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Loss and Damage Beyond Economics:

Exploring Health as a Non-Economic Loss in National Climate Planning

A Global Stocktake of National Climate Policies

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List of Abbreviations

ELD	Economic Loss and Damage
FRLD	Fund for Responding to Loss and Damage
HNAP	Health National Adaptation Plan
IPCC	Intergovernmental Panel on Climate Change
L&D	Loss and Damage
MHPSS	Mental Health and Psychosocial Support
NAP	National Adaptation Plan
NDC	Nationally Determined Contribution
NELs	Non-Economic Losses
NELD	Non-Economic Loss and Damage
PTSD	Post-Traumatic Stress Disorder
SIDS	Small Island Developing States
QALYs	Quality-Adjusted Life Years
UNDRR	United Nations Office for Disaster Risk Reduction
UNFCCC	United Nations Framework Convention on Climate Change
VSL	Value of a Statistical Life
WASH	Water, Sanitation and Hygiene
WHO	World Health Organization
WIM	Warsaw International Mechanism

Executive Summary

This report presents a global stocktake of how health-related L&D is reflected in national climate policy instruments, including Nationally Determined Contributions (NDCs), National Adaptation Plans (NAPs), and Health National Adaptation Plans (HNAPs). Based on an analysis of 123 national documents, it provides a systematic assessment of how health is integrated across three domains: physical health, mental health, and health systems and services.

The findings indicate that health is now more prominently positioned as a critical dimension of climate-related L&D. However, integration remains uneven across policy instruments. However, integration remains uneven across policy instruments. HNAPs demonstrate the most comprehensive coverage, followed by NAPs, while NDCs, despite their central role in shaping international climate commitments, show limited inclusion. This divergence has implications for how health is prioritised within global climate governance, including financing, implementation, and accountability processes.

Across all documents, physical health is the most consistently addressed domain, with countries frequently identifying climate-sensitive risks such as infectious diseases, heat-related illness, malnutrition, and injury and mortality associated with extreme events. However, these impacts are often described in general terms and are not consistently linked to specific L&D mechanisms, implementation pathways, or recovery planning.

Mental health is increasingly recognised but remains less systematically integrated. References are often limited and concentrated in specific contexts, particularly in relation to disasters, displacement, cultural loss, and chronic climate stressors. While these impacts highlight the importance of mental health as a component of NELs, they are rarely supported by detailed policy responses, including system capacity, workforce development, or long-term service provision.

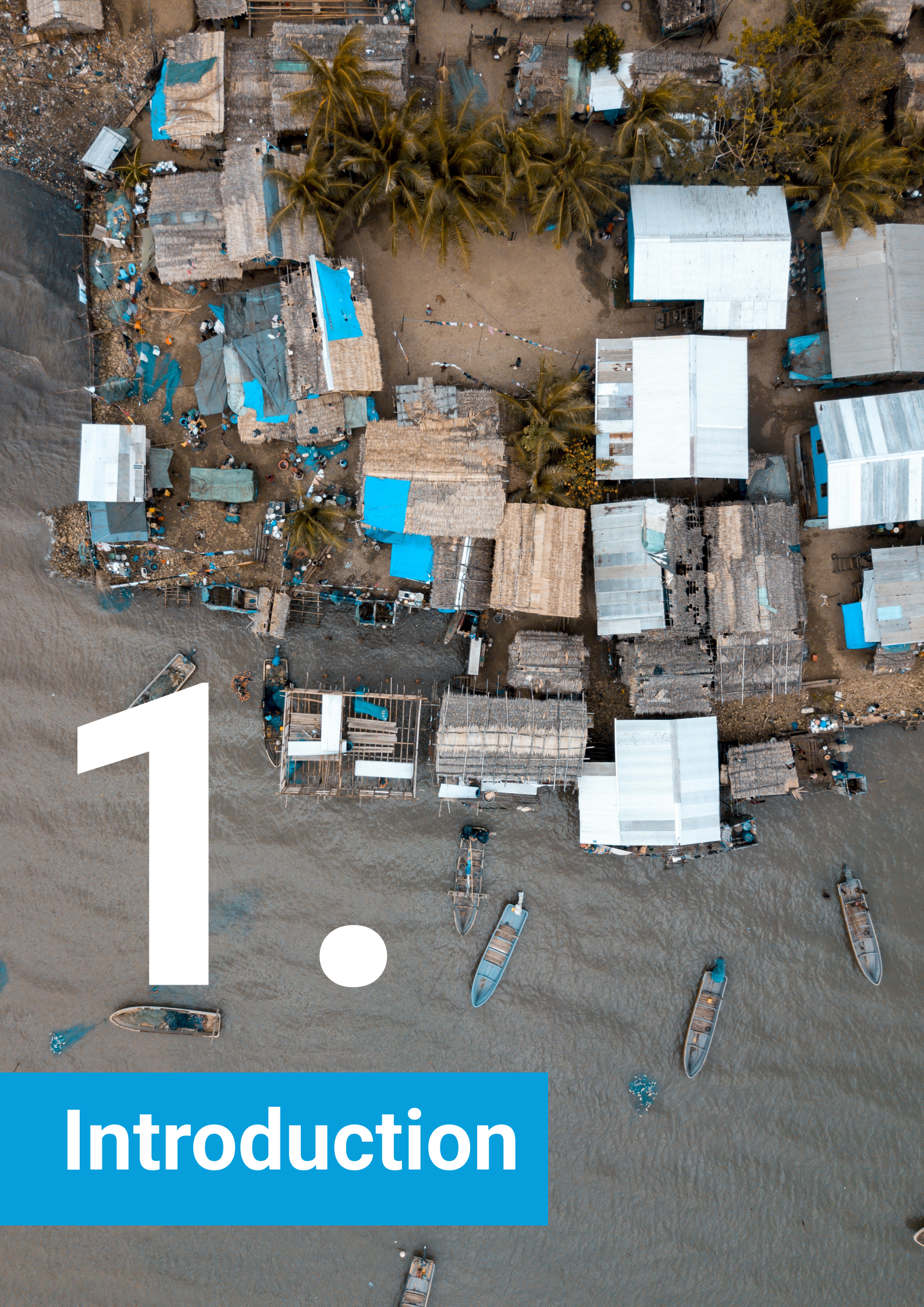
Health systems and services are widely identified as vulnerable to climate-related L&D, particularly through infrastructure damage, service disruption, and increased demand during emergencies. However, few documents articulate comprehensive approaches to resilience, continuity of care, or post-disaster recovery, suggesting that health systems are often framed in terms of exposure rather than as dynamic systems requiring integrated and sustained support.

The analysis also highlights emerging areas of concern. Urban environments are increasingly recognised as hotspots of health-related L&D, particularly in relation to heat stress, infrastructure disruption, and pressures on water, sanitation, and hygiene (WASH) systems. At the same time, extreme weather events dominate national risk framing, while slow-onset processes and indirect, cross-sectoral health pathways are less consistently addressed, despite their long-term implications.

Across documents, vulnerable populations are widely identified, including children and youth, women, older persons, Indigenous Peoples, displaced populations, and people living in poverty. However, this recognition is not consistently translated into targeted and context-specific interventions. While a range of response measures is referenced, including early warning systems, health system strengthening, and social protection, implementation details, financing strategies, and accountability mechanisms remain limited.

Overall, the findings point to a clear and consistent pattern: health-related L&D is increasingly recognised, but not yet fully operationalised within national policy frameworks. Addressing this gap will require stronger integration of health across climate policy instruments, clearer articulation of cross-sectoral pathways, greater attention to mental health and long-term system resilience, and improved alignment between vulnerability analysis and implementation.

As the global architecture for addressing L&D continues to evolve under the United Nations Framework Convention on Climate Change, there is a critical opportunity to ensure that health is positioned as a core component of policy, financing, and implementation. Strengthening health integration will be essential not only for protecting lives and well-being, but also for advancing more equitable, effective, and forward-looking climate responses.



1.

Introduction

1.1 Background and Rationale

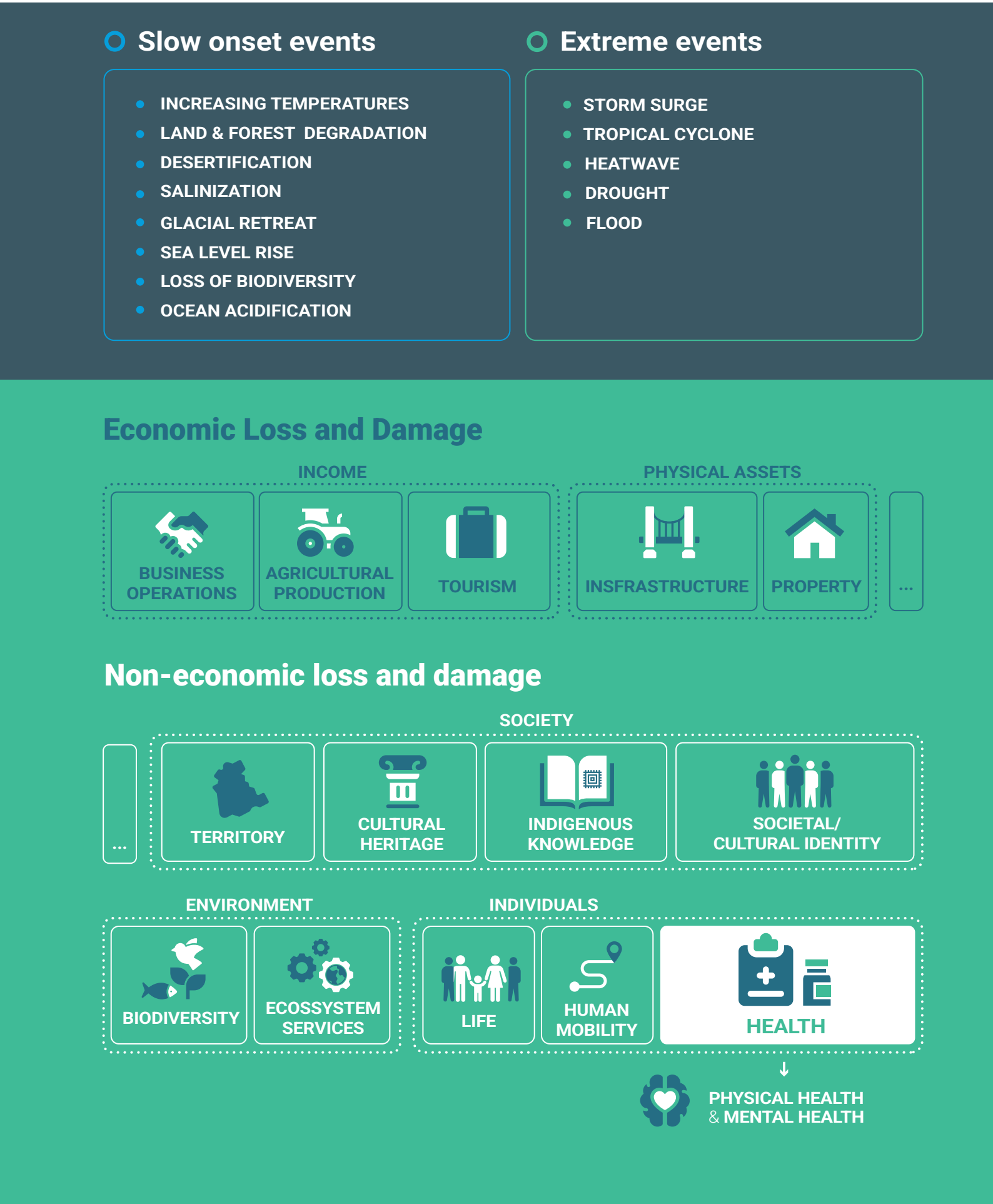
The global community is increasingly recognising the extensive impacts of climate change as a global crisis. Yet, more than a decade after the Paris Agreement, actions to address these impacts remain limited. Among the most critical challenges is the inevitable and often irreversible L&D arising from both the growing frequency and severity of extreme weather events and the slower, more insidious impacts of environmental change. These harms pose serious risks to human wellbeing, particularly for populations disproportionately affected by climate shocks. As a result, L&D has emerged as a global priority, addressing impacts that go beyond the scope of mitigation and adaptation (Boyd et al., 2021).

Clarifying the boundary between adaptation and L&D is essential. In line with the IPCC, adaptation refers to the process of adjustment to actual or expected climate impacts in order to moderate harm or take advantage of potential benefits. L&D, by contrast, refers to the residual harms that persist when feasible and effective adaptation options have been exhausted or when biophysical, economic, social, or institutional limits are exceeded (IPCC, 2022; 2023). These limits are reached when further risk reduction becomes impossible or inappropriate, such as when heat surpasses human physiological tolerance, ecosystems collapse, or displacement becomes unavoidable. This report focuses specifically on the health-related dimensions of L&D, including unavoidable and irreversible impacts that remain despite adaptation.

L&D is often divided into **economic** and **non-economic** categories. Non-economic loss and damage (NELD) covers impacts that cannot be monetised, such as loss of life, health, biodiversity, cultural heritage, identity, or territory. Economic loss and damage (ELD) includes impacts that can be quantified, like damage to infrastructure or livelihoods (Figure 1).

As global temperatures continue to rise, there is increasing discussion of the possibility of temporarily exceeding agreed climate targets. Such scenarios could increase the likelihood of approaching or exceeding adaptation limits in certain contexts, with implications for health-related L&D. These may include increases in heat-related mortality, the spread of climate-sensitive diseases, undernutrition, and impacts on mental health and well-being (IPCC, 2023). In addition, gradual changes such as water scarcity and ecosystem degradation may further affect the environmental and social determinants of health over time (IPCC, 2023; Romanello et al., 2023). These considerations highlight the importance of strengthening the integration of health within L&D assessments, financing, and technical support.

Figure 1
Overview of ELD and NELD Categories, Framing Health as a Central Component of L&D in this Report.



Climate change affects health in many ways. It leads to more illness and death due to heat-related sickness, the spread of infectious diseases, and health problems caused by unsafe water and food insecurity (Teshome, 2024). It also affects mental health, increasing anxiety, depression, and PTSD, especially after extreme weather events (Lawrance et al., 2022; Willets, 2022). These impacts become worse when health systems are weakened by climate shocks that damage facilities, disrupt services, and make it harder for people to get care (Tesfaye et al., 2025).

Since many of these health impacts, such as mental health burdens, trauma from displacement, and health-system disruptions are intangible, context-specific, and often irreversible, they are commonly considered to be NELs (Nayna Schwerdtle et al., 2023). This report therefore treats health primarily as NELs, while also recognising the economic consequences for health systems and households.

Addressing health-related L&D within climate policy is challenging. Many effects are visible but difficult to quantify or directly attribute to climate events, especially non-economic harms, so they are often missed in national reporting (Teshome, 2024). As a result, policies tend to prioritise measurable economic losses, while health losses—primarily experienced by older people, children, people with disabilities, marginalised groups, and climate-vulnerable communities receive less attention, increasing long-term risk (van Daalen et al., 2024).

> Although some NELD, such as health or biodiversity loss, can be monetised using methods like VSL, QALYs, or ecosystem service valuation, they remain classified as "non-economic." They are not traded in markets, lack observable prices, and raise profound ethical and distributional concerns. Many of these impacts are tied to fundamental values or rights that cannot be meaningfully expressed in monetary terms (UNFCCC, 2013; IPCC, 2022). UNFCCC guidance therefore describes NELD as loss and damage "not easily quantified in monetary terms," with health frequently cited as a core example (UNFCCC, 2013).

Despite growing recognition of health in global L&D debates, there has been limited systematic analysis of how national climate policy documents reflect health-related L&D.

1.2 Scope, Purpose, and Objectives of the Stocktake

Responding to an apparent gap in national policy frameworks, this stocktake examines how health-related L&D is addressed in NAPs, HNAPs, and NDCs. By assessing how health-related NELs is reflected in national climate policies, this stocktake provides actionable insights to support more inclusive, equity-oriented, and people-centred approaches to L&D.

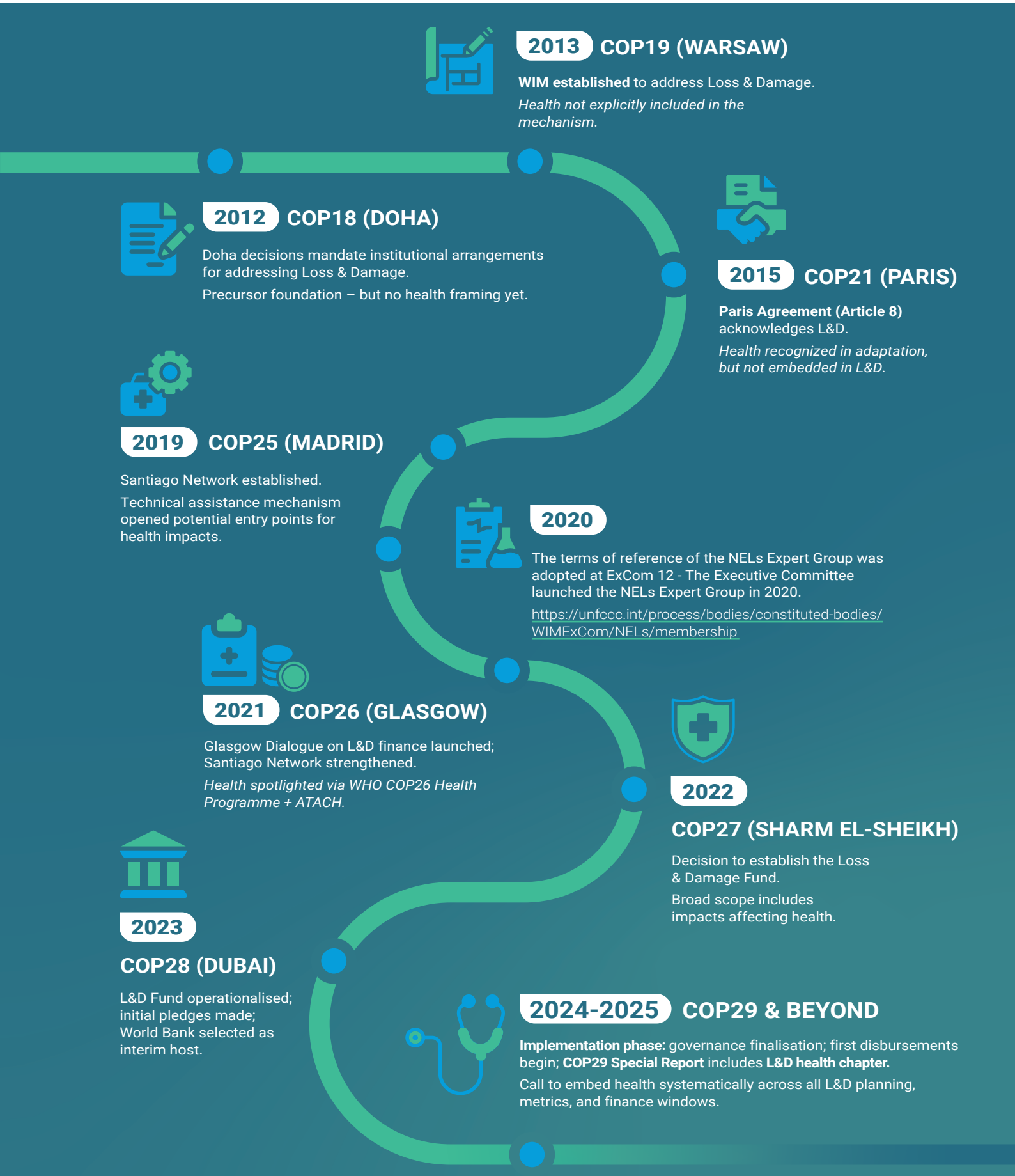
The stocktake pursues three main objectives:

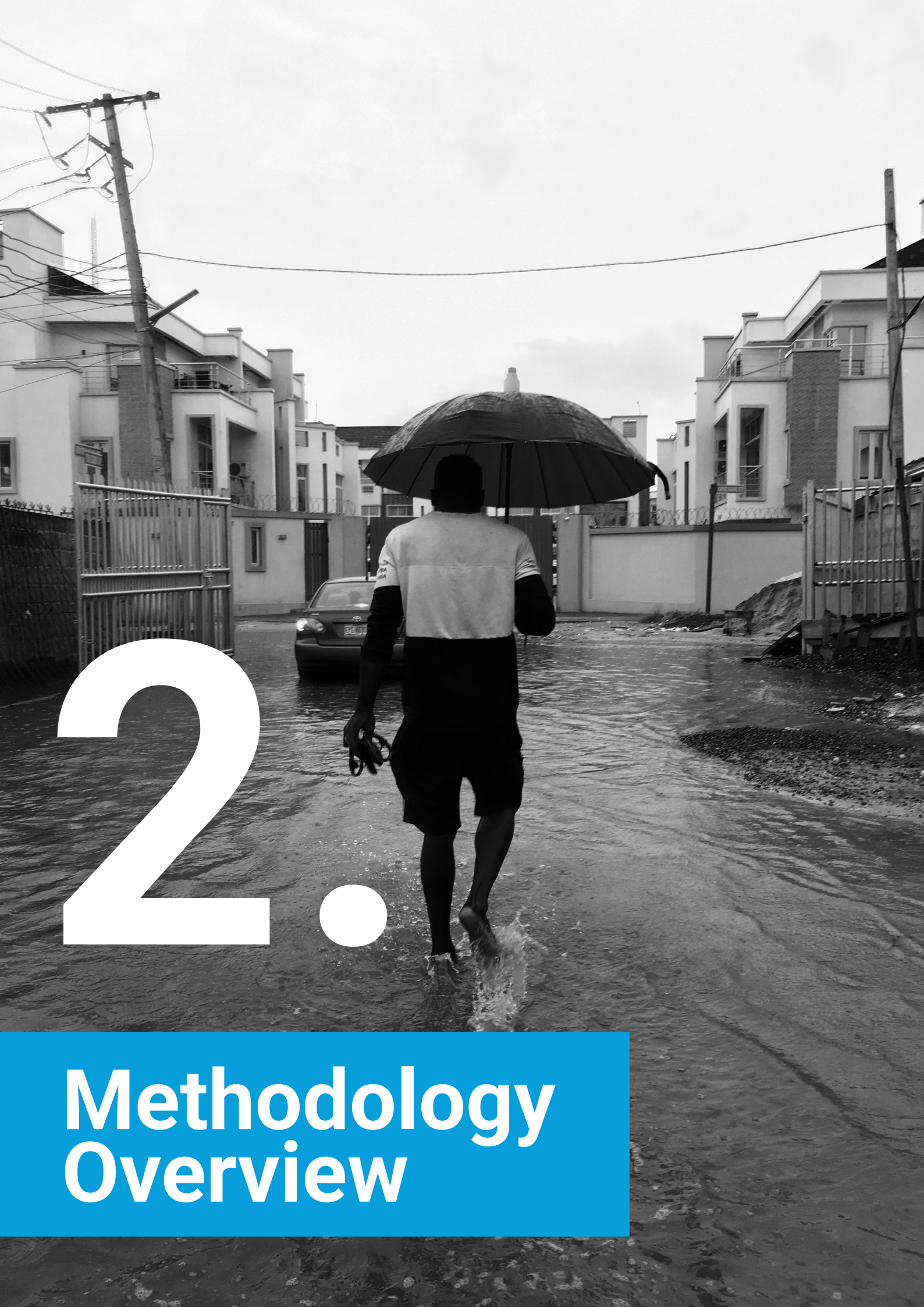
- Identify policy blind spots where the health dimensions of L&D are missing or insufficiently specified in national documents.
- Provide evidence-based insights to inform national responses across health, risk reduction, and finance.
- Promote recognition of health as a core component of L&D in line with equity-driven, people-centred climate action.

International Alignment

This stocktake provides a snapshot of how health-related loss and damage is reflected in national climate policy frameworks, reflecting growing attention to loss and damage within the international climate agenda under the UNFCCC. Within this architecture, the WIM and the Santiago Network provide paths for technical assistance and coordination, with collective responsibility across all parties and support providers, not only countries experiencing impacts. Recent decisions on the FRLD indicate a turning point, with increased recognition that non-economic impacts such as health require committed attention (Figure 2). By mapping how health-related L&D is currently reflected in NAPs, HNAPs, and NDCs, this report offers evidence to guide implementation of these mechanisms and to help close the gap between global ambition and practical action on climate-related L&D to health.

Figure 2
Evolving Recognition of Health in the L&D Agenda





2.

Methodology Overview

This stocktake systematically assessed the extent to which health-related L&D is addressed in official national climate policy documents, focusing on three health domains: physical health, mental health, and health systems and services. The analysis employed a two-phase keyword-based content analysis approach, guided by a structured keyword analysis, co-developed with thematic experts.

2.1 Document Selection and Inclusion Criteria

Documents were sourced from official UNFCCC repositories and included in the analysis if they met the following criteria: (i) published on or before 1 May 2025[1]; (ii) available in English, French, or Spanish; and (iii) explicitly titled as an NDC[2], NAP, or HNAP. To ensure relevance to L&D, a pre-screening step was conducted to include only documents that referenced the terms "loss" or "damage" in any language.

- *Phase 1* involved systematic keyword searches across all included documents, guided by a multilingual framework co-developed with UNEP-CCC and other experts.
- *Phase 2* involved thematic categorisation of the extracted content into three primary health-related domains: physical health, mental health, and health systems and services. These categories included references to ELD and NELD, as well as relevant policy interventions.
- In the final stage of analysis, the extracted results were reviewed in greater depth to strengthen interpretation and synthesis. This included:
  - a more detailed analysis of mental health, including the sub-themes and pathways through which climate-related L&D affects psychosocial well-being; and
  - a focused cross-cutting review of urban health in the context of L&D, drawing on urban-specific references identified across the Phase 1 and Phase 2 results.

Documents were analysed for both frequency and context of relevant health references. Results were categorised by region, country, and document type, using UN and UNEP regional classifications (United Nations, 2018; 2023; 2024). Apart from these primary objectives, the analysis also captured additional insights that emerged repeatedly across documents, including the types of extreme and slow-onset climate events referenced, commonly identified vulnerable population groups, and recurrent types of policy interventions linked to health-related L&D. These are summarised under Additional Findings. A full list of included documents, the keyword framework, and further methodological details (including limitations) are provided in the Annex.

1 The analysis is based on national climate policy documents available as of 1 May 2025. While additional NDC updates and submissions have been made since this date, the stocktake was designed to provide a systematic and comparable baseline of how health-related L&D is reflected in national policy frameworks at a defined point in time. The findings should therefore be interpreted as a structured snapshot rather than a real-time assessment. It is also worth noting that the screening approach focused on documents with explicit references to both health and L&D. Documents addressing health impacts with indirect relevance to L&D may not have been fully captured, suggesting that the findings may represent a conservative estimate of health integration across national frameworks. These considerations do not diminish the validity of the analysis but rather point to opportunities for further refinement in future updates as the global L&D agenda continues to evolve.

2 For countries with multiple NDC submissions (e.g. NDC 2.0 and NDC 3.0), all versions were included to capture shifts in how health-related L&D is addressed over successive submissions.

3.

Findings

3.1 General Overview

A total of 270 documents were initially retrieved from UNFCCC repositories. Following screening and data cleaning, 123 documents met the inclusion criteria and were analysed, including 16 HNAPs, 42 NAPs, and 65[3] NDCs.

Across these documents, coverage of health-related L&D varied substantially by document type. HNAPs demonstrated the highest level of coverage, with 15 of 16 (94%) addressing all three health domains. In comparison, 21 of 42 NAPs (50%) addressed all three domains, while only 14 of 65 NDCs (21%) did so. A further 7 NDCs (11%) did not reference any of the three health domains.

At the country level, patterns suggest varying degrees of alignment across instruments. In several cases, HNAPs and NAPs provided more comprehensive coverage across health domains, while NDCs reflected more partial inclusion. In some countries, documents complemented each other by addressing different aspects of health-related L&D, whereas in others, inconsistencies were observed, with certain domains present in one instrument but absent in others.

At the domain level, physical health was the most frequently referenced domain, appearing in 114 of 123 documents (93%), followed by health systems and services (91 of 123; 74%), and mental health (59 of 123; 48%).

Differences were also evident in the breadth of coverage within documents (Table 1). Among the NAPs, 19 of 42 (45%) addressed two health domains and 2 (5%) addressed only one. Among the NDCs, 24 of 65 (37%) addressed two domains and 20 (31%) addressed only one. Across documents addressing two domains, the most common combination was physical health and health systems, followed by physical and mental health, while mental health and health systems alone were least frequently observed.

Across the dataset, health-related L&D was more commonly framed in terms of non-economic losses, particularly in relation to morbidity, mortality, and disruptions to health systems. Explicit references to economic losses affecting health infrastructure and services were less frequent and were more commonly observed in the HNAPs than in the NAPs or NDCs.

3 The total of 65 NDCs reflects all submitted versions analysed, including NDC 2.0 and 3.0. While multiple versions were analysed where applicable, these correspond to 59 individual countries when counted at the country level. Document counts reported in the Findings reflect submissions analysed rather than unique countries.

Table 1

Representation of Health and L&D in National Climate Policy Documents Included in this Stocktake[4]

Coverage legend: ● Physical Health ● Mental Health ● Health Services

Region	Country	HNAP	NAP	NDC
Africa	Burkina Faso		● ●	
	Cabo Verde		● ●	● ●
	Chad		● ●	
	Central African Republic		● ●	●
	Côte d'Ivoire	● ● ●		
	Democratic Republic of the Congo		● ●	
	Kenya		●	
	Ethiopia	● ● ●	● ●	
	Liberia		● ●	
	Madagascar	● ● ●	● ● ●	
	Morocco		● ●	
	Mauritania	● ● ●		
	Mozambique		● ● ●	● ●
	Namibia			● ●
	Niger		● ● ●	
	Rwanda			● ●
	Senegal			●
	Seychelles			● ●
	Sierra Leone		● ●	
	South Africa			● ●
	South Sudan		● ● ●	
	Tanzania	● ● ●		● ●
	Togo	● ● ●		● ●
	Uganda			●
	Zambia	● ● ●	● ●	
Asia-Pacific	Bangladesh	● ● ●	● ● ●	
	Cambodia		● ●	● ● ●
	Fiji	● ● ●	● ● ●	
	Indonesia*			●
	Kiribati		● ● ●	
	Laos	● ● ●		● ● ●

4 Table 1: Coverage of health-related L&D across physical health (PH), mental health (MH), and health systems and services (HS) in national climate policy documents, by document type and region. Markers indicate the presence of references to each health domain; blank cells indicate that the corresponding domain was not addressed in the document. All NDCs included in the analysis were identified using the UNFCCC NDC Registry. Countries marked with an asterisk (*) submitted multiple NDC versions (e.g. NDC 2.0 and 3.0 or first and second NDC submissions), all of which were analysed separately. Documents that did not reference any of the three health domains appear without markers.

Region	Country	HNAP	NAP	NDC
Asia-Pacific	Malaysia			●
	Maldives*			● ● ●
	Marshall Islands		● ● ●	● ● ●
	Mongolia			● ●
	Myanmar			● ●
	Nauru			● ●
	Nepal	● ● ●	● ● ●	● ●
	Niue			●
	New Zealand	● ● ●		
	Philippines		● ● ●	●
	Sri Lanka		● ● ●	● ●
	Timor-Leste	● ● ●	● ●	● ●
	Thailand*		● ●	● ●
	Tonga			●
	Vanuatu			●
	Cook Island			
	Vietnam			● ● ●
Caribbean and Latin America	Antigua and Barbuda			● ●
	Argentina		● ● ●	
	Bahamas			● ●
	Barbados			● ●
	Brazil*			● ●
	Belize			● ●
	Chile	● ● ●		●
	Dominica			● ● ●
	Dominican Republic			● ●
	Ecuador		●	
	Grenada		● ● ●	●
	Guatemala		● ●	●
	Haiti		● ● ●	● ●
	Mexico			●
	Paraguay		● ●	
	Peru		● ● ●	
	Saint Kitts and Nevis			● ● ●
	Saint Lucia*		● ● ●	● ● ●
	Saint Vincent and the Grenadines		● ●	● ●
	Suriname		● ●	
	Trinidad and Tobago		● ● ●	
	Uruguay*			● ●
Europe	Albania			● ● ●
	Armenia		● ● ●	
	Bosnia and Herzegovina		● ●	
	Georgia			● ●
	Ireland	● ● ●		
	Moldova	● ● ●	● ●	● ● ●
	North Macedonia			
	Serbia		● ● ●	
West Asia	Jordan	● ●		● ● ●
	Oman			● ● ●
	Palestine		● ●	●
	United Arab Emirates			● ● ●
	Pakistan		● ● ●	●

* Countries for which both NDC 2.0 and NDC 3.0 were analysed

3.2 Thematic Analysis

This section summarises how health is referenced across HNAPs, NAPs, and NDCs in relation to L&D. Mentions include both the identification of health-related impacts and proposed policy interventions. While not exhaustive, the findings offer a snapshot of current trends in national climate policy documents.

3.2.1 Physical Health

Physical health impacts were referenced in 114 of 123 documents (93%), making it the most consistently addressed health domain across all document types. These references included both morbidity and mortality, linked to a wide range of climate-related hazards. The most frequently cited risks included:

- Vector-borne diseases (e.g. malaria, dengue)
- Water- and food-borne diseases (e.g. cholera, diarrhoeal diseases)
- Heat-related illness and mortality
- Malnutrition and undernutrition
- Injury and death from extreme events

Across documents, morbidity was most often associated with communicable diseases, while mortality was more frequently linked to extreme events, particularly floods, storms, and heatwaves. Heat-related health impacts were explicitly referenced across all three document types, indicating increasing recognition of extreme heat as a driver of L&D.

A subset of documents also identified compound and interacting risks, including the interaction between malnutrition and infectious disease, as well as concurrent impacts of climate shocks on injury, disease, and mortality. Less frequently referenced risks included respiratory illness, zoonotic diseases, ultraviolet-related conditions, and salinity-related health impacts.

Despite wide recognition, references to physical health were often descriptive, with limited linkage to specific L&D mechanisms, policy actions, or implementation pathways.

3.2.2 Health Systems and Services

Health systems and services were referenced in 91 of 123 documents (74%), including 15 of 16 HNAPs (94%), 38 of 42 NAPs (91%), and 38 of 65 NDCs (59%).

The most commonly identified impacts included:

- Damage to health infrastructure
- Disruption of electricity, water, and sanitation systems
- Reduced access to care due to infrastructure and transport disruption

These impacts were frequently associated with extreme weather events and were often reported to disproportionately affect populations already facing barriers to healthcare access.

In addition, increased demand for health services during climate-related emergencies was widely noted, with constraints including:

- Workforce shortages
- Limited medical supplies
- Insufficient facility capacity

A smaller number of documents referenced climate-related displacement as an additional pressure on health systems.

While many documents acknowledged the need to strengthen health system resilience and preparedness, fewer provided detail on baseline capacity, implementation strategies, or financing mechanisms. References to post-disaster recovery and restoration of services were comparatively limited.

3.2.3 Mental Health

Mental health was referenced in 59 of 123 documents (48%), with substantial variation across document types: 15 of 16 HNAPs (94%), 23 of 42 NAPs (55%), and 21 of 65 NDCs (32%).

Mental health impacts were most commonly associated with:

- Climate-related disasters, including floods and storms
- Displacement and loss of livelihoods
- Cultural loss and disruption of social cohesion
- Chronic climate stressors, such as drought and rising temperatures

Reported impacts included psychological distress, trauma, anxiety, depression, and increased suicide risk. Mental health impacts were also frequently linked to NELs, including loss of identity, place, and cultural continuity, particularly in Small Island Developing States, Indigenous contexts, and displacement settings.

Across documents, mental health was often described in relation to broader impacts rather than as a standalone policy domain. References to mental health system capacity, workforce, and service provision were limited, and proposed responses were not consistently elaborated upon.

3.3 Additional Thematic Area: Urban Loss and Damage and Health

Urban contexts were explicitly referenced in 38[5] of 123 documents (31%). These references highlighted cities as key sites of health-related L&D due to population density, infrastructure interdependence, and exposure to climate hazards.

Urban health risks were most commonly associated with:

- Heat stress, including the urban heat island effect
- Infrastructure disruption, including power outages
- Pressures on WASH systems

Urban heat was frequently linked to increased incidence of heat-related illness and mortality, as well as cascading infrastructure failures, particularly during periods of peak energy demand. Climate-related impacts on WASH systems were associated with increased risks of water-borne and vector-borne diseases, particularly in rapidly urbanising and low-income settings. Urban flooding and extreme events were also identified as threats to health facilities, transport networks, and emergency services, with implications for service continuity and access to care.

3.4 Additional Findings

3.4.1 Climate Hazards and Pathways

Climate hazards were widely referenced to contextualise vulnerability. Extreme weather events were referenced more frequently than slow-onset processes, with the term "extreme weather" identified in 29 NDCs, 18 NAPs, and 11 HNAPs, compared to 8 NDCs and 5 NAPs referencing "slow-onset" processes (see Annex 8.4).

Floods and droughts were the most commonly cited hazards, followed by storms and cyclones. Slow-onset processes such as sea-level rise, erosion, and salinisation were mentioned less frequently, despite their long-term implications.

Health impacts were most commonly described in terms of direct outcomes, including injury, disease, and mortality. In contrast, indirect and cross-sectoral pathways, such as impacts on food systems, water resources, and livelihoods, were less frequently articulated.

3.4.2 Vulnerable Populations and Interventions

References to vulnerable populations appeared across a large proportion of documents, with commonly identified groups including:

- Children and youth
- Women
- Older persons
- People living in poverty
- Indigenous Peoples
- Displaced populations
- People with disabilities

However, the level of specificity varied, with some documents referring broadly to "vulnerable groups" without further detail.[7]

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5 Documents referencing an urban context included 12 HNAPs, 15 NAPs, and 11 NDCs. A full list of countries is provided in Annex.

6 Vulnerable groups were referenced across all document types, although the level of detail varied.

Across documents, several types of interventions were also identified, including:

- Early warning systems
- Awareness and risk communication
- Health system strengthening
- Insurance and social protection mechanisms
- Institutional coordination between climate and health sectors

While these interventions were referenced, details on implementation, coordination, and financing were often limited, indicating variation in the extent to which recognition of health-related L&D is translated into operational policy responses.

4.

Discussion

General Patterns in the Integration of Health Within L&D Frameworks

This stocktake provides a cross-document perspective on how health is currently positioned within national L&D policy frameworks. While health is widely acknowledged across national climate policy instruments, its integration is not yet consistently translated into coherent, operational policy responses. In many cases, health remains embedded within broader climate risk or adaptation narratives, rather than being explicitly framed as a distinct component of L&D. This has implications in terms of how health impacts are prioritised, financed, and governed within emerging national and international L&D processes.

A clear differentiation across policy instruments reflects their distinct roles within climate governance. Health-focused and adaptation-oriented documents tend to provide more detailed and context-specific articulation of health risks, while NDCs, as internationally communicated commitments, often reflect a more limited or partial inclusion. This is significant given the central role of NDCs in shaping global climate priorities, including access to finance, reporting obligations, and accountability mechanisms. More limited integration of health within NDCs may therefore influence how health-related L&D is reflected in global climate action.

At the same time, the coexistence of multiple policy instruments creates both opportunities and challenges for coherence. In some national contexts, documents appear to address complementary aspects of health-related L&D, suggesting a distributed approach to policy coverage. In others, inconsistencies across instruments indicate that health is not yet systematically integrated across planning processes. Strengthening alignment across national frameworks may therefore support more consistent and comprehensive approaches.

The analysis also highlights an imbalance as to how different dimensions of health are reflected. While physical health impacts are more readily incorporated into policy frameworks, other dimensions, including mental health and aspects of health system resilience, are less consistently integrated. This pattern reflects broader tendencies within climate and health policy to prioritise immediate and observable risks, while longer-term, indirect, and non-economic impacts receive comparatively less attention.

An important feature of the dataset is the strong representation of Least Developed Countries (LDCs) and Small Island Developing States (SIDS), particularly within adaptation-focused documents. In these contexts, health impacts are often framed as compounding existing vulnerabilities, including poverty, food insecurity, and limited access to healthcare. This highlights the importance of considering health-related L&D not only in relation to climate hazards, but also in the context of underlying social and structural conditions.

Across documents, health-related L&D is more frequently framed in terms of non-economic losses, such as morbidity, mortality, and disruption of health systems, while economic dimensions, particularly those related to health infrastructure and services, are less consistently articulated. This may have implications regarding the way in which health is incorporated into L&D financing mechanisms, which often rely on quantifiable metrics.

Physical Health: Strong Recognition, but Limited Integration into L&D Frameworks

The prominence of physical health across national climate policy documents reflects a broad and well-established understanding of the direct impacts of climate change on human health. Countries consistently identify a core set of climate-sensitive risks, indicating alignment with global evidence on climate-related morbidity and mortality, particularly in relation to infectious diseases, heat stress, malnutrition, and disaster-related injury.

However, the way these impacts are framed reveals important limitations in terms of how physical health is positioned within L&D policy contexts. In many cases, health impacts are embedded within general climate risk narratives or sectoral assessments, rather than being explicitly articulated as outcomes of L&D, requiring targeted policy responses, financing, and recovery planning. This distinction is critical, as it shapes whether health is treated as a central component of L&D or remains a secondary consideration within broader adaptation discourse.

A key gap relates to the articulation of causal pathways linking climate hazards to health outcomes. While documents frequently identify both hazards

and associated health risks, the intermediate steps connecting exposure to health consequences are often not systematically described. In a limited number of cases, however, more explicit causal framing is evident. For example, the Bangladesh HNAP links flooding and cyclones to water insecurity and increased risk of cholera and other diarrhoeal diseases, illustrating how climate variability translates into disease burden and health system pressures (Bangladesh HNAP, pp. 4, 16). Similarly, Pakistan's NAP connects climate impacts to key determinants of health, including access to clean air, safe water, food security, and shelter, while highlighting how climate-sensitive diseases such as malaria, diarrhoea, and heat stress contribute to morbidity and mortality, particularly among vulnerable populations (Pakistan NAP, p. 5). These examples demonstrate the type of integrated, pathway-based framing that remains unevenly applied across the broader dataset.

> **"Climate change significantly impacts the social and environmental determinants of health, affecting access to clean air, safe drinking water, sucient food, and secure shelter. Moreover, vector-borne diseases like malaria, diarrhea, and heat stress, exacerbated by climate change, contribute to morbidity and mortality, particularly among vulnerable populations facing malnutrition."**
>
> (Pakistan NAP, p.5)

The limited articulation of causal pathways is closely linked to the persistence of sectoral silos. Health impacts are often discussed separately from related sectors such as agriculture, water, and livelihoods, despite clear interdependencies. For instance, Sri Lanka's NDC outlines cascading impacts on coastal livelihoods, agriculture, and fisheries, which imply downstream consequences for food security and water availability, yet the associated health outcomes are not explicitly detailed (Sri Lanka NDC, pp. 31, 50). This pattern suggests that while the connections between climate impacts and health are implicitly recognised, they are not consistently integrated into cross-sectoral analyses, limiting the ability of policy frameworks to capture the full scope of health-related L&D.

In addition, while some documents acknowledge the compounding nature of climate-related health risks, including interactions between malnutrition, infectious disease, and repeated exposure to climate hazards, these dynamics are not systematically translated into corresponding policy responses. The convergence of multiple stressors highlights the complexity of physical health impacts within L&D contexts, yet this complexity is not always reflected in the design of interventions or response strategies.

Another important dimension concerns the breadth of health impacts considered. While commonly cited risks align with major global health priorities, less frequently referenced impacts, such as respiratory illness linked to air pollution and dust exposure, zoonotic diseases, ultraviolet-related conditions, and salinity-related health effects in coastal areas, suggest that the full spectrum of climate-related health risks is not uniformly captured across national documents. Similarly, indirect consequences such as increased risk of violence or conflict associated with resource scarcity are only occasionally acknowledged, despite their relevance for physical health outcomes.

Finally, there is a consistent gap between the recognition of physical health risks and their operationalisation within L&D frameworks. While impacts are widely acknowledged, fewer documents provide clarity on how these risks will be addressed in practice, including the identification of responsible institutions, implementation mechanisms, timelines, and financing arrangements. This gap indicates that physical health, while highly visible in policy narratives, is not yet systematically embedded within structured L&D responses, particularly in relation to recovery, reconstruction, and long-term resilience.

Health Systems and Services: Recognised Vulnerability, but Limited Articulation of Recovery and System-wide Resilience

The prominence of health systems within national climate policy documents reflects a growing recognition that system-level disruption is a critical pathway through which climate-related L&D materialises. Beyond direct health impacts, damage to infrastructure, service interruptions, and reduced access to care can amplify both immediate and long-term health risks, particularly in already strained systems.

However, the way health systems are conceptualised within policy frameworks reveals important limitations. In many cases, health systems are framed primarily as static infrastructure exposed to climate hazards, rather than as dynamic and interdependent systems that require surge capacity, adaptive management, and continuity planning. This framing tends to prioritise physical damage to facilities, while giving comparatively less attention to the broader functional dimensions of health systems, including workforce resilience, supply chain continuity, and service delivery under stress.

A recurring gap relates to the limited integration of preparedness with longer-term system resilience. While many documents acknowledge the need to strengthen health system preparedness, this is often not accompanied by detailed consideration of baseline capacity, resource constraints, or implementation pathways. References to workforce shortages, limited supplies, and inadequate facility capacity highlight systemic constraints, yet these are not consistently translated into structured planning for scaling up services in response to climate-related demand.

Some documents do demonstrate more operationally detailed approaches. For example, the NDC of Lao People's Democratic Republic outlines concrete measures including the upgrading of district hospitals and health centres, installation of reliable water and electricity systems, adoption of digital health technologies, and relocation of facilities to lower-risk areas (Lao PDR NDC, p. 22).

> **Health Adaptation Strategy:**
>
> **Component 6: Resilience to the Climate and the Sustainability of Technology and Infrastructure:**
>
> - **"10 district hospital and 50 healthcare center installed or renovated to ensure there are clean water, electricity, communication, equipment and medicines.**
> - **10 district hospital and 50 healthcare center that use new technology such as eHealth or satellite image on the effectiveness improvement of public health systems.**
> - **10 new healthcare centers in areas not at risk from climate change**
> - **3 proposals for green hospital development in central and provincial levels."**

(Laos NDC, p.22)

Such examples illustrate that health system resilience can be articulated in actionable terms within national policy instruments. However, across the broader dataset, this level of specificity remains the exception rather than the norm.

Another critical dimension that remains underdeveloped is health system recovery following climate-related disruptions. While impacts on infrastructure and service delivery are widely acknowledged, fewer documents explicitly address how systems will recover after shocks. This includes the restoration of damaged facilities, re-establishment of supply chains, replenishment of medical stocks, and rebuilding of workforce capacity. The absence of clearly defined recovery strategies suggests that health system resilience is often conceptualised in terms of preparedness alone, rather than as a continuum that includes response, recovery, and long-term adaptation.

The analysis also highlights how health system stress is shaped by broader socio-environmental dynamics, including population displacement. Although only a limited number of documents explicitly reference climate-induced migration, available examples suggest that both sudden displacements following disasters and gradual mobility, linked to slow-onset processes, can place additional strain on health services. For instance, the Philippines' NAP notes that climate-induced migration may increase demand on already stretched health systems (Philippines NAP, p. 38). Despite this, displacement is not yet systematically integrated into health system planning within L&D frameworks, representing a significant gap given projected trends in climate-related mobility.

In addition, the interaction between multiple stressors is an important but insufficiently developed aspect of health system vulnerability. Some documents reference how previous shocks, including the COVID-19 pandemic and earlier climate events, have exposed structural weaknesses in health systems. These experiences highlight the compounding nature of system stress, where climate-related hazards interact with existing capacity constraints and concurrent crises, yet this complexity is not consistently reflected in policy design.

Mental Health: Evolving Recognition, with Persistent Gaps in Depth and Operationalisation

Mental health is increasingly acknowledged within national discussions of climate-related L&D, reflecting growing awareness of the psychological and social consequences of climate change. However, the way in which mental health is represented across policy instruments suggests that it remains less consistently articulated and less systematically integrated than other health domains.

In many cases, mental health is referenced within broader health or social impact narratives rather than as a distinct policy domain. This positioning can limit its visibility within L&D frameworks, particularly in relation to planning, financing, and long-term service provision. As a result, while recognition is expanding, the translation of this recognition into structured and sustained policy responses remains uneven.

Disasters, Displacement, and Chronic Stressors as Interconnected Mental Health Pathways

Across documents, mental health impacts are most frequently associated with climate-related disasters and their aftermath. Several national policy instruments explicitly describe how extreme events generate psychological distress, trauma, anxiety, depression, and, in some cases, increased suicide risk. For example, Peru's NAP highlights the psychological impacts of extreme events, while Ethiopia's HNAP links economic loss and water scarcity in drought-prone areas to mental distress and increased suicide risk (Peru NAP, p. 231; Ethiopia HNAP, pp. 10–11).

> Mental health is a crucial public health concern, which is principally exacerbated in settings experiencing more frequent climate-related disasters. Mental health is a crucial public health concern, which is principally exacerbated in settings experiencing more frequent climate-related disasters.
>
> Direct effects of climate change on mental health can arise when people are exposed to more frequent, more severe, and longer-lasting natural disasters and extreme weather. Likewise, high temperatures are strongly associated with adverse mental health outcomes and suicide[92].
>
> People in drought prone areas of the country are suffering from mental disorders as they are struggling to find water in their living areas. In particular, pastoralist communities are the most vulnerable ones to mental health problems due to drought induced water scarcity [94]. In this regard, prioritising health related adaptation intervention through understanding local cultural and social contexts is crucial to reduce the climate change impacts on mental health.
>
> Ethiopia HNAP, pp. 10–11

Similarly, the Philippines' NAP describes how exposure to extreme events can lead to stress, anxiety, depression, and suicide, and identifies post-traumatic stress disorder as a significant outcome of disaster exposure (Philippines NAP, pp. 183, 185). Ireland's HNAP also recognises PTSD and related mental health burdens associated with climate-related disasters (Ireland HNAP, p. 32), while the Maldives' NDC explicitly identifies psychological distress and trauma as key impacts and highlights the importance of psychosocial support (Maldives NDC v3.0, pp. 29, 40).

Beyond acute events, several documents highlight the role of slow-onset processes and chronic climate stressors in shaping mental health outcomes. Oman's NDC, for example, draws attention to the cumulative effects of ongoing environmental stress and disruption, while Vietnam's NDC links disaster-related trauma to longer-term displacement, anxiety, and risks of losing cultural identity and local knowledge (Oman NDC, p. 9; Vietnam NDC, p. 17).

> Between 2011 and 2020, 2,153 people died, 316 people went missing, and 4,117 people were injured due to natural disasters. Post-disaster losses also include disease outbreaks caused by contaminated drinking water and mental health problems caused by trauma, anxiety, and stress. Climate change is also one of the reasons for increasing migration and forcing tens of thousands of households to permanently relocate, risking the loss of cultural identity and local knowledge.
>
> Vietnam NDC, p.17

These examples illustrate that mental health impacts are not limited to discrete events but also emerge through prolonged exposure to climate stressors, livelihood insecurity, and environmental change.

Mental Health and NELs: Culture, Identity, and Displacement

A key contribution emerging from the analysis is the strong linkage between mental health and NELs. Several documents explicitly recognise that climate change can disrupt relationships between people, land, culture, and identity, with significant psychosocial consequences.

Jordan's NDC provides a particularly clear articulation of this dynamic, describing how climate-related loss alters connections to land and place, affecting values, traditions, and cultural continuity (Jordan NDC, p. 50). Similar themes are reflected in Fiji's NAP, which highlights the distress associated with the loss of traditional homes and villages (Fiji NAP, p. 69), and in St. Kitts and Nevis' NAP, where post-disaster loss of social cohesion is identified as affecting emotional and community well-being (St. Kitts and Nevis NDC, p. 15).

> Climate change in equal measure causes change, damage and loss to intangible cultural heritage. The decline and disappearance of vegetation, plant and animal species changes important cultural practices, food systems and traditional culinary skills, medicinal herbs and traditions, and most importantly the loss of food security. Climate induced damage and loss results in a change in people's relationship with each other, with the land and with the places they identify with. This causes an evolution in the sense of identity and values, and a loss of traditional stories, rituals and traditions that are no longer set in an identifiable cultural landscape.
>
> Jordan NDC, p. 50

Displacement emerges as a central pathway linking climate change to mental health impacts. The Marshall Islands' NDC describes how forced relocation can lead to loss of cultural connection and identity (Marshall Islands NDC v3.0, p. 3), while Aotearoa/New Zealand's HNAP highlights the mental health implications of losing whenua (land) among Māori communities and similar impacts among Pacific peoples affected by displacement (New Zealand HNAP, p. 29).

> **Pae Tū: Hauora Māori Strategy (Minister of Health 2023b) and Whakamaua: Māori Health Action Plan 2020–2025 (Ministry of Health 2020) provide the guiding framework for health entities to work together with Māori to respond to Māori health aspirations and address Māori health needs. The HNAP reflects this commitment through actions to coordinate effort across the health system and broader government to shift decision-making around resources closer to people and communities.**
>
> (New Zealand HNAP, p. 3)

These examples reinforce the importance of understanding mental health within L&D frameworks not only in clinical terms, but also as a reflection of broader social, cultural, and place-based disruptions.

Compounding Vulnerabilities and Population-specific Impacts

Mental health impacts are frequently described as interacting with and amplifying existing vulnerabilities. Across documents, climate-related stressors are linked to food insecurity, poverty, physical illness, and limited access to services, creating cumulative pressures on mental well-being. For populations dependent on climate-sensitive livelihoods, such as agriculture and livestock, loss of income and economic stability is repeatedly identified as a key pathway contributing to anxiety, depression, and psychological distress.

Certain population groups are consistently identified as being at heightened risk. Children and young people are often described as experiencing climate anxiety, uncertainty about the future, and displacement-related stress. Indigenous and place-based communities are particularly affected by the loss of land, cultural identity, and traditional knowledge systems. Gender-differentiated impacts are also noted, with climate-related migration and shifting livelihood roles influencing mental health outcomes in different ways for men and women. These patterns underscore the importance of considering mental health within broader frameworks of vulnerability, equity, and social determinants of health.

Mental Health Systems and Response Capacity: Limited Readiness and Uneven Articulation

Despite increasing recognition of climate-related mental health impacts, mental health system readiness is not consistently addressed in detail. Several documents point to limited baseline capacity, including shortages of trained professionals and insufficient service coverage, raising concerns about the ability of health systems to respond to rising mental health needs. A particularly stark example is provided by Lao People's Democratic Republic, where only two psychiatrists are reported to serve the entire country (Lao PDR HNAP, p. 10), illustrating the scale of existing capacity constraints.

Where responses are proposed, they tend to focus on capacity-building for health workers, community-based mental health approaches, and the provision of psychosocial support following disasters. Examples include initiatives outlined in Bangladesh's HNAP, the United States' HNAP, and St. Kitts and Nevis' NDC (Bangladesh HNAP, p. 27; USA HNAP, p. 17; St. Kitts and Nevis NDC, p. 6). However, such measures are not consistently elaborated upon across documents and are more frequently detailed in HNAPs than in NAPs or NDCs.

Overall, the limited attention to system-level planning, workforce development, and sustained service provision suggests that mental health remains insufficiently embedded within health systems and L&D frameworks. Without stronger integration, there is a risk that mental

health impacts, particularly those associated with non-economic loss and long-term climate stressors, may continue to be recognised but not systematically addressed.

Urban L&D: Concentrated Risks and Systemic Interdependencies

Urban environments are increasingly recognised as critical contexts for health-related L&D, reflecting the concentration of population, infrastructure, and climate exposure within cities. The analysis highlights that urban risks are inherently systemic, with climate hazards interacting across interconnected systems, including energy, transport, water, sanitation, and healthcare. This interconnectedness means that disruptions in one system can cascade across others, amplifying health impacts and complicating response and recovery.

While national documents increasingly acknowledge these dynamics, urban health risks are often described in sectoral terms, with more limited articulation of integrated, system-wide responses. This suggests that, although cities are recognised as hotspots of climate-related risk, the complexity of urban L&D is not yet fully reflected in policy frameworks.

Heat as a Growing and Systemic Driver of Urban Health Risks

A notable trend across national documents is the increasing attention to extreme heat as a driver of health-related L&D, particularly in urban settings. Heat-related risks are recognised not only as acute hazards but also as compounding stressors that interact with existing inequalities and infrastructure constraints. Several documents highlight that heat stress is intensifying more rapidly in urban areas than in surrounding regions, reflecting the combined effects of built environments, limited vegetation, and high energy use associated with transport, buildings, and cooling systems (e.g., Serbia NAP, p. 43; Jordan HNAP, p. 143; Bangladesh HNAP, p. 20; Ireland HNAP, p. 25).

Importantly, urban heat is frequently linked to cascading infrastructure risks. During periods of peak demand, heatwaves can place significant strain on energy systems, increasing the likelihood of power outages that may disrupt the functioning of hospitals and health services at times of highest need. Argentina's NAP explicitly highlights these compound risks, illustrating how extreme heat and energy system stress can converge to undermine service delivery (Argentina NAP, p. 107). In some cases, heat impacts are also linked to broader health risk assessments; for example, Moldova's NAP connects heat-related mortality to national estimates of climate-related health costs (Moldova NAP, p. 55).

Despite this growing recognition, detailed planning for heat-specific responses remains limited. While some documents reference broader health system strengthening efforts, fewer articulate targeted measures such as heat–health action plans, early warning systems, or occupational protections. In addition, intra-urban disparities in heat exposure, particularly in neighbourhoods with limited green space and fewer adaptive resources, are not consistently addressed.

A smaller subset of documents proposes urban greening and the expansion of green or blue infrastructure as potential responses. Examples from Bangladesh's NAP, St. Kitts and Nevis' NDC, and Fiji's HNAP highlight the role of vegetation and urban design in reducing ambient temperatures and delivering health co-benefits (Bangladesh NAP, p. 161; St. Kitts and Nevis NDC, p. 6; Fiji HNAP, p. 7). However, such interventions are not yet systematically integrated into broader L&D strategies.

WASH Pressures, Infrastructure Disruption, and Uneven Vulnerability

In addition to heat, urban health-related L&D is closely linked to pressures on WASH systems and to broader infrastructure disruption. Several documents describe how climate-related hazards, particularly flooding and extreme rainfall, exacerbate existing strains on urban WASH systems, increasing the risk of water-borne and vector-borne diseases. For example, the Marshall Islands' NAP highlights how disease burdens, linked to water and sanitation challenges, can further strain already limited health system capacity (Marshall Islands NAP, p. 22), while similar concerns are reflected in documents from Myanmar, Bangladesh, and Zambia (Myanmar NDC, p. 42; Bangladesh NAP, p. 55; Zambia HNAP, p. 48).

These risks are often expected to be most pronounced in low-income urban neighbourhoods, where inadequate sanitation, overcrowding, and limited access to healthcare heighten vulnerability. Documents from Togo and Mauritania, for instance, emphasise the disproportionate exposure of such communities to climate-related health risks (Togo HNAP, p. 108; Mauritania HNAP, p. 18). Saint Lucia's NAP further

illustrates how water-related impacts can cascade across sectors, linking disruptions in water availability to food production, malnutrition, and increased disease risk (Saint Lucia NAP, p. 60).

Urban flooding and extreme events are also frequently identified as threats to critical infrastructure, including health facilities, transport systems, and emergency response networks. Examples from Vietnam, the United Arab Emirates, Zambia, and Bangladesh highlight how such disruptions can affect both physical health outcomes and access to care, as well as broader system functionality (Vietnam NDC, p. 17; UAE NDC, p. 45; Zambia NAP, p. 38; Bangladesh NAP, p. 69).

Climate Hazards and Pathways: Emphasis on Extremes and Partial Articulation of Health Linkages

National climate policy documents frequently reference climate hazards to frame vulnerability and justify L&D responses. This framing is often grounded in observed or historical events, which helps contextualise risk and signal urgency. For example, Nepal's NAP highlights exposure to multiple hazards, including landslides and associated mortality, while Mozambique's NAP and Belize's NDC similarly draw on past events to illustrate climate-related loss and damage (Nepal NAP, p. 16; Mozambique NAP, p. 109; Belize NDC, p. 6).

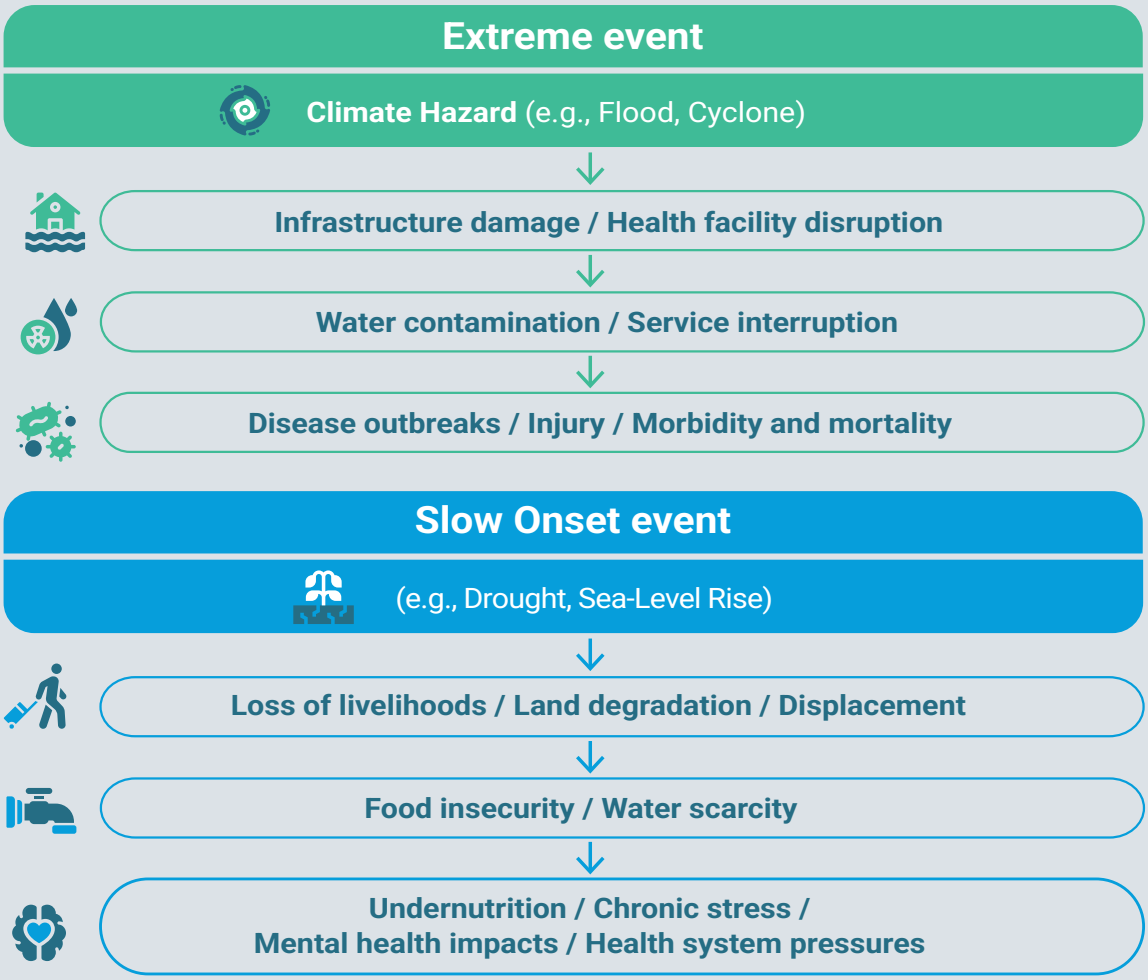
> **"Nepal's disaster risk profile is one of the worst in the world. Nepal has one of the highest fatality rates in the world from landslide events; between 1972 and 2016, 5,190 people lost their lives in 3,419 landslide events. The heavy rainfall that accompanied the 2020 monsoon season caused flooding and landslides that killed at least 132 people in Nepal. More than 80% of the population is exposed to the risk of natural hazards, including earthquakes, droughts, floods, landslides, extreme temperatures, and GLOFs."**
>
> (Nepal NAP, p. 16)

A consistent pattern across documents is the stronger emphasis on extreme weather events relative to slow-onset processes. While this reflects the immediacy and visibility of hazards such as floods, droughts, and storms, it also suggests that longer-term processes, including sea-level rise, salinisation, and erosion, may be less prominently integrated into policy narratives, despite their significant implications for health and livelihoods. These slower processes are often more difficult to attribute and quantify, which may contribute to their more limited representation.

In addition, health impacts associated with climate hazards are more frequently described in terms of direct outcomes, such as injury and mortality, while indirect and cross-sectoral pathways are less consistently articulated. For example, while the links between flooding and disease outbreaks are widely recognised, pathways connecting climate impacts on agriculture, water resources, and livelihoods to longer-term health outcomes, including malnutrition, displacement-related risks, and chronic health conditions, are less systematically developed. This suggests that the cascading nature of climate-related L&D is not yet fully captured within many national policy frameworks.

Figure 5 provides a simplified illustration of how these pathways are reflected across documents, highlighting commonly described linkages between extreme events and acute health impacts, as well as between slow-onset processes and longer-term outcomes such as displacement and nutritional stress. However, the analysis also indicates that more complex dynamics, including compound events, feedback loops, and cumulative impacts over time, are less frequently articulated.

Figure 5
Examples of How Climate Hazards Translate into Health Impacts



Note: The pathways shown are illustrative examples identified across national climate policy documents and do not represent all possible climate-health pathways.

Finally, the analysis underscores the importance of context-specific hazard profiles. Certain hazards are primarily referenced in geographically exposed regions, such as sea-level rise and saltwater intrusion in coastal and island states, or glacial lake outburst floods in mountainous regions. These patterns highlight the need for locally grounded approaches to understanding and addressing health-related L&D.

Vulnerability and Response: from Recognition to more Targeted and Operational Approaches

National climate policy documents widely acknowledge that health-related L&D is not experienced uniformly across populations. This recognition reflects an understanding that climate impacts intersect with existing social, economic, and structural inequalities. However, while vulnerability is frequently identified, the level of specificity and depth of analysis varies, and the translation of this recognition into targeted and actionable responses remains uneven.

In many cases, vulnerability is framed in broad terms, with references to "vulnerable groups" without detailed articulation of how risk is shaped by intersecting factors such as gender, age, socioeconomic status, displacement, and access to services. Where more detailed framing is provided, documents highlight how vulnerability is embedded within wider social and structural conditions. For example, Aotearoa/New Zealand's HNAP identifies climate change as a determinant of mental health for young people, Māori, Pacific peoples, and rural communities, emphasising the importance of cultural identity and place-based connections (New Zealand HNAP, pp. 3, 29). Similarly, Peru's NAP illustrates gender-differentiated impacts, noting that climate-related migration can affect men and women in distinct ways, with implications for mental well-being and caregiving burdens (Peru NAP, p. 104).

Other documents point to emerging areas of concern, including youth-focused mental health impacts and climate-related anxiety. For instance, Kiribati's NAP highlights the need to address anxiety linked to uncertainty about the future, while the United Arab Emirates' NDC references youth engagement and dialogue around climate-related stress (Kiribati NAP, p. 170; UAE NDC, p. 61). These examples reinforce the importance of understanding vulnerability not as a fixed category, but as a dynamic condition shaped by multiple and interacting factors.

While the identification of vulnerable populations is increasingly prominent, corresponding policy responses are less consistently developed. Across documents, a range of intervention types is referenced, including early warning systems, awareness and risk communication, health system strengthening, social protection measures, and institutional coordination between climate and health sectors. These interventions indicate growing recognition of the need to address health-related L&D through both preventive and responsive measures.

However, the articulation of these interventions often remains at a high level, with limited detail on implementation pathways. Information on institutional responsibilities, financing mechanisms, timelines, and monitoring frameworks is not consistently specified, which may constrain the translation of policy intent into effective action. While early warning systems and preparedness measures are frequently emphasised, less attention is given to longer-term recovery, sustained service provision, and targeted support for populations facing compounded vulnerabilities.

Moreover, the linkage between vulnerability identification and intervention design is not always clearly established. Although many documents recognise that certain groups face heightened risks, fewer outline tailored or group-specific strategies to address these risks in practice. This gap is particularly relevant in the context of intersecting vulnerabilities, where factors such as poverty, displacement, and limited access to services can amplify health impacts over time.

At the same time, some documents demonstrate more comprehensive and integrated approaches. The Philippines' NAP, for example, highlights that indirect and non-economic impacts, including health risks, psychological stress, and potential conflict, may be as significant as direct losses, even when not fully captured in quantitative models (Philippines NAP, p. 41).

> **"The indirect social costs of inaction, such as health impacts, loss of ecosystem services, conflict and security risks, and psychological and social stress, should not be overlooked. While these costs are not fully quantified in socioeconomic models, a comprehensive assessment might reveal that these indirect consequences can be as detrimental, if not more, to the Philippines than direct impacts."**
>
> (Philippines NAP, p.41)

Such framing underscores the importance of considering both the immediate and longer-term dimensions of vulnerability and response within L&D planning.

5. Conclusion

Health is now firmly established as a critical dimension of climate-related L&D, with national policy frameworks increasingly recognising its implications across physical health, mental health, and health systems. Continued efforts will be important to further integrate health considerations into implementation pathways, financing mechanisms, and governance frameworks, ensuring a more comprehensive and coordinated response across sectors. (UNBOLD)

This gap is particularly evident in the limited articulation of cross-sectoral pathways, the partial integration of mental health and recovery planning, and the insufficient alignment between vulnerability analysis and targeted interventions. At the same time, emerging areas of concern, including urban health risks, climate-related displacement, and the cumulative impacts of slow-onset processes, highlight the increasing complexity of health-related L&D. Without more explicit and integrated approaches, there is a risk that significant dimensions of health L&D, particularly non-economic and long-term impacts, may remain insufficiently addressed within national and global responses, as also highlighted in recent assessments (IPCC, 2022a; 2023).

Strengthening the integration of health within L&D frameworks will therefore require a shift from recognition to implementation. This includes embedding health more systematically across national climate policy instruments, ensuring that resilience and recovery are addressed as part of a continuum, and strengthening the alignment between national planning and evolving international mechanisms under the UNFCCC (UNFCCC, 2015), including the Warsaw International Mechanism (UNFCCC, 2013), the Santiago Network (UNFCCC, 2022a), and the Fund for Responding to Loss and Damage (UNFCCC, 2023a). As global L&D architecture continues to develop, there is a timely opportunity to ensure that health is positioned not as a secondary consideration, but as a core component of equitable, effective, and forward-looking climate action.

Box 1. Future updates and forthcoming guidance on health and loss and damage

Since the completion of this stocktake, several additional NDCs, NAPs, and HNAPs have been published, further advancing national approaches to health and loss and damage. These new documents will be incorporated into the next iteration of this analysis, and the updated findings will be showcased/reflected in a forthcoming WimExCom's Guide on Health.

6.

Policy Recommendations

Building on these insights, the following priority areas are proposed to support stronger and more operational integration of health within L&D frameworks:

1. Strengthen integration of health across L&D policy instruments and processes

- Embed health explicitly within all national climate policy instruments, particularly NDCs, recognising physical health, mental health, and health systems as core L&D domains (IPCC, 2022; WHO, 2022).
- Align national planning with international L&D mechanisms, including the Warsaw International Mechanism, the Santiago Network, and the Fund for Responding to Loss and Damage (FRLD), to ensure health is reflected in global priorities and support structures (UNFCCC, 2013; 2023; 2024).
- Promote coherence across HNAPs, NAPs, and NDCs to ensure consistent treatment of health across planning, implementation, and reporting processes.

2. Expand integration of mental health and NELs

- Recognise mental health as a core component of L&D, including impacts related to disasters, displacement, cultural loss, and chronic climate stressors (WHO, 2023; IPCC, 2022).
- Integrate mental health within health system planning, including workforce development, community-based care, and sustained psychosocial support beyond immediate disaster response (WHO, 2021; 2022).
- Where mental health and psychosocial support (MHPSS) measures are proposed, implementation may benefit from alignment with established international frameworks, including the Inter-Agency Standing Committee (IASC) Guidelines on Mental Health and Psychosocial Support in Emergency Settings and the MHPSS Minimum Service Package, which provide practical guidance for integrating psychosocial support within emergency preparedness, response, and recovery efforts (IASC, 2007; MHPSS Collaborative, 2024).
- Strengthen the inclusion of non-economic losses, including impacts on identity, culture, and social cohesion, within national and international L&D frameworks (UNFCCC, 2013; IPCC, 2022).

3. Build climate-resilient and recovery-oriented health systems

- Integrate health system resilience within L&D frameworks, including climate-resilient infrastructure, continuity of essential services, and surge capacity during emergencies (WHO, 2007; IPCC, 2022).
- Strengthen planning for post-disaster recovery, including restoration of infrastructure, supply chains, and workforce capacity, recognising recovery as a core component of L&D (IPCC, 2022; UNDRR & WHO, 2022).
- Develop tools linking hazard profiles and health risk assessments to phased preparedness, response, and recovery strategies (Romanello et al., 2023).

4. Strengthen cross-sectoral and urban approaches to health-related L&D

- Improve articulation of cross-sectoral pathways linking climate hazards to health outcomes across water, food, energy, and livelihood systems (IPCC, 2022; van Daalen et al., 2024).
- Promote integrated approaches to urban health risks, including extreme heat, WASH pressures, and cascading infrastructure disruptions (IPCC, 2023; UN-Habitat, 2020).
- Incorporate spatial and intra-urban inequalities into planning, particularly for informal settlements and low-income communities (WHO, 2010).

5. Advance equity-focused and targeted responses

- Strengthen identification of populations facing heightened vulnerability and translate this into targeted, context-specific interventions (IPCC, 2022; UNFCCC, 2013).
- Incorporate equity-sensitive monitoring and accountability mechanisms, including disaggregated indicators for health outcomes and access to services (WHO, 2021; World Bank, 2022).
- Address intersecting vulnerabilities, including those related to poverty, gender, displacement, and cultural context, within L&D planning and implementation.

6. Strengthen implementation pathways, coordination, and financing

- Articulate clearer implementation pathways, including institutional responsibilities, coordination mechanisms, timelines, and monitoring frameworks (UNFCCC, 2023; 2024).

- Strengthen coordination between health and climate sectors through joint planning and integrated governance approaches.

- Facilitate access to international financing mechanisms, including the FRLD and the Green Climate Fund, ensuring that health-related L&D is reflected in funding priorities and proposals (Green Climate Fund, 2020; UNFCCC, 2023).

These recommendations aim to help translate growing recognition of health-related L&D into more coherent, equitable, and operational national responses, while also informing ongoing evolution of the global L&D regime under the UNFCCC (IPCC, 2022, 2023; UNFCCC, 2013, 2023).

7.

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8.

Annex

8.1 Methodology

This stocktake aims to assess how health-related impacts in the context of L&D are addressed in national climate policy documents. The analysis focuses on the inclusion and treatment of health themes in three types of documents:

1. NDCs
2. NAPs
3. HNAPs

The objective is to understand the extent, nature, and thematic trends of health-related L&D references across countries and regions, based on a systematic keyword-based content analysis.

The scope of the analysis includes only officially designated NDCs, NAPs, and HNAPs that were available in English, Spanish, or French as of 1st May, 2025. Other national adaptation-related policy documents were excluded if they did not explicitly bear one of the formal titles above. All NDC 2.0 submissions and NDC 3.0 submissions, published by the cutoff date of 1st May 2025 were included.

Prior to detailed analysis, documents were pre-screened to include only those that made specific references to L&D or mentioned the terms "loss" or "damages," ensuring relevance to the L&D context. A full list of the documents and countries included is provided in Appendix I.

8.1.1 Document Selection

Documents were sourced from official UNFCCC repositories and selected based on the following criteria:

The scope of this analysis is limited to the publicly accessible, official UNFCCC documents explicitly titled as NAPs, HNAPs, and NDCs. Other national policy documents, although potentially related to thematic focus, were excluded if they did not bear one of these formal designations. Furthermore, the NDCs 3.0 that have been published up until **1st May,** 2025 are additional documents that have been analysed, in addition to all of the other available NDCs 2.0. As per the researchers' language proficiency, documents available in English, French and Spanish were analysed. Documents in other languages were excluded.

Before the scoping analysis was conducted, all potentially relevant documents underwent a screening for the crucial keywords. While at a later stage, a vast range of keywords was considered, the first screening was intended to filter those documents that mention and recognise health impacts within the framework of losses and damages. Therefore, the search terms "loss", "damage" and "health" (or their respective equivalent in either French or Spanish) were applied. Documents were included accordingly. All documents which did not contain the term "loss" or "damage" were omitted from the subsequent analysis. The inclusion of the term "health" was not considered obligatory.

8.1.2 Analytical Framework

The content analysis was guided by a keyword-based framework, co-developed with thematic experts from UNEP-CCC and WHO. Keywords were organised into six thematic categories:

1. ELD and NELD
2. Mental Health Impacts
3. Physical Health Impacts
4. Health Services and Infrastructure
5. Vulnerable Groups
6. Extreme Weather Events and General Climate Impacts

Translations of keywords were developed to maintain conceptual consistency across English, French, and Spanish. The full multilingual keyword list is included in Appendix II.

8.1.3 Data Extraction and Screening Process

The stocktake was conducted in two sequential rounds, combining both structured keyword identification and thematic categorisation to ensure a comprehensive understanding of how health impacts in the context of L&D are represented across the selected policy documents.

Phase 1: Keyword-Based Identification

All documents were manually reviewed using a structured keyword search process, based on a pre-established multilingual keyword framework (see Appendix II). This process involved a detailed line by line scan of the documents to identify any phrases, sentences, or paragraphs explicitly referencing health impacts within the context of L&D.

To maintain consistency and avoid overrepresentation of repeated content, duplicate quotes or recurring sections were recorded only once per document. While the primary objective of this round was to capture thematic mentions related to health and L&D, relevant policy interventions were also noted if clearly articulated. However, it is important to note that policy-related content was not systematically captured, as it did not constitute a dedicated keyword category in the initial framework.

Phase 2: Thematic Categorisation

In the second round, all excerpts extracted during the keyword identification phase were subjected to detailed content analysis and thematic categorisation. This step involved a two-tiered classification:

a. Type of L&D:

- ELD
- NELD
- Both ELD and NELD

b. Health L&D Impact Domain:

- Physical Health
- Mental Health
- Health Services and Infrastructure

Excerpts that did not fall within these categories but were determined to reflect substantive content on policy responses or urban health impacts were retained and screened separately for qualitative narrative analysis. These two categories, namely, policy interventions and urban health were not part of the original keyword framework, but were identified inductively during the review process, due to their recurring relevance across multiple documents.

Excerpts deemed thematically ambiguous or non-specific were excluded from the quantitative component of the analysis but may be referenced qualitatively where relevant.

Following this categorisation, a quantitative tally of thematic mentions was compiled for each document and country, allowing for a comparative overview of the prominence and distribution of health-related L&D content by region, country, and document type. Screening was standardised through team calibration, with keyword translations verified by fluent speakers and ambiguous cases reviewed collaboratively.

Regional and country categorical trends were based on the UNEP division of regions (UNEP, 2018) and the UN definitions of Least Developed Countries (LDCs) and Small Island Developing States (SIDS) (United Nations, 2023; 2024).

8.1.4 Quality Assurance and Consistency

Screening was standardised through team calibration, with keyword translations verified by fluent speakers and ambiguous cases reviewed collaboratively to ensure consistency across the analysis.

8.1.5 Limitations

This analysis presents a structured but non-exhaustive overview of health-related impacts in the context of L&D across selected national policy documents. Several limitations should be acknowledged in interpreting the findings:

1. Document scope: First, only documents explicitly titled as NAPs, HNAPs, and NDCs were included. National strategies or adaptation documents not bearing these formal titles were excluded, even if potentially relevant.
2. Keyword framework: The stocktake was conducted using a defined set of keywords across six thematic categories. While efforts were made to ensure broad

coverage, including expert input and multilingual translation, it is possible that some relevant content was not captured due to variations in terminology, document phrasing, or use of synonyms not included in the keyword set.

3. Language: The analysis was limited to documents available in English, Spanish, or French. Documents submitted in other languages were excluded, which may have led to gaps in regional coverage.
4. Document variability: Differences in document structure, clarity, and length presented challenges for consistent extraction and may have introduced inconsistencies in content identification.
5. Deduplication: To avoid duplication, repeated or overlapping excerpts were recorded only once per document. This may slightly underrepresent emphasis on certain themes within individual documents.
6. Policy interventions: Policy-related content was identified opportunistically rather than through systematic keyword searching and therefore should not be interpreted as a comprehensive inventory of all health-related L&D responses in national documents.

Quantitative findings reflect the relative presence and distribution of health-related L&D mentions across documents. Results should not be interpreted as evaluative rankings of countries or as measures of the sufficiency or quality of national L&D responses.

8.1.6 Data and Sample Characteristics

In Phase 1, a total of 270 national climate policy documents were retrieved from official UNFCCC repositories and screened for eligibility. Of these, 123 documents met the inclusion criteria (explicitly referencing loss and/or damage in English, French, or Spanish, and published by 1st May 2025) and were included in Phase 2 for detailed thematic analysis. The final analysis comprised:

- 16 HNAPs, representing countries across five UNEP regions;
- 42 NAPs, representing countries across five UNEP regions; and
- 65 NDCs, representing 59 individual countries. (The total of 65 NDCs reflects all NDC submissions analysed (NDC 2.0, NDC 3.0, and earlier versions where applicable), while 59 represents the number of unique countries represented).

8.2 List of Documents Analysed (NAPs, NDCs, HNAPs)

HNAPs (n=16)	NAPs (n=42)	NDCs (n=59)
Aotearoa / New Zealand	Argentina	Albania
Bangladesh	Armenia	Antigua and Barbuda
Chile	Bangladesh	Barbados
Côte d'Ivoire	Bosnia & Herzegovina	Belize
Ethiopia	Burkina Faso	Brazil*
Fiji	Cabo Verde	Cabo Verde
Ireland	Cambodia	Cambodia
Jordan	Central African Republic	Central African Republic
Lao People's Democratic Republic	Chad	Chile
Madagascar	Democratic Republic of Congo (DRC)	Cook Islands
Mauritania	Ecuador	Dominica
Nepal	Ethiopia	Dominican Republic
Tanzania	Fiji	Georgia
Timor-Leste	Grenada	Grenada
Togo	Guatemala	Guatemala
Zambia	Haiti	Haiti
	Kenya	Indonesia*
	Kiribati	Jordan
	Liberia	Lao People's Democratic Republic
	Madagascar	Malaysia
	Marshall Islands	Maldives*
	Moldova	Marshall Islands
	Morocco	Mexico
	Mozambique	Moldova
	Nepal	Mongolia
	Niger	Myanmar
	Pakistan	Namibia
	Palestine	Nauru
	Paraguay	Nepal
	Peru	Niue
	Philippines	North Macedonia
	Saint Lucia	Oman
	Saint Vincent and the Grenadines	Pakistan
	Serbia	Palestine
	Sierra Leone	Philippines

HNAPs (n=16)	NAPs (n=42)	NDCs (n=59)
	South Sudan	Rwanda
	Sri Lanka	Saint Kitts and Nevis
	Suriname	Saint Lucia*
	Thailand	Saint Vincent and the Grenadines
	Timor-Leste	Senegal
	Trinidad & Tobago	Serbia
	Zambia	Seychelles
		South Africa
		South Sudan
		Sri Lanka
		Thailand*
		Timor-Leste
		Tanzania
		The Bahamas
		Togo
		Tonga
		Uganda
		United Arab Emirates
		Uruguay*
		Vanuatu
		Vietnam

Note: * indicates countries for which a specific NDC version or updated submission was highlighted in the analysis (as referenced in the report text)

8.2 Countries Referencing an Urban Context in Relation to Health-related L&D (by document type)

Document type	Number of documents	Countries
HNAPs	12	Bangladesh; Chile; Côte d'Ivoire; Fiji; Ireland; Jordan; Mauritania; Nepal; Tanzania; Timor-Leste; Togo; Zambia
NAPs	15	Argentina; Bangladesh; Cabo Verde; Central African Republic; Fiji; Haiti; Madagascar; Morocco; Niger; Peru; Saint Lucia; Serbia; Sri Lanka; Timor-Leste; Zambia
NDCs	11	Central African Republic; Jordan; Moldova; Myanmar; Saint Kitts and Nevis; Senegal; United Arab Emirates; Uruguay (V2, V3); Vanuatu; Vietnam

8.3 Keyword List Used for Analysis in English, Spanish and French

Themes	English		Spanish		French	
L&D keywords	Climate change	Loss, damage	Cambio climático	Impactos en la salud	Changement climatique	Pertes et dommages, pertes, dommage
	Health impacts	Climate-related loss	Pérdidas y daños, pérdidas, daños	Pérdidas asociadas al clima, pérdidas relacionadas con el clima, impactos climáticos	Impacts sur la santé	Pertes liées au climat
ELD and NELD keywords	Economic loss	Displacement	Pérdidas económicas impactos económicos, impactos negativos para la economía, impactos económicos negativos	Desplazamiento forzado, Desplazar, provocar desplazamiento, forzar desplazamiento	Pertes économique	Déplacement, Déplacer
	Non-economic loss	Cultural loss	Pérdidas no económicas	Pérdida(s) cultural(es)	Pertes non-économique	Perte(s) culturelle(s)
	Livelihood loss, loss	Immigration, migration	Pérdidas de medios de vida, pérdidas de medios de subsistencia	Inmigración Migración,	Pertes de moyens de subsistence	Immigration, Migration,

Themes	English		Spanish		French	
Health-specific keywords	Morbidity	Mental health	Morbilidad (also found "morbimortalidad" as a mix of morbidity and mortality)	Salud mental	Morbidité, décès	Santé mentale
	Mortality	Heat-related illnesses	Mortalidad	Enfermedades relacionadas con el calor, enfermedades asociadas al calor	Mortalité	(Maladies liées à la) chaleur
	Infectious diseases	Respiratory health, illness, disorder	Enfermedad, Enfermedades infecciosas	Respiratorio Enfermedades respiratorias, enfermedades cardio-respiratorias, Trastorno desorden, Muerte, defunciones defunción	Maladie, Maladies infectieuses	Respiratoire , Désordre, Maladie
Mental health-specific keywords	Depression	Substance use	Depresión	Abuso de sustancia	Dépression	Toxicomanie , Abus des substances
	Psychiatric	Addict	Psiquiátrico	Persona con adicción Adicto/a, toxicómano/a	Psychiatrique	Toxicomane
	Psychological disorder, illness	Suicide	Desorden psicológico/ sicológico, trastorno psicológico/ sicológico,	Suicidio	Trouble psychologique	Suicide
	Anxiety	Psychological distress, disorder	Ansiedad	Malestar psicológico, Malestar	Anxiété	Détresse psychologique
	Panic	Emotional distress	Pánico	Malestar emocional	Panique	Détresse émotionnelle
	Mental	Eco-anger	Mental	Eco-ira	Mental	Éco-colère
	MPSS	Eco-anxiety	Síntomas psicosociales/ sicolosociales múltiples	Ecoansiedad	MPSS	Éco-anxiété
	Psychosoc, psycho-social	Grief	Psicosocial/ sicosocial	Duelo	Psychosocial, Psycho-social	Chagrin
	Mental hygiene, mental disorder, mental illness	Psychosis	Higiene mental	Psicosis	Hygiène mentale	Psychose

Themes	English		Spanish		French	
Mental health-specific keywords	Stressor, stress, distress	Hopelessness	Estrés, Estresor	Desesperanza	Stress, Stresses, Stresseur	Désespoir
	Stressful	Environmental distress	Estresante	Malestar ambiental	Stressant	Détresse environnementale
	Emotion	Solastalgia	Emoción, Emocional	Solastalgia	Emotion, Emotionnel	Solastalgie
	PTSD, post-traumatic stress disorder	Climate anxiety	Trastorno de estrés postraumático (TEPT), Estrés post-traumático	Captured by other keywords	Troubles de stress post-traumatique, Stress post-traumatique	Captured by other keywords
	Trauma	Climate grief	Trauma	Captured by other keywords	Traumatisme	Captured by other keywords
	Schizophrenia	Eco-grief	Esquizofrenia	Captured by other keywords	Schizophrénie	Captured by other keywords
	Ecological despair	Pre-traumatic stress	Ecoansiedad	Captured by other keywords	Détresse environnementale	Captured by other keywords
	Biospheric concern	Anticipatory grief	Captured by other keywords	Captured by other keywords	Captured by other keywords	Captured by other keywords
	Eco-paralysis	Future loss	Captured by other keywords	Captured by other keywords	Captured by other keywords	Captured by other keywords
	Ecological anxiety disorder	Existential anxiety	Captured by other keywords	Captured by other keywords	Captured by other keywords	Captured by other keywords
Health services	Health services	Hospital	Servicios sanitarios, servicios de salud	Hospital	Services de santé	Hôpital
	Healthcare	Ambulance	Atención médica, atención sanitaria	Ambulancia	Soins de santé	Ambulance
	Health infrastructure	Facilities	Infraestructura de salud	Instalaciones	Infrastructure de santé	Installations
Vulnerable populations	Vulnerable	Poor, poverty	Vulnerables	Pobreza,Personas en situación de pobreza, pobre	Vulnérable	Pauvreté , Pauvre
	Children, youth, infant	Impoverished	Niños, niñas, Lactante, bebé, Jóvenes	Empobrecido	Enfants, Nourrissons, Jeunes	appauvri

Themes	English		Spanish		French	
Vulnerable populations	Elderly, older adults, aged	Indigenous	Personas mayores, población anciana, Personas de avanzada edad, Adultos mayores	Indígena (adj)	Personnes âgées, Adultes plus agés	Indigène
	Low-income, lower income		De bajos ingresos, De menor ingreso		Faible revenu	
Climate impacts/disasters	Drought	Storm	Sequía	Tormenta	Sécheresse	Tempête
	Flood	Heatwave	Inundación	Ola de calor	Inondation	Canicule
	Cyclone	Wildfire	Ciclón	Incendio forestal	Cyclone	Cyclone
	Hurricane	Pollution	Huracán	Contaminación	Ouragan	Pollution
	Extreme heat	Extreme events	Calor extremo	Eventos meteorológicos extremos , eventos hidrometeorológicos extremo	Chaleur (extreme)	Captured by other keywords

8.4 Climate Hazard Mentions (Extreme and Slow-onset Terminology)

Document Type	Term Mentioned	Countries Mentioned
NDC	Extreme Weather	Philippines, Saint Lucia, Saint Vincent and the Grenadines, Serbia, Maldives (NDC 3.0), Mongolia, Myanmar, Tanzania, Pakistan, South Sudan, Sri Lanka, The Bahamas, Barbados, Belize, Thailand, Dominica, Georgia, Malaysia, Cabo Verde, Moldova, Saint Kitts and Nevis, Vietnam, Vanuatu, United Arab Emirates, Chile, Nauru, Oman, Namibia
NAP	Extreme Weather	Zambia, Bangladesh, Philippines, Saint Lucia, Serbia, Chad, Mozambique, Pakistan, Timor-Leste, Palestine, Trinidad & Tobago, Bosnia and Herzegovina, Cabo Verde, Argentina, Fiji, Grenada, Liberia, Moldova
HNAP	Extreme Weather	USA, Zambia, Bangladesh, Timor-Leste, New Zealand, Tanzania, Ethiopia, Fiji, Ireland, Jordan, Lao PDR
NDC	Slow Onset	Saint Lucia (NDC 2.0), Maldives (NDC 3.0), Pakistan (NDC 3.0), Barbados (NDC 2.0), Vanuatu, Grenada, Nauru, Marshall Islands (NDC 3.0)
NAP	Slow Onset	Bangladesh, Philippines, Saint Lucia, Thailand, Grenada

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