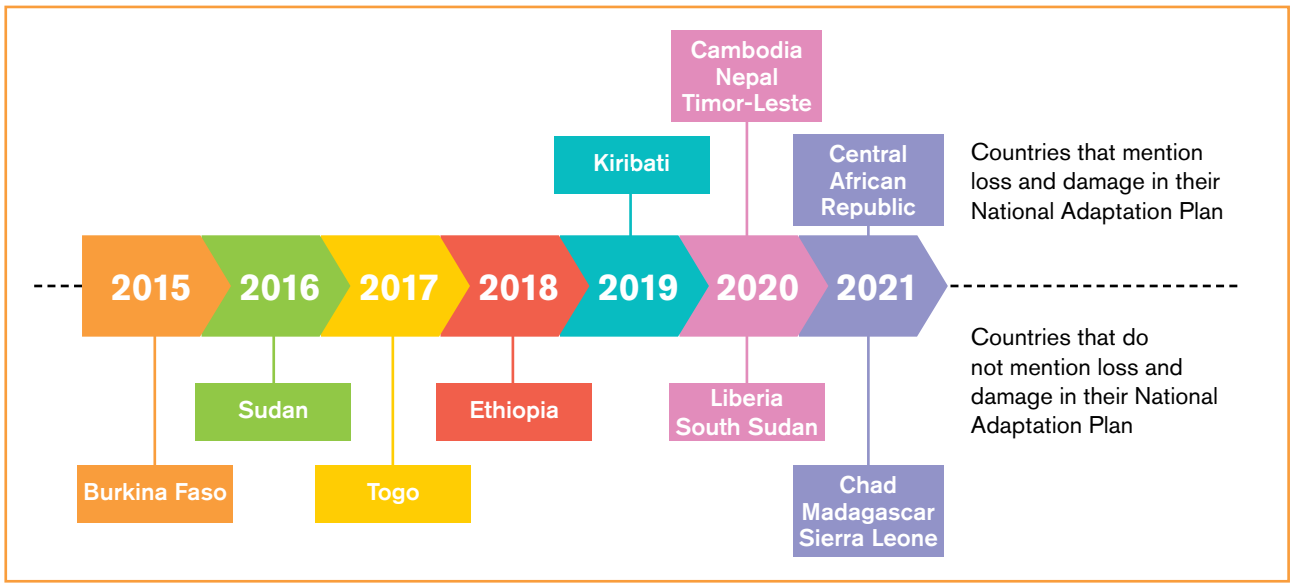


Table 2. Framing of loss and damage in NAPs

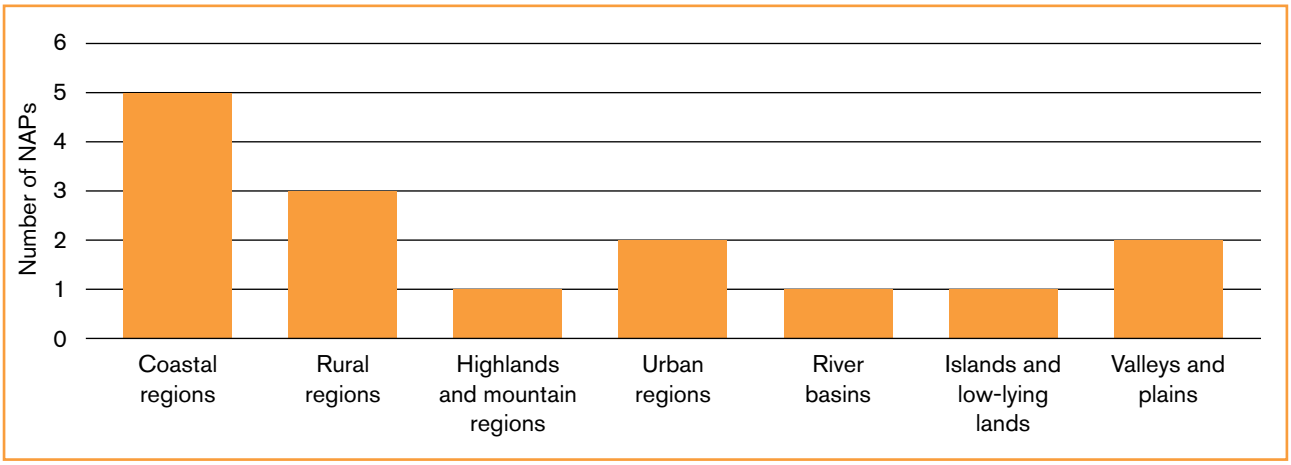
NO.	COUNTRY	MENTION OF LOSS AND DAMAGE
1	Cambodia	Strategic Objective 6: Promote adaptive social protection and participatory approaches in reducing loss and damage due to climate change in Cambodia
2	Central African Republic	Description of loss and damages: ▪ "From the 2009 floods amounted to damages of 2.8 billion FCFA (USD 6 million) and losses to 1.2 billion FCFA (USD 2.6 million). They left 14,500 people homeless. According to the UNDP 2009, the average annual losses and damages caused by recurrent floods are estimated at 3.1 billion FCFA (USD 7 million)." Impacts of climate change on energy resources and related risks (risks under firewood and oil products): ▪ "Human loss and damage, as well as loss and damage to buildings and infrastructure" Enabling activities for the short term (within three years) — improved data, information and knowledge management systems to support climate change adaptation planning processes: ▪ "Develop a standardized protocol for collecting and sharing climate information and data on damage and loss, including socioeconomic and gender-disaggregated data, to feed into the monitoring and evaluation system that will be established."
3	Nepal	Addressing limited adaptive capacity in Nepal: ▪ "The damage and losses from climate change impacts in key natural, social and economic sectors reduced by 2025 through enhanced adaptation planning, capacity of the concerned agencies and service providers, and implementation of urgent and immediate adaptation actions enabled by the establishment and operationalization of real time early warning, climate change data management, monitoring and review mechanism at federal, provincial and local levels." Disaster risk reduction and management: ▪ "Floods, landslides, epidemics and fires are the most devastating climate-induced disasters in Nepal in regard to deaths, affected population and economic losses. Floods are most damaging, causing over 50% of deaths and 30% of economic losses." ▪ "An example is the 2017 flooding that affected 80% of the Tarai region and some surrounding districts and caused USD 584.7 million in damages. In the future, it is expected that flooding will cause 82.93% of the average annual loss."
4	Timor-Leste	"Launch studies on economic valuation, cost benefit analysis and loss and damage to assess the existing ecosystem services and programmes to enhance the ecosystem further."
5	Kiribati	L&D has been framed as unavoidable climate change impacts among different sectors and sections of the population: ▪ "Key national adaptation priority (KNAP) — unavoidable climate change impacts #1): Enhance understanding of loss and damage (through data collection and vulnerability analysis) to better position Kiribati to engage with and receive support from regional and international initiatives that will address national priorities and concerns."

NO.	COUNTRY	MENTION OF LOSS AND DAMAGE
5	Kiribati (cont.)	▪ "Develop a National Data and Information Centre (including a geographic information system — GIS) to coordinate, share and manage information related to disaster risk, climate change, and loss and damage for improved decision making and increased effectiveness and efficiency (Centre to cover socioeconomic, environmental and species migratory data, GIS and maps). (Also contributes to KNAP — Unavoidable climate change impacts #1): – 1) Develop and interpret integrated data sets for dissemination to support planning and decision making at all levels (including information and awareness products). (Also contributes to KNAP — Unavoidable climate change impacts #1). a. Analyse data sets based on needs. b. Amend the format of Household Income and Expenditure Surveys to effectively capture data related to climate change and disaster risk management, and loss and damage." Under Result 5.6: Key national adaptation priority — health security #5: ▪ "Undertake a vulnerability and/or loss and damage assessment to identify climate change-related impacts and prioritise interventions." Under Result 6.3: Building coastal resilience through strategic coastal protection initiatives: ▪ "Identification of immediately vulnerable areas and preparing a loss and damage assessment for areas at most immediate threat (see also Result 6.5)." Under Result 6.5: Key national adaptation priority — unavoidable climate change impacts #2. Establish financial mechanisms to address the risks facing community and public assets (with a focus on climate risk insurance and building on existing initiatives and programmes): ▪ "Responsiveness of national stakeholders to evolving loss and damage scenarios and needs." ▪ "Number of technologies and innovative solutions transferred or licensed to mitigate loss and damage."

NAPs that do not mention L&D link it closely to destruction and damage of infrastructure; dwellings; road infrastructure; socioeconomic equipment; loss of materials; human lives; crops; livestock; reduction of critical habitats for biodiversity in wetlands and forests; reduction in river flows; and adverse impacts on key habitats in wetland ecosystems and isolation of localities resulting from climate-induced risks like large-scale flooding, high winds and droughts.

- **South Sudan:** floods and droughts have already had negative socioeconomic impacts in terms of increased crop losses, loss of pasture lands and water resources for livestock, reduction of critical habitats for biodiversity in wetlands and forests, reduction in river flows and adverse impacts on key habitats in wetland ecosystems.
- **Liberia:** Severe impacts of climate change in the form of loss of lives and income, and damage to infrastructure have recently become evident. Large-scale floods have caused massive damages to properties.
- **Burkina Faso:** "Being vulnerable is living in such precarious conditions that anything that goes wrong or can change the current situation threatens very survival. Vulnerability therefore results from possibility of a destructive event to occur against which vulnerable populations are not able to defend themselves. It can have physical origins (types and places of construction) economic (possession of livestock, fields, equipment and so on), social (frailty of children, the sick, the elderly, employees and so on) and cultural (traditions)."
- **Togo:** "Flooding would affect large areas, including 20–35% of areas usually not flooded, mainly the area… of the two cordons (the lower town of Lomé between the lagoon and the sea) where 40–50% of the population and 80% of infrastructure and industrial and hotel equipment would be of major magnitude." … "Increased flooding and high winds will affect dwellings, road infrastructure and socioeconomic equipment, with losses of materials and human lives and isolation of localities."

Figure 18. Geographic areas mentioned in the NAPs



- **Ethiopia:** "Loss of income, loss of cultivable land, loss of productive manpower, loss of oxen power, biodiversity loss, decreased productivity, and so on. Droughts, floods, human and livestock diseases, crop diseases and pests, hailstorms and wildfires (specific to some regions) are the major climate-related hazards in the country, affecting the livelihoods of significant numbers of people. Moreover, experience has shown that the country is exposed to unpredictable rains including the complete failure of rains, seasonal shifts in rainfall patterns and shortage of rainfall (drought) and this uncertainty is expected to increase with climate change."
- **Sudan:** "Almost all localities in the western side of White Nile River were found to be among the most vulnerable to droughts and other impacts of climate change. These impacts have already been manifested in declining crop productivity, loss of grazing resources and rangeland valuable species, land degradation, increased frequency of diseases in crops, livestock and population, loss of livelihoods and human migration in search for jobs and alternative livelihoods."

Geographical areas considered vulnerable

Given their status as LDCs, most countries mention vulnerability across almost the entire geographical areas in their NAPs. But coastal regions are mentioned in five NAPs; rural regions in three; urban regions, and valleys and plains in two; and highland and mountain regions, river basins, islands and low-lying lands in one each (see Figure 18).

Eight NAPs mention the scale of impact in terms of percentage of loss to GDP and value of funds (see Figure 19).

Mention of vulnerable communities

Thirteen NAPs mentioned vulnerable population groups (see Figure 20). The most common were women (12 NAPs), farmers (8 NAPs), coastal population (6 NAPS), disabled people (4 NAPs), children (4 NAPs), rural poor (3 NAPs), elderly people (3 NAPs) and Indigenous Peoples (3 NAPs). The gendered impact of loss and damage on different vulnerable groups has not been covered in detail.

Key impacts/hazards considered as L&D

All 14 NAPs mentioned impacts/hazards, although some hazards appeared more frequently: floods (11), drought/famine (10), crop losses (6); biodiversity loss, high wind, saltwater intrusion and land erosion (5), heat waves and infrastructure damage (4) and water shortage (2) (see Figure 21).

Figure 19. Countries reporting scale of impact of climate change

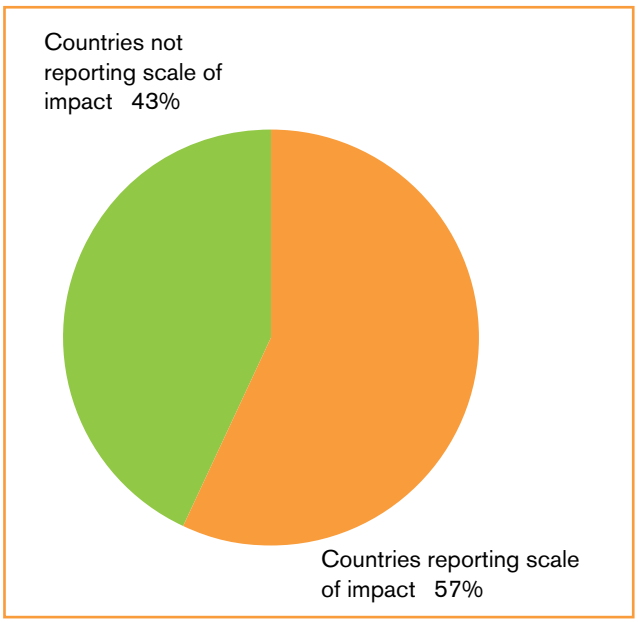


Figure 20. Mention of vulnerable groups in number of NAPs

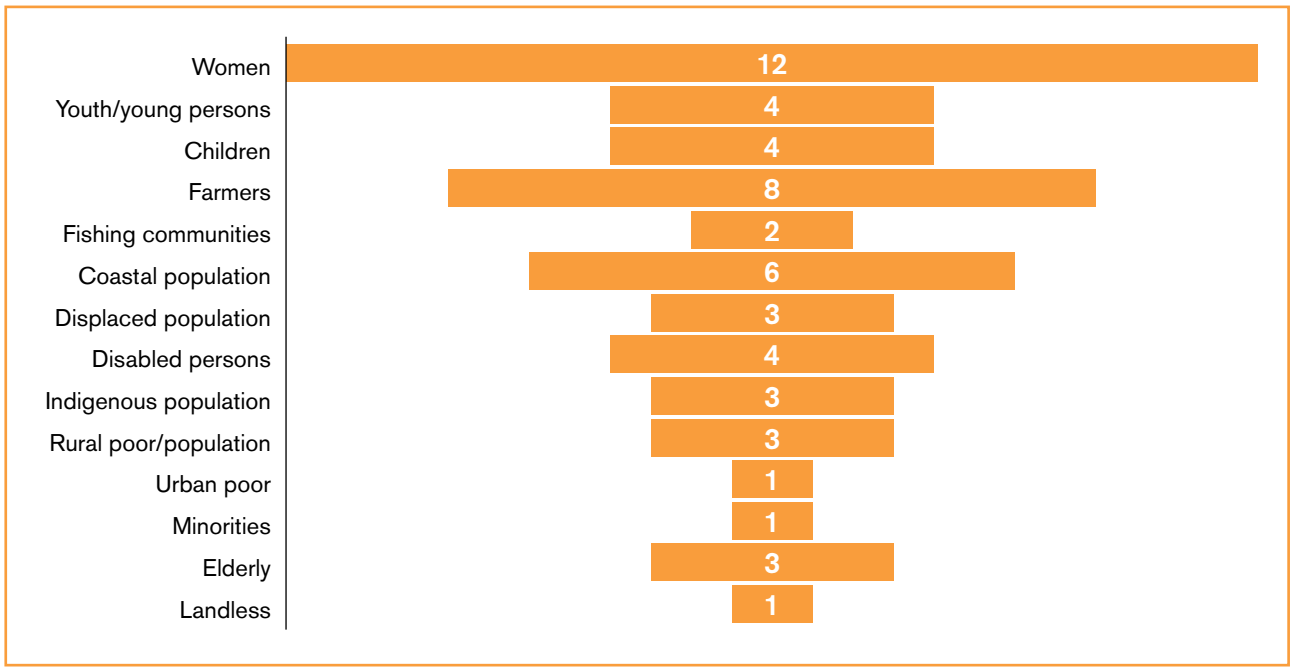
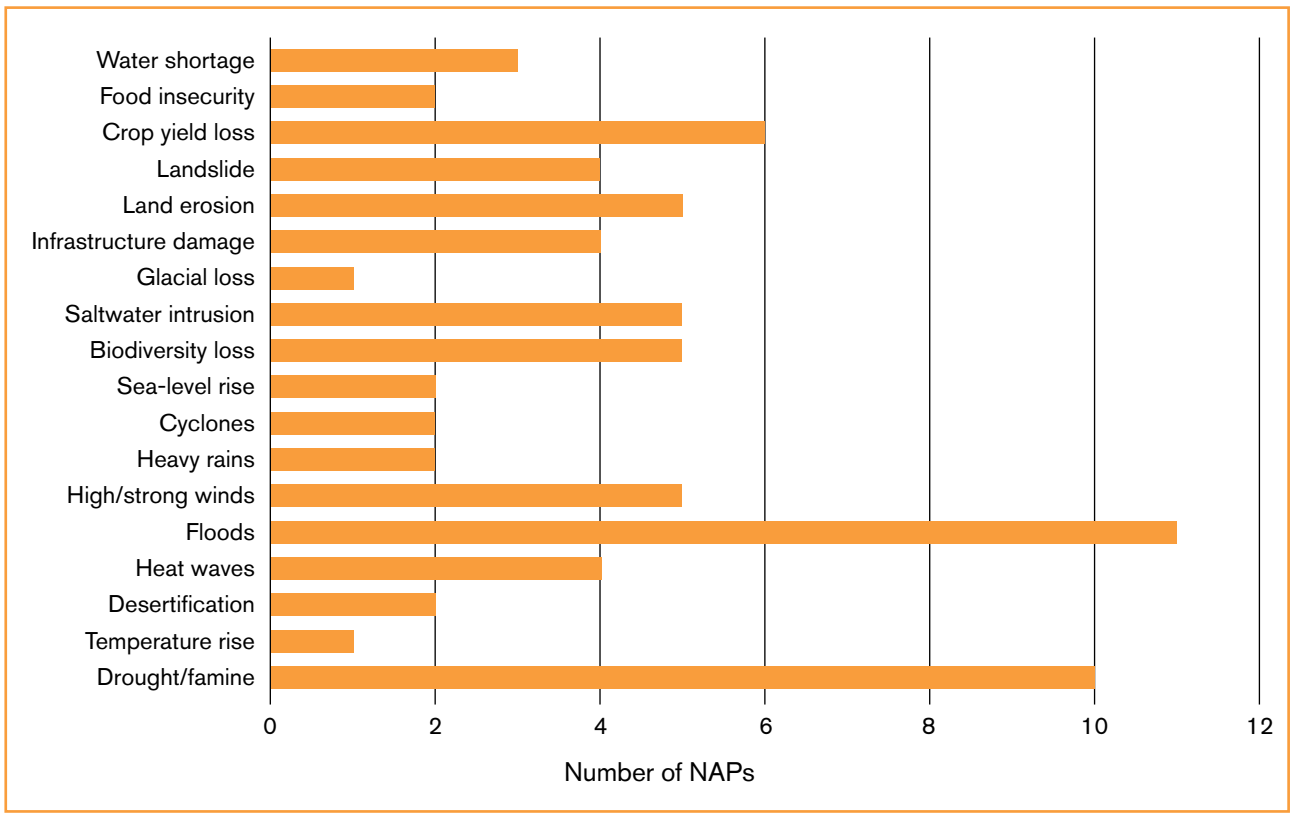


Figure 21. Mention of climate change impacts in NAPs



Actions and support identified to address L&D

Only Central African Republic and Kiribati refer to L&D directly in their NAPs. All other NAPs have actions and support identified to address L&D under adaptation actions. Other areas of action and support mentioned were capacity development support (12 NAPs), systems (11 NAPs), finance (6 NAPs), infrastructure (7 NAPs) and technology (3 NAPs) (see Figure 22).

Types of tools/approaches/interventions suggested

Among tools mentioned in NAPs, risk reduction appears most often (11 NAPs) followed by anticipatory action (4 NAPs), risk management (3 NAPs) and risk reduction (2 NAPs) (see Figure 23).

Eleven countries mentioned early warning systems as a tool/approach/intervention for addressing adaptation actions of which L&D is a part. Other tools included insurance (7 NAPs), disaster risk reduction (6 NAPs), research to estimate L&D (3 NAPs), and humanitarian response and forecast-based finance (2 NAPs) (see Figure 24).

Funding support for loss and damage

NAPs for Cambodia, Central African Republic and Nepal mention L&D and also propose actions to address it. Countries such as Madagascar and Sierra Leone propose actions and budgets for L&D but do so under the DDR or adaptation action category without directly mentioning L&D. Many NAPs do not mention any budget for L&D. Most countries that mention budgets have committed to spending 40% of total budgeted funds from their own national resources.

Figure 22. Action categories mentioned in NAPs of LDCs

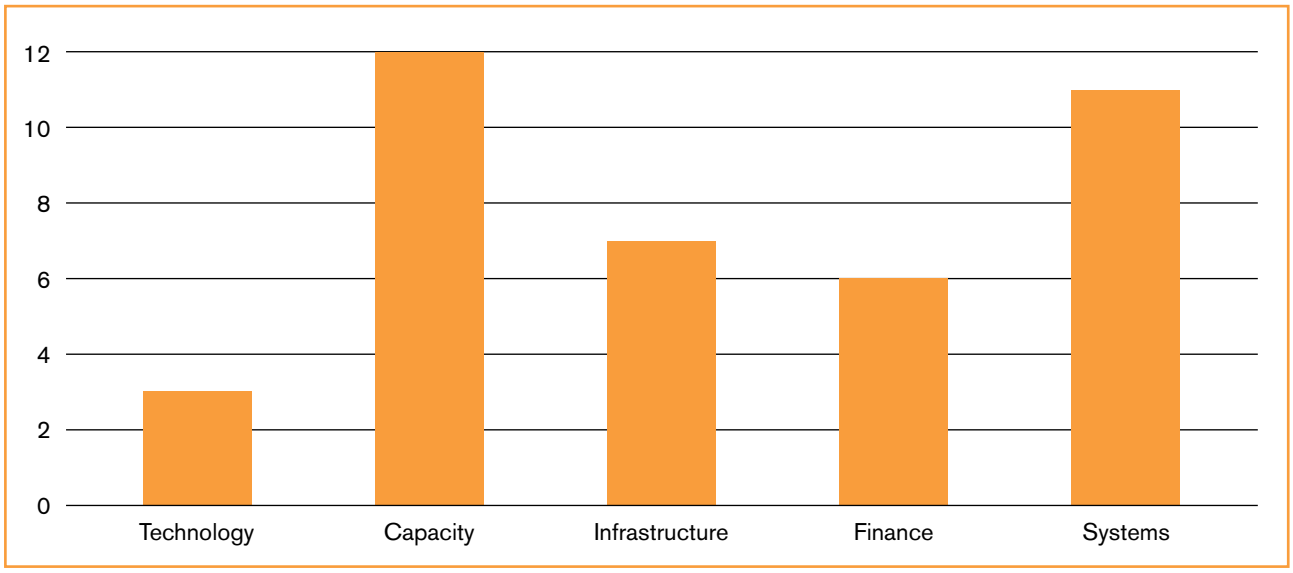


Figure 23. Tool categories mentioned in the NAPs of LDCs

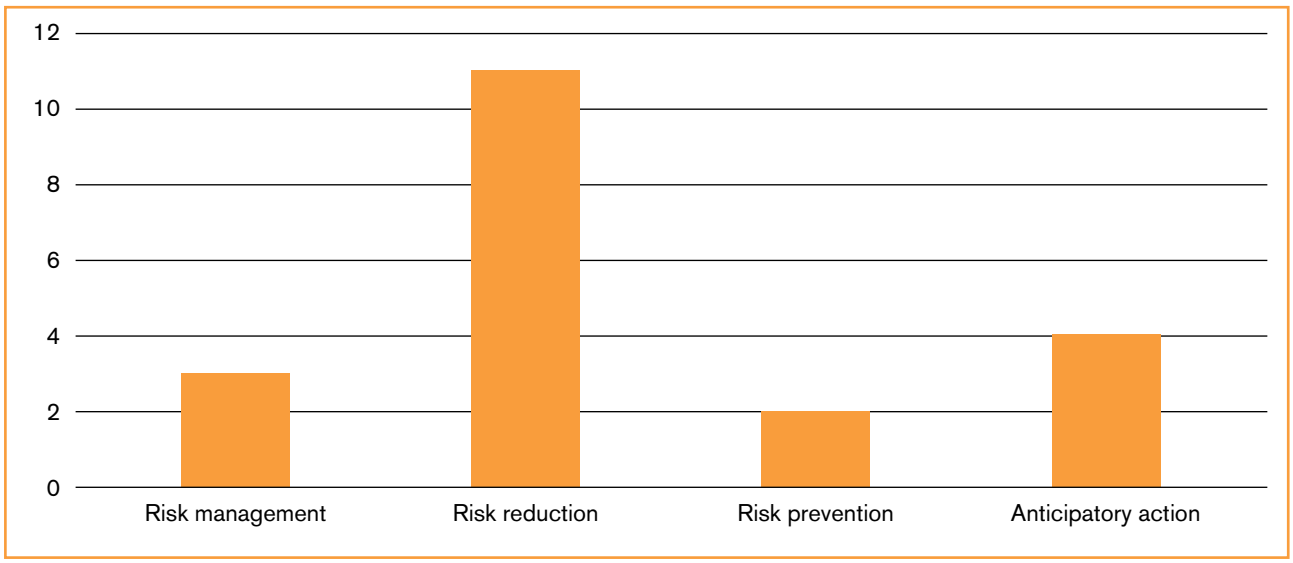
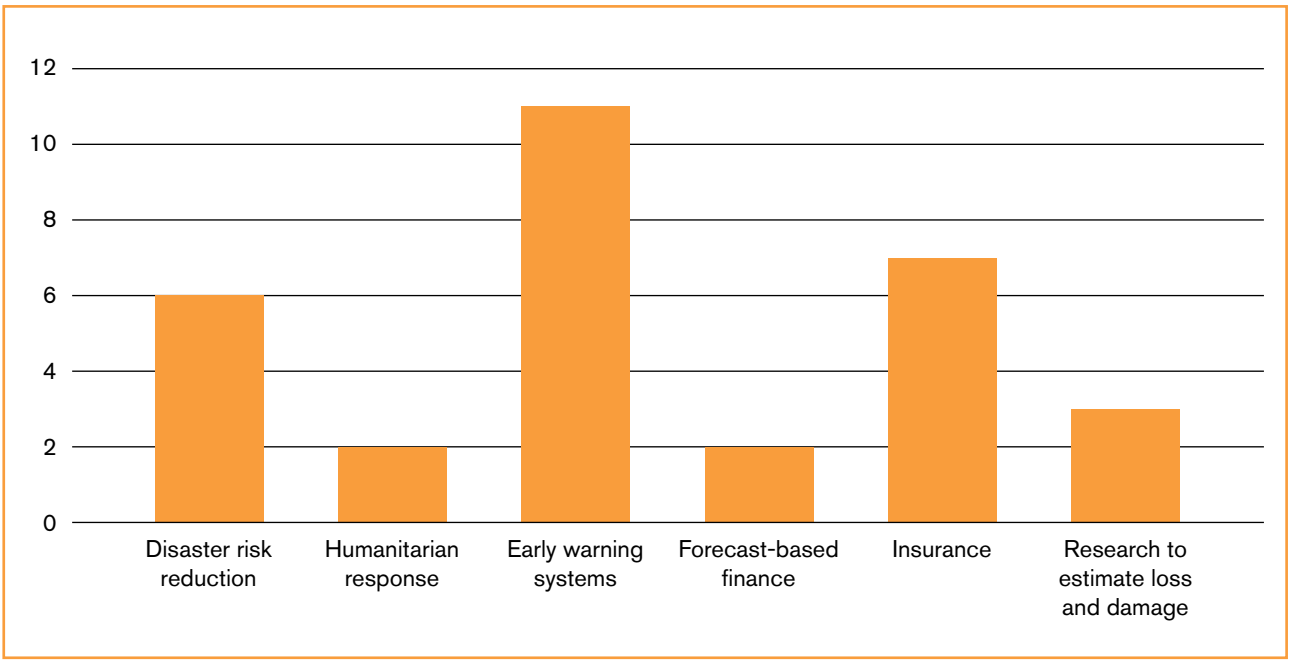


Figure 24. Tools and approaches for addressing loss and damage



Responding to loss and damage in NDCs

3

This section recommends three overarching strategies for LDCs to respond to L&D in their NDCs. They should define L&D in a national context, present a multidimensional risk and vulnerability assessment, and present responses and support needed for managing L&D. In this way, they can raise the profile of L&D and build a case for more finance. These recommendations have been drawn from the series of five deliberative dialogues organised by IIED before and after COP26 with a range of stakeholders from LDCs, NGOs, civil society and academics. These deliberative dialogues were used to co-create solutions to some of the critical questions facing L&D discourse such as: (i) where and what type of action and support is needed; (ii) what works and in which contexts; and (iii) how such action and support can be delivered and financed.

Recommendations

The review of NDCs and NAPs shows that updated NDCs increasingly included elements for addressing L&D. But they also shy away from defining L&D. Instead, they present the range of vulnerabilities and impacts associated with L&D or elaborate on financing needs for managing it.

The review also shows elaboration of adaptation actions. But L&D does not get the same level of priority in climate action plans. There is limited evidence and information in these documents to help LDCs build a stronger case for more support and finance to address L&D.

We make the following recommendations for revision of NDCs before the next COP:

1. Define loss and damage in national contexts

L&D impacts are caused by a wide range of hazards. These range from extreme weather events such as flooding, droughts or cyclones, to long-range slow-onset events such as sea-level rise, salination, desertification and glacier loss. LDCs need to define L&D as they experience it in their NDCs and NAPs. We recommend the following

Develop a framework for identifying climatic events causing L&D now and in future. Events leading to L&D could be identified in many ways — from a single unprecedented event or as the culmination of consecutive risks. The unprecedented event could be interpreted as:

- Impacts of the same type and magnitude but more frequent than before. For example, the Caribbean faced three category-5 hurricanes in 2017. This was unprecedented, causing tremendous damage.[10]
- Impacts of similar types of climate events but of higher magnitude (intensity). For example, Hurricane Dorian in the Bahamas was one of many events that did serious damage in 2019.
- New types of impacts causing L&D. For example, the Caribbean is experiencing droughts, which it has not faced in the past.[10]

Responses to such unprecedented events are beyond both national budgets and knowledge, skills and capacity. This leads to L&D. Such a framing can provide a more rational basis to incorporate L&D risks in NDCs.

Present the economic and non-economic impacts of L&D. L&D impacts are highly varied. Some can encompass economic impacts that can be readily quantified, such as damage to infrastructure, loss of land value and reduced productivity. Other impacts cannot be monetised, such as loss of biodiversity, cultural heritage or identity.

L&D impacts will also manifest differently for different people (women, children, disabled people, Indigenous Peoples and so on), regions (small islands, land-locked areas, coastal regions) and countries (different fiscal capacities, political structures, infrastructure, institutions). Thus, NDCs will need to capture who are or will be affected, how and in what ways. This can help design responses that address specific vulnerabilities of regions, communities and households that are most at risk. To do this, NDCs should:

- Illustrate the L&D impacts caused by a wide range of hazards — from rapid-onset events (flood, cyclone and other extreme weather) to slow-onset events (sea-level rise, salination, desertification, glacier loss, coastal erosion and biodiversity loss).
- Explain the various L&D impacts of climate hazards on the lives, living conditions and livelihoods of the most vulnerable people and on the ecosystems and infrastructure they depend on (and how different groups experience the impacts differently). This would encompass quantifiable economic impacts such as damage to infrastructure, loss of land value and reduced productivity. But it would also include impacts that cannot be expressed in monetary terms such as loss of biodiversity, cultural heritage or identity; loss of access to basic services and institutions; population displacement or migration; and loss of customs and places of rituals.

Integrate secondary and tertiary impacts into L&D framing. L&D goes beyond causing loss of livelihoods, assets and infrastructure to generate far-reaching impacts on mental health and wellbeing. By damaging the social structure, L&D is exposing women, girls and disabled people to exploitation, slavery and trafficking.[16]

In Barbados, for example, people with no means to protect themselves are suffering mental trauma and anxiety due to incessant rains. In Senegal, many young people are dying on their attempts to migrate to Europe.[17] These impacts need to be adequately captured and quantified.

The above approach to defining L&D will allow LDCs to present existing and likely impacts of L&D, and to identify affected groups. This will help justify responses to address the specific vulnerabilities of the countries, regions, communities and households at risk.

2. Present a multidimensional risk and vulnerability assessment

LDCs and SIDS face social, environmental, institutional, infrastructural and economic development deficits that are more complex than for other developing and developed countries. Climate change is a stress multiplier that compounds these deficits, making it difficult for these countries to anticipate, respond to and recover from climate impacts resulting in L&D. We identify three ways to capture these factors appropriately in the NDCs:

Present a multidimensional vulnerability and risk assessment to show the range of factors that L&D management should address. Understanding the multifaceted nature of vulnerability and exposure is critical for several reasons. First, it is a prerequisite for determining how weather and climate events contribute to disasters. Second, such knowledge is needed to design and implement effective adaptation and disaster risk management strategies.[18]

As climate change hazards are becoming more frequent and intense, some countries may be more vulnerable. With their relatively weaker economies, LDCs are unable to respond quickly to climate impacts. They also lack capacity to anticipate action that can protect lives and livelihoods.

It normally takes many years for such countries to recover from an extreme event. As the intensity and frequency of extreme events keeps increasing, they are more exposed every year. Each time, their response creates more debt, undermining capacity for the next crisis. They thus become trapped in an unsustainable cycle. Stuck in perpetual recovery mode, LDCs struggle to focus on long-term solutions. Issues such as severe biodiversity loss, rising sea levels and loss of habitats may already be irreversible.

Poorer and marginalised groups dependent on natural resources such as fishing and agriculture may be most affected by L&D. Yet these are the very communities with the least capacity to cope. Fishing communities, for example, lose their livelihood resource base and cannot adapt as quickly to changing conditions. Similarly, as climate change affects agricultural yields and productivity, it will increase food prices. This, in turn, can increase poverty in LDCs. For example, in Malawi, households spend on average 63% of their income on food and beverages.[19] Even a small increase in food price can throw them into deeper poverty. In countries such as Bangladesh, Nepal and Bhutan, climate impacts are expected to force the 'near poor' back into poverty. Exposure to cyclones, floods and other extreme events, for example, will lead to health shocks because of increased diarrhoeal diseases and displacements.

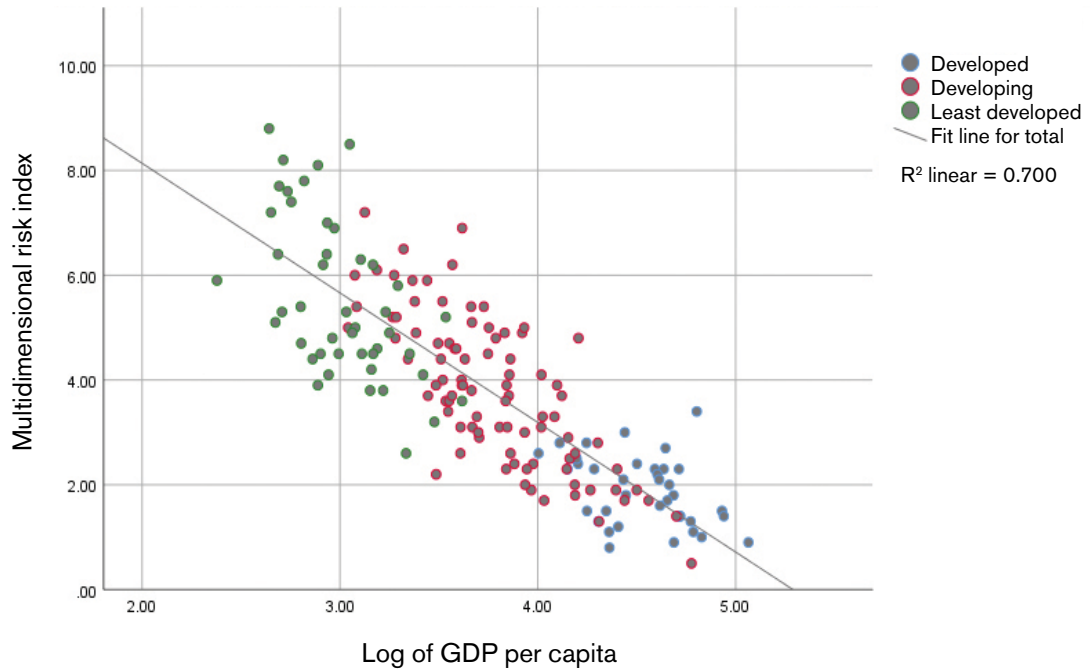
Similarly, certain communities, social groups and Indigenous Peoples may be at a higher risk of adverse consequences of climate impacts. Factors such as poverty, marginalisation and lack of access to essential services may limit their capacity to cope with climate impacts, amplifying the impact of L&D.

Figure 25 presents multidimensional risks of LDCs, developing and developed countries. It shows how these risks and vulnerabilities increase with the reduction of GDP per capita. This, in turn, makes LDCs more vulnerable. The graph includes data on a range of indicators covering environmental, social, economic, institutional and infrastructural dimensions. It covers 173 countries — 46 LDCs, 90 developing countries and 37 developed countries. The data source for developing the graph is presented in Table 22 in Annex 2.

LDCs need to unpack multidimensional risks, highlighting how L&D impacts compound other risks such as poverty, health, marginalisation, conflict and so on. They must also show how these impacts and risks are experienced by different communities (women, children, disabled people, Indigenous Peoples and other marginalised groups) and regions (small islands, land-locked areas and coastal regions).

This will require LDCs to collate bottom-up evidence on different multidimensional risks impacting different regions and communities. This evidence must then be layered with other indicators such as fiscal capacity, economic health and state of infrastructure. In this way, LDCs can present a holistic multidimensional risk assessment.

Figure 25. Multidimensional risks of LDCs, developing and developed countries with respect to per capita GDP



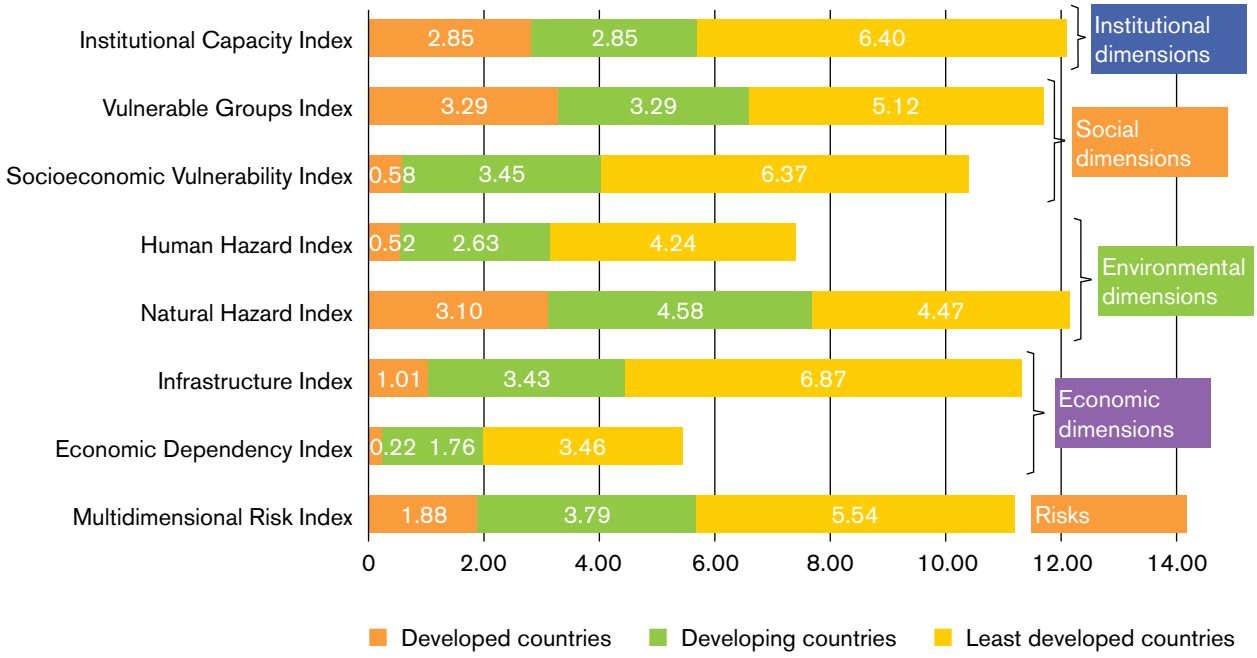
Make the case for finance and technical assistance through multidimensional vulnerability and risk assessment. The Glasgow Dialogue provides an opportunity for LDCs to demand an adequate and additional finance fit for their context, as well as a suitable delivery mechanism for L&D. A multidimensional risk and vulnerability assessment will allow LDCs to use the data to position themselves more strongly. In this way, they can present a solid case to access grant and concessional finance, as well as technical assistance.

Figure 26 uses a range of indicators to calculate multidimensional risks of LDCs compared to developing and developed countries. By analysing relative risk, it depicts how LDCs are more vulnerable than developing and developed countries, building the case for urgent support. The analysis was done using the INFORM 2022 database[20] for 173 countries (46 LDCs, 90 developing countries and 37 developed countries). It assessed multidimensional risk by aggregating 54 core indicators across natural, human, socioeconomic, vulnerable groups, institutional and infrastructure categories presented in Table 22 in Annex 2. These indicators envisage three dimensions of risk: hazards and exposure, vulnerability and lack of coping capacity.

The selection of indicators illustrates the type and range of factors that LDCs can consider in their risk and vulnerability assessments based on issues that matter to them. Such an analysis can also help LDCs to highlight context-specific vulnerabilities on which they need support and finance. These might include access to infrastructure; technology in areas like early warning; capacity building to strengthen institutions and delivery mechanisms in response to climate crises; finance based on fiscal capacity to withstand recurring climatic impacts; and enhanced support for particular geographies and communities exposed to hazards. Reflecting these needs in the NDC will enable LDCs to demand a wider package of financial, technical and capability building support to deal with L&D.

Incorporate risk assessment for a range of future hazards. The changing nature of hazards and their increasing intensity or frequency is leading to L&D. LDCs need to use climate science and available climate modelling outputs well, while expressing their future risks due to L&D. Climate models normally show the likely increase in climate impacts (such as temperature or precipitation) associated with a given increase in atmospheric CO_2. The distribution of future climate impacts and their associated damages, from both slow-onset and extreme weather events, is generally shown

Figure 26. Multidimensional risks of LDCs compared to developing and developed countries on a range of parameters like institutional, social, environmental and economic dimensions



as averages. High-probability events, for example, tend to appear as a huge peak on a graph. Conversely, rare events with potentially disastrous effects appear with low probability.

Even with relatively low probability, the outcomes of rare events can be catastrophic and cause L&D. Thus, countries must highlight the risk of these events in the NDC and consider them in planning. To do this, countries must change how they consider climate modelling outputs. Taking an average of different global climate models is common practice, but this produces different results. Averaging all the results obscures the range of likely impacts and the range of less likely, more catastrophic events — the ones that usually cause L&D.

The way future climate risks are presented and used in planning of responses in NDCs needs to be improved. For example, analysis could use ranges rather than averages. It could also consider a range of possible futures, including even the low-probability extreme events. Approaches to 'uncertain' events should build in flexibility and redundancy. In this way, responses can be relevant and 'fit for purpose' for a range of possible future events.

3. Present responses and support needed for managing L&D

LDCs could illustrate existing coping and adaptation measures — both traditional and innovative — and how these can help tackle L&D risks. They might also highlight the gaps and challenges in response measures and indicate what is needed to help communities to prepare, cope and recover from L&D. Finally, priorities for action on L&D can be set out at local and national levels to show how they fill these gaps. LDCs could share solutions, and collaborate on accessing the finance and technical assistance needed. To achieve this, LDCs can do the following in their NDCs:

Explain how they are managing risks. In the absence of external support, many LDCs are developing their own mechanisms for L&D. Many communities are already trying out local and traditional coping mechanisms for survival. These fall into four broad areas:

- Taking ex-ante action to prevent risks before events occur (such as early warning systems, local risk-based atlas and risk-informed early action)

- Developing an emergency response to minimise impacts during a climate event (such as moving livestock to higher ground during floods, or taking communities to shelters during cyclones)
- Addressing reversible impacts (such as rapid humanitarian response after events to support recovery and rehabilitation) and irreversible impacts (such as planned relocation and rehabilitation in places exposed to sea-level rise)
- Adopting transformative measures (such as pre-defined dynamic approaches for crisis response) and enabling timely action as needed (such as forecast-based finance).

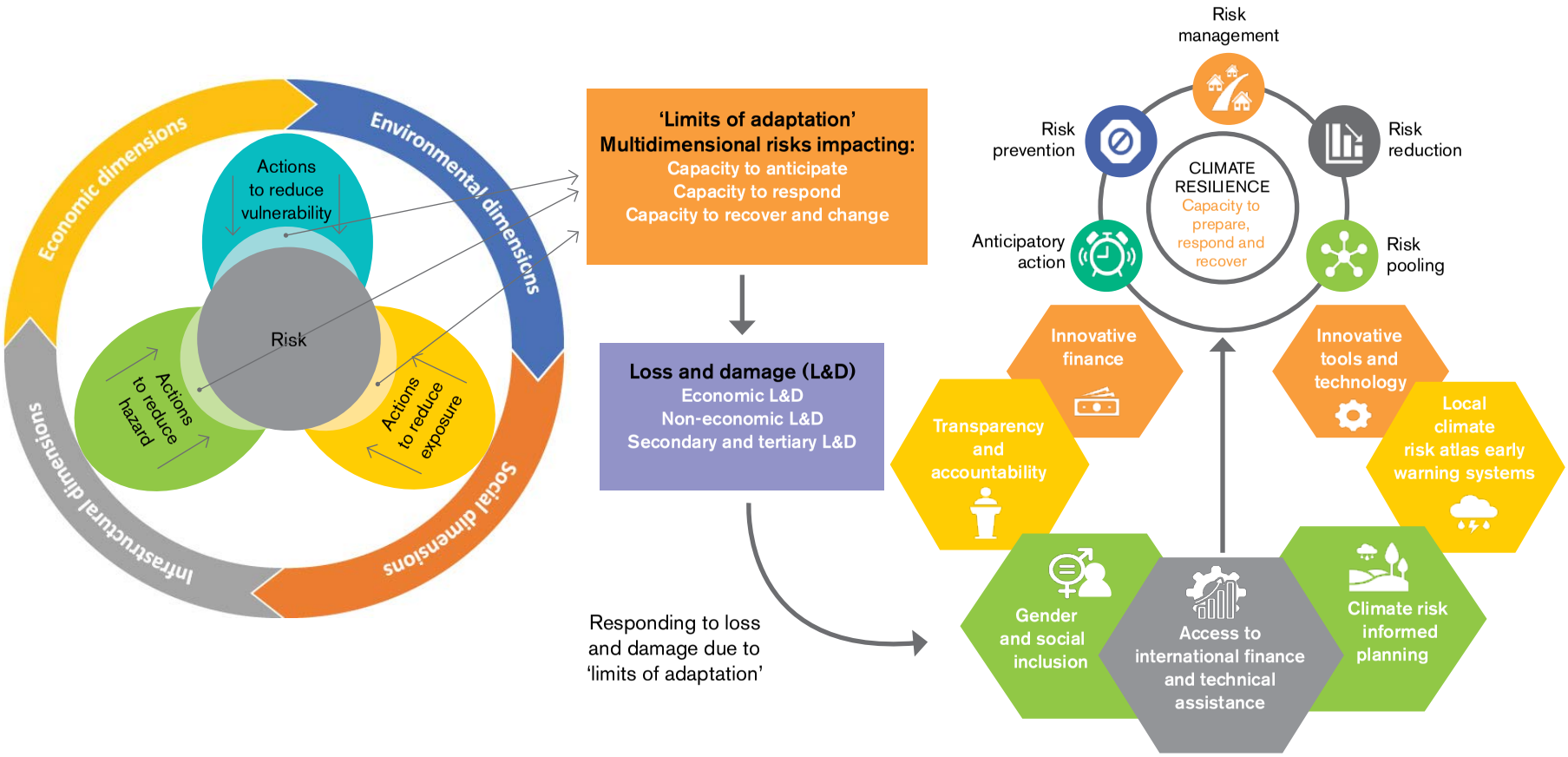
LDCs will have greater influence if they speak with one voice at the Glasgow Dialogues and SNLD discussions about the effectiveness of these approaches in addressing different types of L&D risks. They could identify which approaches and practices are (or might be) most effective in tackling L&D risk in a given context. This evidence can both support thinking about the design of L&D support and enable deeper understanding of the available options at climate negotiations.

Highlight gaps, and where support (technology, finance and capacity) is needed. L&D impacts are dynamic. As the need for adaptation grows, L&D efforts will also need to be rapidly ramped up. Yet many countries cannot keep pace with L&D from slow-onset or extreme weather events. Trinidad and Tobago, for example, has permanently lost beaches and sandy cliffs. Moreover, the vulnerability profiles of local groups have changed because they can no longer pursue traditional livelihoods.[21] LDCs need to identify the right set of tools to assess the nature of L&D in different contexts and present ways of responding to them. The response mechanism of LDCs could include:

- **Estimates of costs for managing different risks.** NDCs could outline how much national finance is already allocated to managing L&D and how much external/international finance will be needed.
- **Delivery mechanisms.** LDCs could propose mechanisms that deliver resources that reach the most vulnerable geographies and communities in time for both rapid- and slow-onset events. These will include anticipatory action, humanitarian support, rehabilitation and recovery support, and so on. Climate finance will be needed to strengthen existing institutional and governance mechanisms and create new ones. In this way, finance, technology and capacity-building support can reach the local level in time. Such support systems should move from responding to frequent disasters to anticipating them.
- **Integrating risk into national planning processes.** LDCs must show how they are integrating risk assessment into national planning. They should integrate climate change (risks/impacts) into all of their country's development goals and plans, and national strategic development goals. These should be collated and presented in the NDC as national climate goals.
- **Gender and intersectionality.** NDCs should analyse the secondary and tertiary impacts of L&D on marginalised and vulnerable groups, including women, children and disabled people. These impacts should be presented within the context of eroding gains of Sustainable Development Goals (SDGs). For example, floods can lead to loss of livelihoods and increased stress. This, in turn, can increase alcohol consumption and lead to more domestic violence. In this way, L&D can undermine gains to combat violence against women and children (SDG 5 Gender equality). Similarly, L&D can undermine gains towards mental health (SDG 3 Good health and wellbeing). Climate impacts, for example, can increase grief, anxiety and lack of hope for the future. These issues require different support depending on the context and should be incorporated into planning and response mechanisms.

Figure 27 summarises the approach for analysing and presenting L&D in NDCs. Such a framework will enable LDCs to adopt a more holistic approach to their range of vulnerabilities. It will allow them to show how they are failing to address certain climatic impacts due to limits of adaptations. It will also show the economic and non-economic impacts of L&D from these gaps. The countries will also be able to highlight what is needed to address the gaps, what they are already doing and what additional support is needed to create a resilient society.

Figure 27. Framework for analysing and presenting L&D in NDCs



Looking forward

NDCs are, and will continue to be, a useful tool for enhancing climate priorities and ambition over time. L&D has already been recognised as the third pillar of climate action within the Paris Agreement alongside adaptation and mitigation. It should therefore be included in NDCs with the same level of prominence.

LDCs must present L&D more effectively in updated NDC submissions to build a stronger case for supporting a climate-resilient society.

NDCs are a potentially important political tool at both national and global levels. At home, in view of rising L&D impacts, NDCs should annotate the need for appropriate finance and technical assistance to address L&D. In international forums such as the Glasgow Dialogue and SNLD, NDCs could provide evidence on policies and measures needed to drive climate actions on L&D; overcome structural and external vulnerabilities; and build resilience to withstand current and future shocks.

Related reading

Bharadwaj, R and Shakya, C (2021) Loss and damage case studies from the frontline: a resource to support practice and policy. IIED, London. https://pubs.iied.org/20551iied

Bharadwaj, R, Gallagher, C, Carthy, A, Nisi, N, Shakya, C and Addison, S (2021) Climate change loss and damage: 1st deliberative dialogue report. IIED, London. https://pubs.iied.org/20346iied

Bharadwaj, R, Nisi, N, Gallagher, C, Carthy, A, Addison, S and Shakya, C (2021) Climate change loss and damage: 2nd deliberative dialogue report. IIED, London. https://pubs.iied.org/20391iied

Bharadwaj, R, Carthy, A, Nisi, N, Gallagher, C, Addison, S and Shakya, C (2021) Climate change loss and damage: 3rd deliberative dialogue report. IIED, London. https://pubs.iied.org/20476iied

Bharadwaj, R, Gallagher, C, Carthy, A, Nisi, N, Addison, S and Shakya, C (2021) Climate change loss and damage: 4th deliberative dialogue report. IIED, London. https://pubs.iied.org/20586iied

Addison, S, Bharadwaj, R and Carthy, A (2021) Tackling loss and damage: lessons from vulnerable countries. IIED, London. https://pubs.iied.org/20546iied

Bharadwaj, R, Chakravarti, D, Karthikeyan, N, Hazra, S, Daniel, U, Topno, J and Abhilashi, R (2022). Climate change, migration and vulnerability to trafficking. IIED, London. https://pubs.iied.org/20936iied

Bharadwaj, R (2022) Social protection to enhance climate resilience: what works where? IIED, London. https://pubs.iied.org/20821iied

Addison, S, Bharadwaj, R, Carthy, A, Gallagher, C, More, C, Nisi, N and Shakya, C (2022) Addressing loss and damage. Practical insights for tackling multidimensional risks in LDCs and SIDS. IIED, London. http://pubs.iied.org/21046IIED

Annexes

Annex 1. Data tables on NDC and NAP review

1. Data tables for NDC review

Table 3. Updated NDC versions submitted to UNFCCC

YEAR	ENGLISH			FRENCH		FRENCH AND ENGLISH (TRANSLATION)	GRAND TOTAL
	FIRST EDITION	FIRST UPDATED EDITION	SECOND EDITION	FIRST EDITION	FIRST UPDATED EDITION	FIRST EDITION	
2015	1						1
2016	3					2	5
2017	1						1
2018	2						2
2020		2	1	1			4
2021		17	3		11		31
2022					2		2
Grand total	7	19	4	1	13	2	46

Table 4. Mention of loss and damage in NDCs

MENTION OF LOSS AND DAMAGE IN THE NDC	NO. OF NDCS
No	35
Yes	10
Data could not be accessed	1
Grand total	46

Table 5. NDCs that mention vulnerable geographic areas

MENTION OF VULNERABLE GEOGRAPHIC AREAS	NO. OF COUNTRIES	PERCENTAGE
Countries reported	37	81
Countries not reported	8	17
Data could not be accessed	1	2
Total for data	46	100

Table 6. Geographic areas considered vulnerable to climate change

AREAS CONSIDERED VULNERABLE TO CLIMATE CHANGE	NO. OF COUNTRIES (MULTIPLE RESPONSES)	PERCENTAGE OF CATEGORY TO TOTAL NDCS REPORTING (37 NDCS)
Coastal regions	22	59.46
Rural regions	13	35.14
River basins	6	16.22
Forests	5	13.51
Highlands and mountain regions	4	10.81
Urban regions	4	10.81
Islands and low-lying lands	3	8.11
Savannah regions	1	2.70
Delta regions	1	2.70
Valleys and plains	1	2.70
Plateaus	1	2.70

Table 7. Scale of impact mentioned in NDCs

SCALE OF IMPACT	NO. OF COUNTRIES	PERCENTAGE OF TOTAL
Countries not reported	26	56.52
Countries reported	19	41.30
Data could not be accessed	1	2.17
Total	46	100.00

Table 8. Vulnerable communities mentioned in NDCs

CATEGORY OF VULNERABLE COMMUNITIES	NO. OF NDCS	PERCENTAGE OF CATEGORY TO TOTAL NDCS REPORTING DATA (45 NDCS)
Farmers	39	86.67
Rural poor	28	62.22
Coastal populations	24	53.33
Women	22	48.89
Urban poor	15	33.33
Children	9	20.00
Elderly people	3	6.67
People living in mountain regions	2	4.44
Disabled people	2	4.44
People living in river basins	2	4.44
Displaced people	1	2.22
Adolescents and young people	1	2.22
People living near forests	1	2.22
People living in low-lying areas	1	2.22

Table 9. Impact/hazards reported in NDCs

CATEGORY OF HAZARD/IMPACT	NO. OF NDCS
Drought	32
Floods	26
Reduction in agricultural and livestock yield	20
Water scarcity	16
Food and nutritional insecurity	14
Wind storms	14
Damage to infrastructure	12
Loss of biodiversity	12
Sea-level rise	11
Pest-borne diseases to human beings	11
Salinisation	9
Erosion of land	9
Loss of lives	7
Degradation of land and desertification	7
Landslides	6
Increased precipitation	6
Deforestation	7
Cyclones/typhoons/hurricanes	5
Forest fires	5
Reduced fish catch	5
Increased pests and weeds in agriculture	4
Disaster displacement	3
Disappearance of wetlands	3
Flash floods	3
Social and political instability	3
Slow-onset events	3
Temperature rise	3
Heat waves	3
Glacier outbreak	2
Other diseases to human beings	1
Diseases to livestock animals	1
Loss of islands	1
Disruption of public services	1
Migration	1
Silting of rivers	1
River flow reduction	1
Snow fall	1

Table 10. Actions mentioned in NDCs to address loss and damage

ACTIONS MENTIONED	NO. OF NDCS (MULTIPLE RESPONSES)	PERCENTAGE OF NDCS REPORTING
Capacity	30	78.95
Systems	26	68.42
Technology	26	68.42
Infrastructure	21	55.26
Finance	14	36.84
Land, water and biodiversity conservation	7	18.42
Total NDCs	38	100.00

Table 11. Risk category reported in NDCs

RISK CATEGORY	NO. OF NDCS (MULTIPLE RESPONSES)	PERCENTAGE
Risk reduction	36	97
Anticipatory action	14	38
Risk management	5	14
Risk prevention	2	5
Total countries	37	100

Table 12. Types of tools/approaches/interventions

TYPES OF TOOLS	NO. OF COUNTRIES	PERCENTAGE
Early warning system	31	83.78
Disaster risk reduction	22	59.46
Delivery mechanisms	19	51.35
Insurance	14	37.84
Research to estimate loss and damage	14	37.84
Forecast-based finance	6	16.22
Social protection	4	10.81
Total countries	37	100.00

Table 13. Countries reporting on funding requirement for L&D

FUNDING ON LOSS AND DAMAGE	NO. OF COUNTRIES	PERCENTAGE
Funding not mentioned for L&D	36	78.26
Funding reported for L&D actions but under adaptation action	8	17.39
Funding provisions explicitly for L&D	1	2.17
Data could not be accessed	1	2.17
Total	46	100.00

2. Data tables for NAP review

Table 14. NAP submitted to UNFCCC by LDCs

NAP SUBMITTED TO UNFCCC	NUMBER OF COUNTRIES	PERCENTAGE
Yes	14	30.43
No	32	69.57
Total	46	100.00

Table 15. Year of submission of NAP to UNFCCC

YEAR OF SUBMISSION	COUNTRY
2015	Burkina Faso
2016	Sudan
2018	Togo
2019	Ethiopia
2020	Kiribati
2021	Cambodia, Liberia, Nepal, South Sudan, Timor-Leste
2022	Central African Republic, Chad, Madagascar, Sierra Leone

Table 16. Mention of loss and damage in the NAP

MENTION OF LOSS AND DAMAGE IN NAP	NOT MENTIONED
Cambodia	Burkina Faso
Central African Republic	Chad
Kiribati	Ethiopia
Nepal	Liberia
Timor-Leste	Madagascar
	Sierra Leone
	South Sudan
	Sudan
	Togo

Table 17. Vulnerable areas mentioned in NAPs

VULNERABLE AREA	NO. OF NAPS
Coastal regions	5
Urban regions	2
Valleys and plains	2
Rural regions	2
Highlands and mountain regions	1
River basins	1
Islands and low-lying lands	1

Table 18. Mention of scale of impact in NAPs

MENTION OF SCALE OF IMPACT	NO. OF NAPS
Countries reported	8
Countries not reported	6

Table 19. Mention of vulnerable groups in NAPs

VULNERABLE COMMUNITY GROUPS	MENTION IN NAPS	PERCENTAGE
Women	12	85.71
Farmers	8	57.14
Coastal population	6	42.86
Youth/young persons	4	28.57
Children	4	28.57
Disabled persons	4	28.57
Indigenous Peoples	3	21.43
Displaced population	3	21.43
Rural poor/population	3	21.43
Elderly	3	21.43
Fishing communities	2	14.29
Urban poor	1	7.14
Minorities	1	7.14
Landless	1	7.14

Table 20. Action categories for addressing L&D in NAPs of LDCs

ACTIONS	NO. OF NAPS	PERCENTAGE
Capacity	12	85.71
Systems	11	78.57
Infrastructure	7	50.00
Finance	6	42.86
Technology	3	21.43

Table 21. Action and approaches/categories for addressing L&D in NAPs of LDCs

RISK MITIGATING CATEGORY	NO. OF NAPS	PERCENTAGE
Early warning systems	11	78.57
Insurance	7	50.00
Disaster risk reduction strategies	6	42.86
Research to estimate loss and damage	3	21.43
Humanitarian responses	2	14.29
Forecast-based finance	2	14.29

Annex 2. Approach and methodology for multidimensional risk assessment

A regression analysis was done to understand how the economic status of the countries affects the multidimensional risks of the countries. The regression model employed in the analysis is as follows:

$$Y = \alpha + \beta \log(X) + \varepsilon$$

Where

Y = Multidimensional risk index
α = Intercept
β = Regression coefficient
X = GDP per capita of the countries
ε = Error

This model attempts to assess the association between country-level multidimensional risks (represented by INFORM Risk Index – Y) and the per capita gross domestic product of the countries (X). The countries for which published data on the model variables was available were considered for the analysis. As many as 173 countries were taken into account (N = 173).

Results of running the regression model are presented below:

$$\mathbf{Y = 13.106^{*} - 2.478 \log(X)^{*} + \varepsilon}$$

*significant value at 1% level of significance

For this model, the **F value is 395.969 and is statistically significant** (sig.000). As a result, the model is fit. The independent variables in the model explain **more than 50% of the variation in the dependent variable (R^2 = 0.698)**, which is good indicator of model fit. The intercept value is statistically significant.

A **negative relationship** between X and Y and **statistical significance** (sig.000) exist between income status (GDP-PC) and multidimensional risk index. The negative relation between GDP per capita and the risk index suggests that low-income countries are more likely to be exposed to multidimensional risks and vice versa.

The climate-related risk is represented by INFORM Risk Index in this model. In the absence of a global-level metric to evaluate the effectiveness of social assistance programmes on vulnerabilities caused by climate change, the vulnerability score calculated using the data of the INFORM Report (2022) will be helpful to examine the relationship between the social assistance instruments and vulnerabilities.

The score is a composite value of Human Development Index (HDI), Multidimensional Poverty Index (MPI), Gender Inequality Index (GII) and Gini Index (GI). These indices represent the outcomes produced by a combination of several factors, and investment on social assistance is only a part of those factors. Hence, interpretation and generalisation of the results should be dealt with using caution. However, the model results reveal how consistent the independent variables, particularly spending on social assistance programmes, are in explaining the variation in vulnerability (dependent variable).

The econometric analysis was done using the IBM SPSS 25 software programme.

Predicted values of multidimensional risk index were calculated based on the above regression model. The estimated multidimensional risk index values were further analysed by cross cutting the degree of multidimensional risk index of the countries.

Low risk (0–3.4): Among 69 countries listed under this category, 37 were developed countries and 32 were developing countries. None of the least developed countries figured in this category.

Medium risk (3.5–4.9): As many as 60 countries were listed under this category, of which 52 were developing countries and eight were least developed countries. None of the developed countries were listed in this category.

High risk (5 and above): This category included 44 countries and the majority in the list (38) were least developed countries and only six were developing countries. None of the developed countries were listed in this category.

Table 22. Indicators covered in the multidimensional vulnerability assessment

COMPOSITE INDICATOR	PARAMETERS COVERED
Institutional Capacity Index	Corruption Perception Index and Governance Effectiveness Index
Vulnerable Groups Index	Uprooted people, people living with HIV/AIDS, incidence of communicable diseases, child mortality rate, people affected by disasters and food availability score
Socioeconomic Vulnerability Index	Human Development Index, Multidimensional Poverty Index, Gender Inequality Index and Income Gini Index
Human Hazard Index	National power conflict intensity and subnational conflict intensity
Natural Hazard Index	Physical hazards to natural disasters, droughts probability, and historical impact and exposure to epidemics
Infrastructure Index	Communication facilities, physical connectivity and Access to Healthcare Index
Economic Dependency Index	Public aid per capita, net Overseas Development Assistance received and volume of remittances

Data sources for the indicators:

- European Commission, INFORM Report 2022 database. https://drmkc.jrc.ec.europa.eu/inform-index
- UNCTAD (2021) The Least Developed Countries Report 2021. https://unctad.org/webflyer/least-developed-countries-report-2021.

Highest and least risk countries based on the regression analysis

Top highest and least risk countries, based on the results of the regression model, are presented in the following tables.

Table 23. Top five highest risk countries

NO.	COUNTRY	DEVELOPMENT CATEGORY	ESTIMATED MULTIDIMENSIONAL RISK INDEX
1	Burundi	Least Developed	7.21
2	Somalia	Least Developed	6.56
3	Mozambique	Least Developed	6.54
4	Madagascar	Least Developed	6.48
5	Sudan	Least Developed	6.45

Table 24. Top five least risk countries

NO.	COUNTRY	DEVELOPMENT CATEGORY	ESTIMATED MULTIDIMENSIONAL RISK INDEX
1	Luxemburg	Developed	0.56
2	Switzerland	Developed	0.87
3	Ireland	Developed	0.89
4	Norway	Developed	1.14
5	United States of America	Developed	1.21

Endnotes

1 Definition adopted from: Addison, S, Bharadwaj, R and Carthy, A (2021) Tackling loss and damage: lessons from vulnerable countries. IIED, London. https://pubs.iied.org/20546iied. This reference draws on Klein, RJT, Midgley, GF, Preston, BL, Alam, M, Berkhout, FGH, Dow, K and Shaw, MR (2014) Adaptation opportunities, constraints, and limits. In: *Climate Change 2014 impacts, adaptation and vulnerability. Part A: Global and Sectoral Aspects. Contribution of WG II to IPCC AR5*. Cambridge University Press, Cambridge UK and New York, USA.

Climate change loss and damage (L&D) does not have a universally agreed definition. Some countries frame L&D as residual risk when mitigation is insufficient and when the full potential of adaptation is not met. Others frame it as the residual losses and damages after mitigation and adaptation choices have been made. Another relevant concept is that of 'adaptation limits'. According to the Intergovernmental Panel on Climate Change, adaptation limits are reached when adaptation is no longer able to "provide an acceptable level of security from risks to the existing objectives and values and prevent the loss of the key attributes, components or services of ecosystem."

2 The Paris Agreement is a legally binding international treaty on climate change. It was adopted by 196 Parties at COP21 in Paris on 12 December 2015 and entered into force on 4 November 2016. Its goal is to limit global warming to well below 2.0°C, preferably to 1.5°C, compared to pre-industrial levels. The Paris Agreement is a landmark in the multilateral climate change process because, for the first time, a binding agreement brings all nations into a common cause to undertake ambitious efforts to combat climate change and adapt to its effects.

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4 Heinrich Böll Stiftung, Stamp Out Poverty, actionaid, Brot, and Practical Action (2021) Unpacking finance for loss and damage: Why do developing countries need support to address loss and damage? Heinrich Böll Stiftung North, Washington, DC. https://us.boell.org/en/2021/04/06/why-do-developing-countries-need-support-address-loss-and-damage

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7 Buhr, B, Volz, U, Donovan, C, Kling, G, Lo, Yuen C, Murinde, V and Pullin, N (2018) Climate Change and the Cost of Capital in Developing Countries. Imperial College London; SOAS University of London; UN Environment, Geneva.

8 The Climate Vulnerable Forum is an international partnership of countries highly vulnerable to a warming planet. The forum serves as a South–South cooperation platform for participating governments to act together to deal with global climate change. https://thecvf.org/

9 Bharadwaj, R and Shakya, C (2021) Loss and damage case studies from the frontline: A resource to support practice and policy. IIED, London. https://pubs.iied.org/20551iied

10 Bharadwaj, R, Gallagher, C, Carthy, A, Nisi, N, Shakya, C and Addison, S (2021) Climate change loss and damage: 1st deliberative dialogue report. IIED, London. https://pubs.iied.org/20346iied

11 The global stocktake of the Paris Agreement (GST) is a process for taking stock of the implementation of the Paris Agreement with the aim to assess the world's collective progress towards achieving the purpose of the agreement and its long-term goals (Article 14). Decision 19/CMA.1 outlines the modalities and sources of input for the GST. https://unfccc.int/topics/global-stocktake/global-stocktake

12 Kreienkamp, J and Vanhala, L (2017) Climate Change Loss and Damage. Global Governance Institute, Brussels. https://www.ucl.ac.uk/global-governance/sites/global-governance/files/policy-brief-loss-and-damage.pdf

13 UNCTAD, Least Developed Countries List. https://unctad.org/topic/least-developed-countries/list

14 UNFCCC, NDC Registry. https://unfccc.int/NDCREG

15 UNFCCC, Yemen NDC. https://www4.unfccc.int/sites/submissions/INDC/Published%20Documents/Yemen/1/Yemen%20INDC%2021%20Nov.%202015.pdf

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20 European Commission, INFORM Report 2022 database. https://drmkc.jrc.ec.europa.eu/inform-index

21 Bharadwaj, R, Nisi, N, Gallagher, C, Carthy, A, Addison, S and Shakya, C (2021) Climate change loss and damage: 2nd deliberative dialogue report. IIED, London. https://pubs.iied.org/20391iied

Least Developed Countries (LDCs) are facing increasingly devastating impacts of climate change that are leading to loss and damage (L&D). As LDCs revise their climate action plans known as Nationally Determined Contributions (NDCs), they should provide concrete evidence about L&D. This can help LDCs make the case for additional climate finance, technology and capacity-building support needed by them to tackle L&D. This paper analyses how LDCs are currently reporting loss and damage in their NDCs and National Adaptation Plans, identifies gaps or issues in coverage, and suggests a framework for addressing these gaps.

Knowledge Products