The Report of the Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015–2030

UNDRR
UN Office for Disaster Risk Reduction

SENDAI FRAMEWORK
FOR DISASTER RISK REDUCTION 2015-2030

Disclaimer

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List of acronyms and abbreviations

AI	Artificial intelligence
ASEAN	Association of Southeast Asian Nations
BBB	Build back better
CARICOM	Caribbean Community
CREWS	Climate Risk and Early Warning Systems
DESA	United Nations Department for Economic and Social Affairs
DIA	Disaster impact assessment
DRM	Disaster risk management
DRR	Disaster risk reduction
ECOSOC	United Nations Economic and Social Council
ESCAP	United Nations Economic and Social Commission for Asia and the Pacific
FEMA	Federal Emergency Management Agency
FAO	Food and Agriculture Organization
GAP	Gender Action Plan for the Sendai Framework
GBF	Kunming-Montreal Global Biodiversity Framework
GDP	Gross domestic product
HDP	Humanitarian, development and peace
HFA	Hyogo Framework for Action 2005–2015
HLM	High-level Meeting of the United Nations General Assembly on the Midterm Review of the Sendai Framework
HLPF	High-level political forum on sustainable development
IAEG	Inter-Agency and Expert Group
IOM	International Organization for Migration
IRP	International Recovery Platform

ISC	International Science Council
LTIK	Local, traditional and Indigenous knowledge
MENA	Middle East and North Africa
MHEWS	Multi-hazard early warning systems
MTR SF	Midterm review of the implementation of the Sendai Framework 2015–2030
MVI	Multidimensional Vulnerability Index
ODA	Official development assistance
OECD	Organisation of Economic Co-operation and Development
OIEWG	Open-ended intergovernmental expert working group on indicators and terminology relating to disaster risk reduction
PDNA	Post-disaster needs assessment
RRM	Regional Response Mechanism
SDGs	Sustainable Development Goals
SEM	Stakeholder Engagement Mechanism
SFM	Sendai Framework Monitor
SIDS	Small Island Developing States
STC MG	United Nations Scientific and Technological Community Major Group
UNDP	United Nations Development Programme
UNDRR	United Nations Office for Disaster Risk Reduction
UNECE	United Nations Economic Commission for Europe
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
WHO	World Health Organization
WMO	World Meteorological Organization

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Special thanks go to all Member States and non-State stakeholders whose genuine interest and commitment to consultations, review and reporting allowed the assembly of such a thorough and insightful collection of findings and recommendations for amplified and accelerated action to 2030 and beyond.

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1. Foreword

The progress made in realizing the outcomes, goals and targets of the Sendai Framework and other 2015 agreements, conventions and frameworks in the first years following their adoption was encouraging. Despite the enormous challenges to implementation, collective efforts were imbued with the same positivity and optimism that infused the environment in which these agreements were adopted.

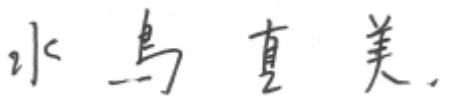
In the Sendai Framework, United Nations Member States crafted a universal vision of how societies might collaborate to identify, prevent and reduce risks *before* they manifest as shocks or disasters, to build resilience and thereby navigate risk-informed and sustainable pathways leading up to 2030 and beyond. The Sendai Framework is a remarkable agreement. It now serves as the connecting tissue between all global agendas, with ramifications for every aspect of the interactions of humans with each other, and the natural environment.

However, at the midpoint of the implementation of the 2015 agreements, progress has stalled and, in some cases, reversed. This has resulted not only from the impact of the COVID-19 pandemic, but also from short- versus long-termism, weakened multilateralism, disconnects between the real and the financial economies, rising inequality, and barriers between risk science, perception and risk-informed decision-making. Risks are being created and accumulating faster than our ability to anticipate, manage and reduce them, and when those risks are realized as shocks or disasters, they bring increasingly dire consequences for people, livelihoods, society and the ecosystems on which we depend.

The Midterm Review of the Implementation of the Sendai Framework 2015-2030 (MTR SF) therefore comes at a critical moment. This report summarizes the learning and recommendations of an extensive review by States and stakeholders pursuing the expected outcome and goal of the Framework and thus risk-informed sustainable development.

The MTR SF presents an opportunity for States and stakeholders to review, course-correct and, as the Secretary-General said, upgrade "our toolbox, norms, and approaches" so that frameworks for global cooperation can mirror evolving issues rather than become "zero-sum and polarizing."[1] As one of several midpoint stocktaking and review exercises, the findings and recommendations of the MTR SF are central to informing actions that support numerous global agreements and reviews, including those related to sustainable development, financing for development, climate, biodiversity, water, energy and food.

As we look to the 2023 Sustainable Development Goals Summit (SDG Summit), the twenty-eighth Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC), and the Summit of the Future, let us take our learning and seize the moment, so that current and future generations can live more safely and believe in a resilient future, where the needs of people, society and planet are at the forefront.



Mami Mizutori

Special Representative of the Secretary-General for Disaster Risk Reduction
Head of the United Nations Office for Disaster Risk Reduction

1 United Nations, *Secretary-General's remarks to the Security Council Open Debate on Multilateralism*, 14 December 2022.

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2. Introduction

Cast your mind back to before 2015. Economies and the people they serve were finally starting to look forward with renewed optimism after one of the most significant global shocks in living memory – the global financial crisis of 2007–2009.

As the implementation period of the Millennium Development Goals was concluding, cognizant of the need for ambition and propelled by a growing sense of urgency, Member States and non-State stakeholders came together to forge a series of interconnected global agreements designed to chart sustainable and regenerative pathways for humans on a liveable planet. It was a unique moment of collective endeavour in multilateral diplomacy.

Adopted by Member States in the United Nations General Assembly in June 2015,[2] the Sendai Framework for Disaster Risk Reduction 2015–2030 (Sendai Framework) was the first of those pivotal agreements. In so doing, Member States adopted an insightful and prescient framework, one that called for a critical shift in how the world deals with disasters, moving prevalent approaches away from managing disasters after the fact to managing risks prior. Responsibility for this was situated not only with government offices, institutions or entities responsible for disaster and crisis management, but with all stakeholders, requiring an *all-of-society* and *all State institutions* engagement and partnership for its achievement.[3]

Furthermore, in broadening the scope of hazards and risks to include natural and man-made hazards, as well as related environmental, technological and biological hazards and risks,[4] countries recognized the dynamic nature of the world in which these agreements were reached: a world undergoing rapid changes in the speed, complexity and scale of hyperconnections in and among socioecological and technological systems. Countries recognized that interconnections and interdependencies – among decisions, actions and inactions inherent to social, economic, political, financial and ecological systems – can have far-reaching systemic consequences across space and through time. The Sendai Framework was envisioned with the understanding that decisions that create or prevent, amplify or reduce risk before the risk becomes disaster, are of critical importance if we are to reduce shocks that can be characterized by local-to-planetary-to-local cascading impacts and contagion.

The 2015 agreements, including the Sendai Framework, heralded commitments to inter alia pursue risk-informed decision-making, build resilience, tackle climate change and create sustainable development pathways. They examine a world beyond prosperity measured only by gross domestic product (GDP),[5] and beyond extractive and transactional relationships with each other and nature – for as much as we have constructed economic, political and technological systems that often consider ourselves separate to and above nature, the fundamental truth is that we live within finite planetary boundaries.

The failure to place risk reduction at the heart of current societal, political and economic choices, not to mention the global financial system, means that while some progress is being made, risk creation is outstripping risk reduction.[6]

The COVID-19 pandemic demonstrated the consequences of failing to grasp and manage the drivers of risk creation and propagation in and across sectors, disciplines, geographies, scales and through time. What began as a local outbreak accelerated into a global pandemic that continues to generate economic, social and technological shocks, many of which we are still trying to understand and manage.

2 A/RES/69/283.
3 Ibid., para. 19c.
4 Ibid., para. 15.
5 "Distinctions must be kept in mind between quantity and quality of growth, between costs and returns, and between the short and long run. Goals for more growth should specify more growth of what and for what." Simon Kuznets, "How to judge quality", The New Republic, 20 October 1962. Available at https://static1.squarespace.com/static/5536fbc7e4b0d3e8a9803aad/t/554d19f6e4b0005c69696961/1431116278720/Kuznets_How+to+judge+Quality_1962.pdf. Accessed on 31 January 2023.
6 UNDRR, *Global Assessment Report on Disaster Risk Reduction 2022: Our World at Risk – Transforming Governance for a Resilient Future* (Geneva, 2022a). Available at https://www.undrr.org/gar2022-our-world-risk.

Similarly, the multidimensional and cascading impacts ensuing from the triple environmental crises of climate change, biodiversity loss and pollution are negatively affecting the health and well-being of humans and ecosystems – not to mention food, water, energy and health systems. All of this in turn exacerbates vulnerabilities and exposure, and the underlying risk causes and drivers.

The MTR SF therefore comes at a critical juncture, affording Member States and stakeholders the opportunity to reflect on what has been learned from 2015 into the present reality. We need to confront how we apply or neglect what we already know about risk and examine the required renovations to risk governance frameworks and risk management approaches. This will enable us to deal with the multi-hazard, multidimensional and systemic nature of risk and to shift away from the prevailing approach of protecting development from exogenous or external threats. We need to install risk-informed decision-making and risk management cognizant of endogenous risks, that are socially constructed and accumulated over time.[7]

These renovations will help us deal more effectively with wide and varied threats that are driven by, for example, unsustainable production and consumption, the misuse of artificial intelligence, and structural impediments to finance and capital being able to better manage risk. Such an approach will allow us to integrate diverse knowledge systems in how we know risk, and "re-embrace global solidarity and find new ways to work together for the common good".[8]

If such renovations to risk governance and risk management approaches and modalities were to be adopted, we might finally be able to resolve the fundamental contradiction that dominant approaches protect the very same systems that are generating the risk.[9]

7 Allan Lavell and others, *The Social Construction of the COVID-19 Pandemic: Disaster, Risk Accumulation and Public Policy* (LA RED & Risk Nexus Initiative, 2022). Available at www.desenredando.org/.
8 United Nations, *Our Common Agenda: Report of the Secretary-General* (New York, 2021a).
9 Andrew Maskrey, Garima Jain, and Allan Lavell, *The Social Construction of Systemic Risk: Towards an Actionable Framework for Risk Governance* (Geneva, UNDRR, 2022).

3. Background

3.1. Mandate and objectives

The Sendai Declaration and the Sendai Framework, adopted by the Third United Nations World Conference on Disaster Risk Reduction[10] were subsequently endorsed by Member States in the United Nations General Assembly,[11] providing the framework for *all-of-society* and *all State institutions*[12] engagement in preventing and reducing disaster risks posed by both natural and anthropogenic hazards and related environmental, technological and biological hazards and risks.

The Third United Nations World Conference on Disaster Risk Reduction invited the General Assembly "to consider the possibility of including the review of the global progress in the implementation of the Sendai Framework as part of its integrated and coordinated follow-up processes to United Nations conferences and summits, aligned with the Economic and Social Council (ECOSOC), the high-level political forum on sustainable development (HLPF) and the quadrennial comprehensive policy review cycles".[13]

Aware that the period to 2023 marks the midpoint in implementing the Sendai Framework as well as other related agreements and conventions,[14] the United Nations General Assembly decided[15] to "hold a midterm review of the implementation of the Sendai Framework in 2023 to assess progress on integrating disaster risk reduction (DRR) into policies, programmes and investments at all levels, identify good practice, gaps and challenges and accelerate the path to achieving the goal of the Sendai Framework and its seven global targets by 2030", adding "that the Sendai Framework….provides guidance relevant to a sustainable recovery from COVID 19 and [….] to identify and address underlying drivers of disaster risk in a systemic manner".

In his 2021 report on the implementation of the Sendai Framework, the United Nations Secretary-General recommended[16] that countries initiate "their midterm review process before the end of 2021 to be completed before the end of 2022" and advised countries to "utilize existing multisectoral inter-institutional mechanisms" to ensure that the review benefits from "a whole of government approach" consulting with "key ministries and institutions beyond the disaster management authorities".

Scope and objective of the review:

The **overall objective** of the MTR SF is to take stock of the implementation of the Sendai Framework to date, assessing progress made and challenges experienced in preventing and reducing disaster risk, identifying new and emerging issues as well as changes in context since 2015. It further aims to initiate nascent thinking on possible international arrangements for risk-informed sustainable development beyond 2030.

In examining challenges experienced in preventing new and reducing existing disaster risk, the MTR SF explores aspects of progress in integrating risk reduction into decision-making, investment and behaviour across sectors, disciplines, geographies and scales, by countries and other stakeholders, to prompt the re-examination and redress of our relationship with risk in pursuit of sustainable and habitable pathways.

10 A/CONF.224/L.1.
11 A/RES/69/283.
12 Ibid., para. 19c.
13 Ibid., para. 49.
14 Including but not restricted to sustainable development, climate change, water for development, financing for sustainable development, and the Kunming-Montreal Global Biodiversity Framework.
15 A/RES/75/216.
16 A/76/240.

The **outcome** of the MTR SF is expected to inform:

- policy adjustments and new modalities for implementation for Governments and other stakeholders for the second half of the duration of the Sendai Framework

- the deliberations of Member States on an expression of renewed commitment to implement recommended actions emanating from the review

- the follow-up processes to United Nations conferences and summits, including but not limited to the deliberations of the ECOSOC HLPF on sustainable development, the SDG Summit and the High-level Dialogue on Financing for Development, the Global Stocktake of the Paris Agreement and the twenty-eighth Conference of the Parties to the UNFCCC, the Midterm Review of the Water Action Decade and the United Nations Water Conference, the Summit of the Future, the Doha Programme of Action, and the follow-up and review of the SIDS Accelerated Modalities of Action Pathway (SAMOA Pathway) and the Vienna Programme of Action, so as to strengthen policy coherence and further integrate reducing disaster risk and building resilience

3.2. Guidance

Member States and stakeholders were encouraged[17] to conduct consultations and review that were grounded in country-level or constituency experience, based on evidence[18] and informed by appropriate evaluations and expert opinion, with multi-stakeholder participation. Emphasis was placed on multi-stakeholder participation, with States encouraged to structure national consultations in a participatory, inclusive, accessible and transparent way, and by engaging all levels and sectors of government, consistent with the Guiding Principles of the Sendai Framework. Specific guidance on a gender-responsive review was also provided.[19]

Member States and other stakeholders were invited to consider key enablers and challenges observed since 2015 – for instance institutional, social, political, financial, organizational or thematic – and to examine and bring attention to issues emerging since the adoption of the Sendai Framework that will need to be considered in its implementation up to 2030 and beyond.

Coordinated by the United Nations Office for Disaster Risk Reduction (UNDRR), and with the input and support of numerous United Nations entities, this substantive review was initiated at national, regional and global levels in 2021, with consultations and review to conclude by September 2022 to allow inputs to be incorporated into this report as well as the report on the main findings and recommendations of the MTR SF.[20] Both reports are produced to support Member States' deliberations on a political declaration that is expected to be adopted at the High-level Meeting of the United Nations General Assembly on the MTR SF (HLM) on 18 and 19 May 2023.

17 See https://sendaiframework-mtr.undrr.org/key-documents-mtr.
18 Informed by data and information that is ideally disaggregated by income, sex, age, race, ethnicity, migration status, disability, and geographic location, among other characteristics relevant to national contexts.
19 UNDRR, United Nations Population Fund (UNFPA), and UN Women, *Midterm Review of the Sendai Framework for Disaster Risk Reduction 2015–2030: Gender Guidance* (2022). Available at https://sendaiframework-mtr.undrr.org/media/78735/download.
20 A/77/640.

This report provides a qualitative and quantitative analysis of the progress made in the implementation of the Sendai Framework, on the basis of the submissions made by Member States, and by non-State stakeholders, as well as analysis of data provided to the Sendai Framework Monitor (SFM), global and regional thematic studies, interviews, focus group discussions, a review of the Sendai Framework Voluntary Commitments, and the literature review of the MTR SF. Additional relevant literature was consulted, including but not restricted to those listed in section 5.5 of the Concept Note of the MTR SF.[21]

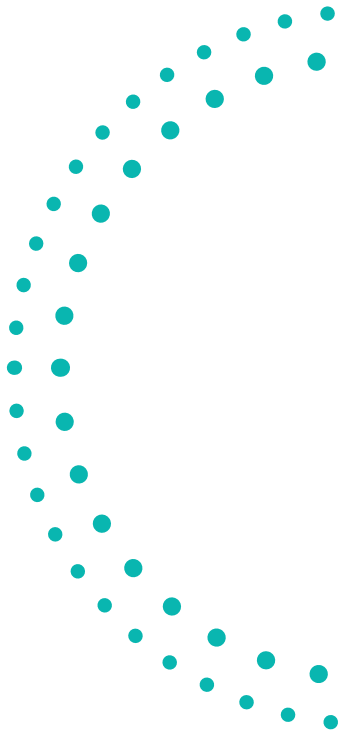
This report is made up of two parts:

Part I. Retrospective review – a stocktaking exercise from 2015 to 2022, inter alia appraising the progress in implementation, identifying good practice, gaps and challenges

Part II. Prospective review and recommendations – exploring context shifts and emerging issues and laying out some of the areas identified in the review as priorities for amplified and accelerated risk-informed decision-making and action to 2030 and beyond

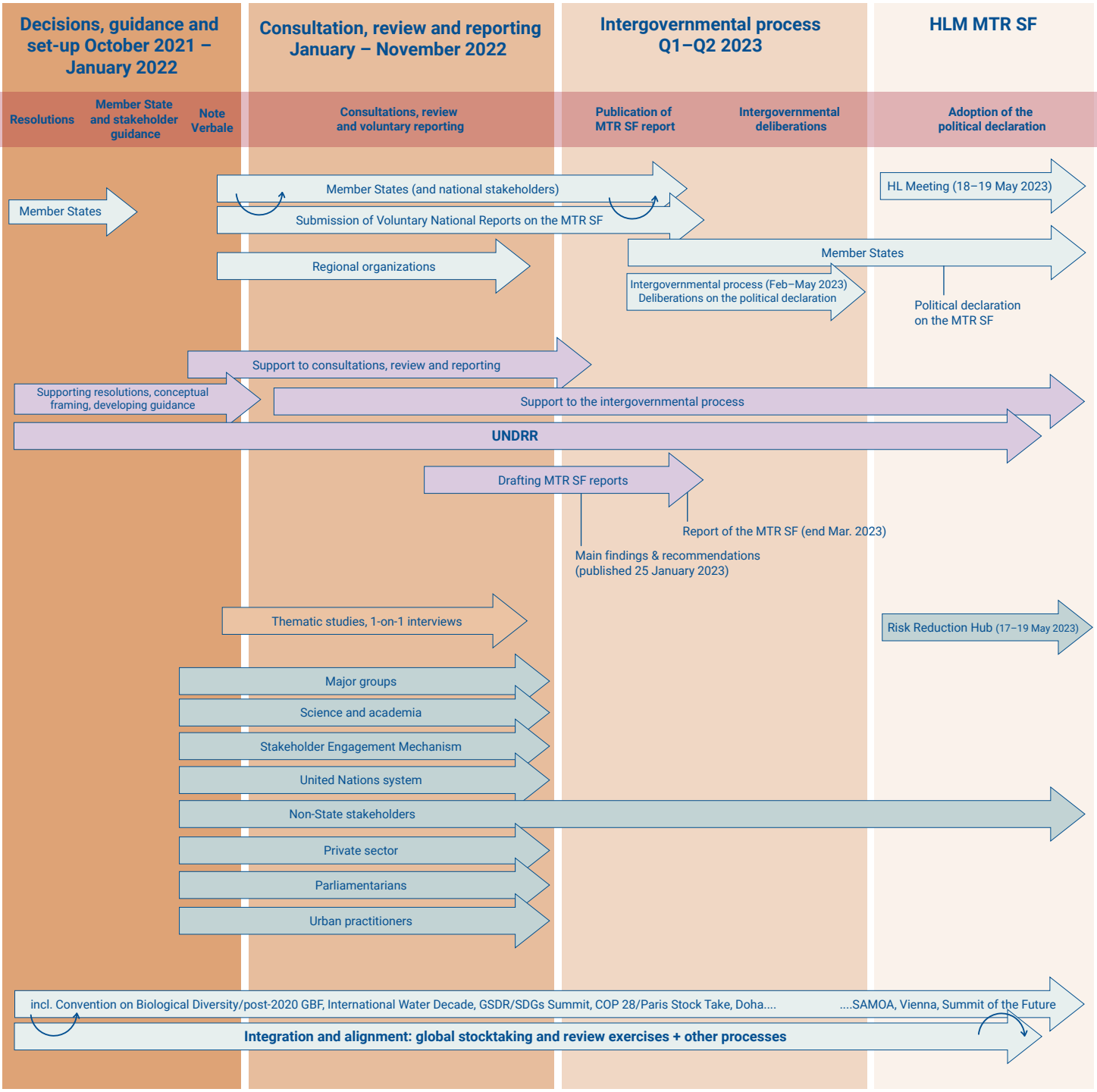
This report's main findings and recommendations are captured in the report published by the United Nations General Assembly on 31 January 2023, entitled the Report of the Main Findings and Recommendations of the Midterm Review of the implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030 (A/77/640).

This report was published to inform Member States' deliberations on the political declaration in advance of the HLM, and is available via the United Nations Official Document System[22] and the UNDRR repository.[23]



21 Available at https://sendaiframework-mtr.undrr.org/key-documents-mtr.
22 Available at https://documents.un.org/prod/ods.nsf/xpSearchResultsM.xsp?sort=PubDate&dir=descending.
23 Available at https://sendaiframework-mtr.undrr.org/publication/main-findings-and-recommendations-midterm-review-implementation-sendai-framework.

Figure 1. Timeline of the Midterm Review of the Sendai Framework 2021–2023



4. Methodology

Coordinated by UNDRR, the MTR SF is an inclusive, multi-stakeholder-led review, consistent with the Sendai Framework as an *all-of-society* and *all State institutions* undertaking.

The methodology followed in preparing the report included:

i. preparation (by UNDRR) of the MTR SF literature review[24]

ii. desk review

iii. quantitative and qualitative analysis of reports of Voluntary National Reports submitted by Member States and data submitted to SFM

iv. analysis of MTR SF research and reports submitted by non-State stakeholders

v. analysis of global MTR SF surveys of the Stakeholder Engagement Mechanism (SEM), parliamentarians, urban practitioners and water community

vi. analysis of individual interviews

vii. analysis of focus group discussions and interviews

viii. analysis of the proceedings of the global platform and regional platforms for DRR

ix. triangulation and validation of the information acquired

The present report draws on the substantive review of the MTR SF that was initiated in October 2021. Its content is drawn from submissions received in the drafting period of this report. Both Member States and stakeholders continued to provide formal submissions after the drafting period to inform deliberations on the political declaration and the HLM in May 2023. All submissions that received permission are uploaded and accessible on the MTR SF website.[25]

National consultations and the review were central to the MTR SF, and as suggested by the United Nations Secretary-General,[26] Member States were encouraged to initiate consultations and review to produce voluntary reports on the findings of their national midterm reviews (national voluntary reviews of the MTR SF). Forty-nine Voluntary National Reports on the MTR SF were received by 30 November 2022 – the list of countries can be found in annex I. At the time of writing, 23 Member States submitted Voluntary National Reports on the MTR SF after 30 November 2022, or indicated their intent to submit prior to the HLM – the list of these countries can be found in annex II.

The MTR SF also engaged and benefited from **contributions of non-State stakeholders**. Ten entities or constituencies conducted constituent-specific or multi-stakeholder consultations and review. The full list of contributing entities and constituencies can be found in annex III and includes 28 United Nations entities, 25 major groups and entities associated with SEM.

The report draws on **policy, strategic and guidance documents** provided by all contributing Member States, entities and organizations, as well as eight **thematic studies** (see annex IV) to understand the components of progress in DRR to date. In addition, UNDRR conducted **27 interviews with experts and practitioners worldwide**, from governments, the United Nations system, civil society organizations and the private sector. The list of interviewees is provided in annex V.

DRR meetings also provided inputs to the MTR SF, including: the Africa Regional Platform for Disaster Risk Reduction (hosted by Kenya on 16–19 November 2021), the Regional Platform for Disaster Risk Reduction for the Americas and the Caribbean (hosted by Jamaica

24 Available at https://sendaiframework-mtr.undrr.org/publication/literature-review-midterm-review-implementation-sendai-framework-disaster-risk.
25 Available at https://sendaiframework-mtr.undrr.org/.
26 A/76/240.

on 1–4 November 2021), the Arab Platform for Disaster Risk Reduction (hosted by Morocco on 8–11 November 2021), the European Forum for Disaster Risk Reduction (hosted by Portugal on 24–26 November 2021), and the Asia-Pacific Ministerial Conference on Disaster Risk Reduction (hosted by Australia on 19–22 September 2022), as well as the Global Platform for Disaster Risk Reduction 2022 (hosted by Indonesia on 23–28 May 2022).

49 Voluntary National Reports on the MTR SF were received by 30 November 2022

23 Member States submitted Voluntary National Reports on the MRT SF after 30 November 2022

10 entities or constituencies conducted constituent-specific, or multi-stakeholder consultations and review

28 United Nations entities

25 major groups and entities associated with SEM

27 interviews with experts and practitioners worldwide

- Part I -

Retrospective Review

5. Progress towards the expected outcome and goal

Box 1. Targets of the Sendai Framework

(a) Substantially reduce global disaster mortality by 2030, aiming to lower the average per 100,000 global mortality rate in the decade 2020–2030 compared to the period 2005–2015.

(b) Substantially reduce the number of affected people globally by 2030, aiming to lower the average global figure per 100,000 in the decade 2020–2030 compared to the period 2005–2015.

(c) Reduce direct disaster economic loss in relation to global gross domestic product (GDP) by 2030.

(d) Substantially reduce disaster damage to critical infrastructure and disruption of basic services, among them health and educational facilities, including through developing their resilience by 2030.

(e) Substantially increase the number of countries with national and local disaster risk reduction strategies by 2020.

(f) Substantially enhance international cooperation to developing countries through adequate and sustainable support to complement their national actions for implementation of the present Framework by 2030.

(g) Substantially increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to people by 2030.

Between 2005 and 2015, the monitoring system of the Hyogo Framework for Action (HFA) consisted of biennial self-assessment and reporting by Member States and intergovernmental organizations. This identified trends, areas of progress and challenges based on 22 (principally policy) indicators, organized according to the five priorities for action. 80 per cent of United Nations Member States reported at least once using the HFA Monitor. However, the HFA core indicators focused on "inputs", tracking implementation rather than the result of the implementation. The self-assessed progress in implementation was thus inadequately reciprocated through a decline in human and economic impact of disasters.

The Sendai Framework made a paradigm shift by adopting a set of seven global targets (Box 1), four of which (A–D) are outcome focused. Consistent with the shift to managing risk, Targets A–D are objective and measurable, with the reduction of disaster losses to be assessed relative to the size of national population and economy. Targets A and B explicitly allow the international benchmarking of progress relative to the quantitative baseline data of 2005–2015. Such outcome-level monitoring helps assess the result of DRR and related actions, with the understanding that the success (or lack thereof) of efforts will be reflected in the decrease (or increase) in disaster impacts.

Targets E to G are at output level and track the presence of disaster risk governance mechanisms, level of international cooperation and progress in multi-hazard early warning systems (MHEWS) and risk knowledge – all through quantified indicators.

Progress in these seven global targets is measured through a total of 38 indicators.

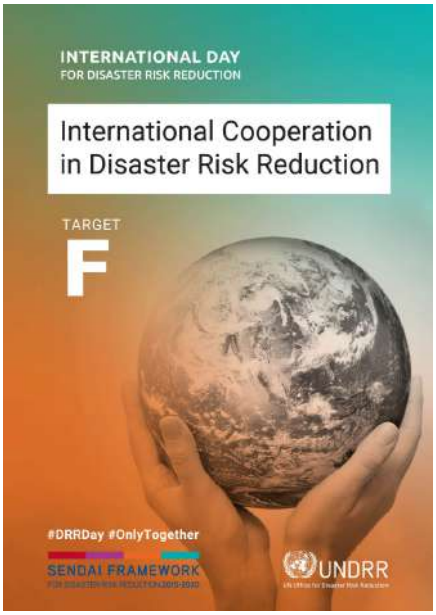
Although the Sendai Framework was agreed prior to the SDGs, negotiations for the post-2015 agreements occurred in parallel and were mutually supportive. The work of the open-ended intergovernmental expert working group on indicators and terminology relating to disaster risk reduction (OIEWG) took place between 2015 and 2016 in conjunction with that of the Inter-Agency and Expert Group (IAEG) on SDG Indicators. With the support of UNDRR, an explicit relationship was established between several targets of the SDGs and the Sendai Framework – particularly SDGs 1 (eradication of poverty), 11 (inclusive, safe, resilient and sustainable cities) and 13 (climate action) – with common target indicators adopted.

5.1. The Sendai Framework Monitor

The SFM online portal[27] was established to enable Member States to report on progress in Sendai Framework implementation. The portal can be accessed by the public and complements the SDG database for SDG-related indicators. The Monitor has also been critical in developing annual reports, such as the Secretary-General's report on the implementation of the Sendai Framework and the annual report on SDGs. UNDRR has developed Sendai Framework target-specific reports (Target E in 2020, Target F in 2021, and Target G in 2022) to provide in-depth status updates on topical issues, while partner organizations have also benefited from such official data and statistics.

Since SFM's launch in 2018, there has been an increase in data reporting across all targets of the Sendai Framework. As at 31 March 2022, **155 countries** were using the SFM compared with 88 countries in 2018. Moreover, there are **110 countries** that have national disaster loss databases using the DesInventar system,[28] which is designed to assist countries in collecting data to report against Targets A–D of the Sendai Framework.

Data on progress towards reducing disaster impact shows that **countries are not on track to realize the expected outcome of the Sendai Framework**: a substantial reduction in disaster losses by 2030. However, several achievements have been realized. Progress in each of the seven targets is summarized below.



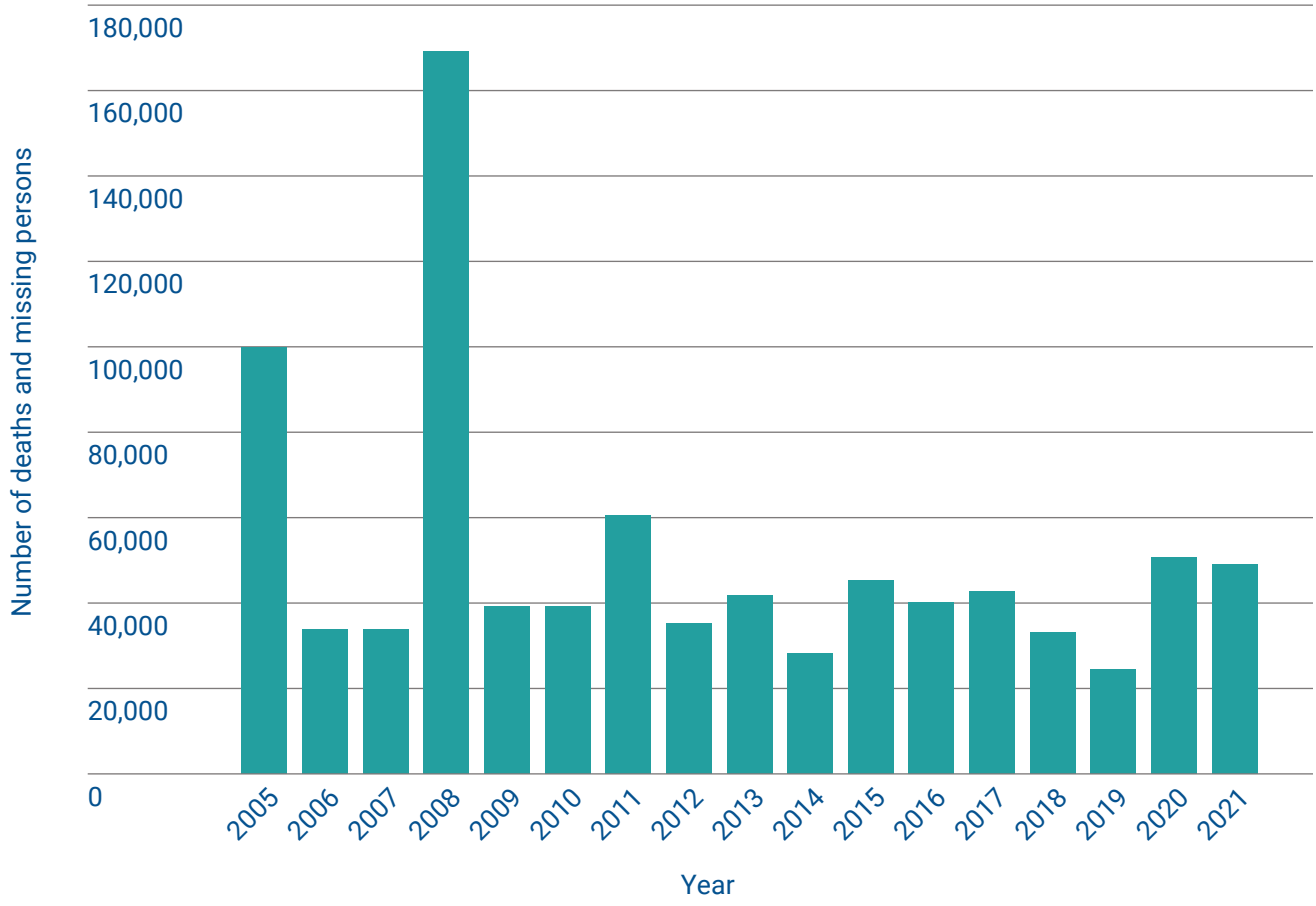
27 Available at https://sendaimonitor.undrr.org/.
28 Available at https://www.desinventar.net/.

5.1.1. Target A: Substantially reduce global disaster mortality

Average annual disaster-related mortality 2015–2021 is 40,797 people per year (Figure 2). As at March 2022, the average annual number of deaths and missing persons in the event of a disaster per 100,000 people has **decreased from 1.77 from the decade 2005–2014 to 0.82 in the decade 2012–2021** (Figure 3).

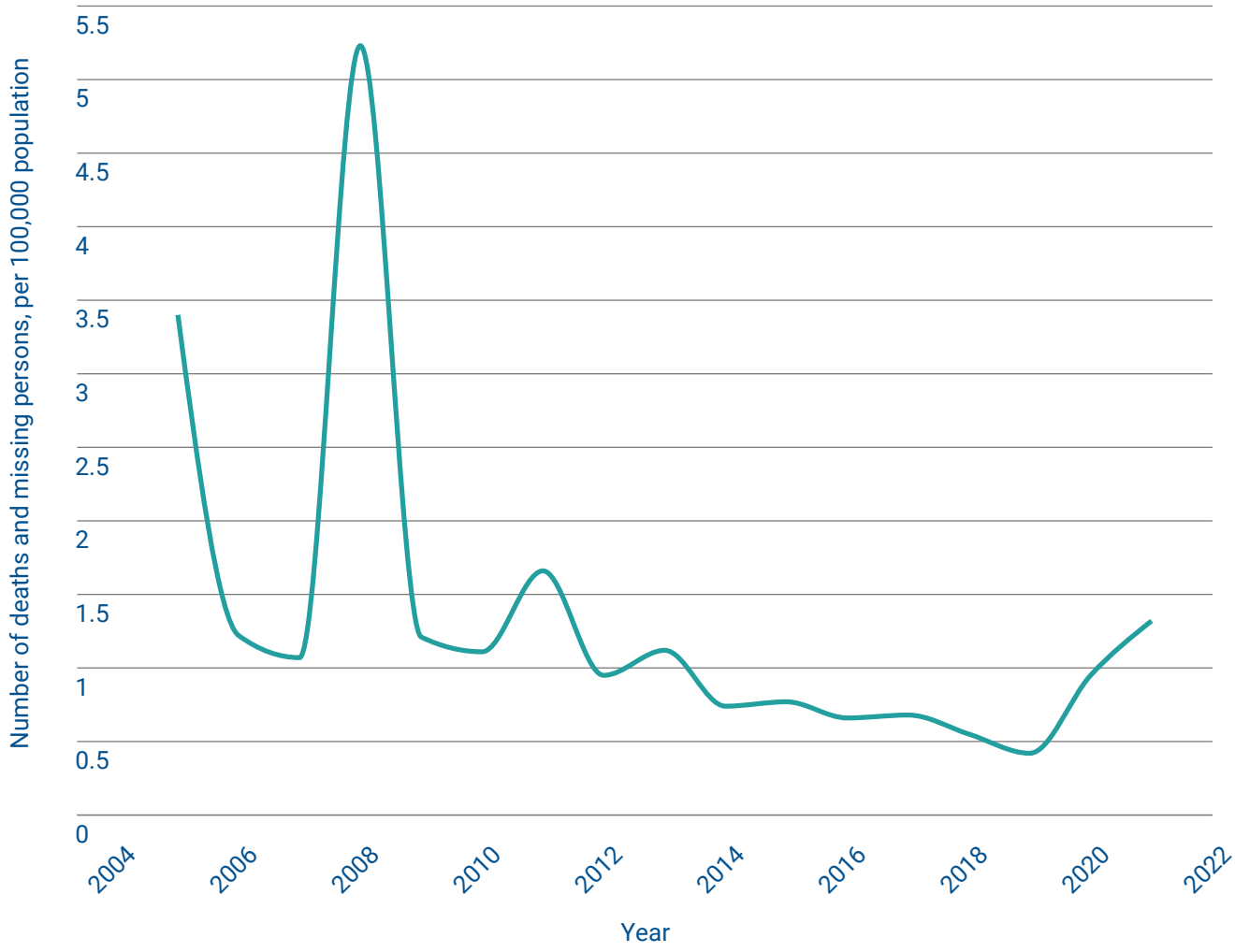
However, this data does not include the 599,239 deaths in 2020 and 237,518 deaths in 2021 that resulted from the COVID-19 pandemic as reported by 37 countries via SFM. However, even these high figures on COVID-19-related mortality were markedly underreported, as the impact of the pandemic was estimated by the World Health Organization (WHO)[29] to be 3.5 million deaths in 2021 with a cumulative total of 6.5 million deaths by the end of 2022.

Figure 2. Global disaster-related mortality, 2012–2021



29 See https://covid19.who.int/info?openIndex=2.

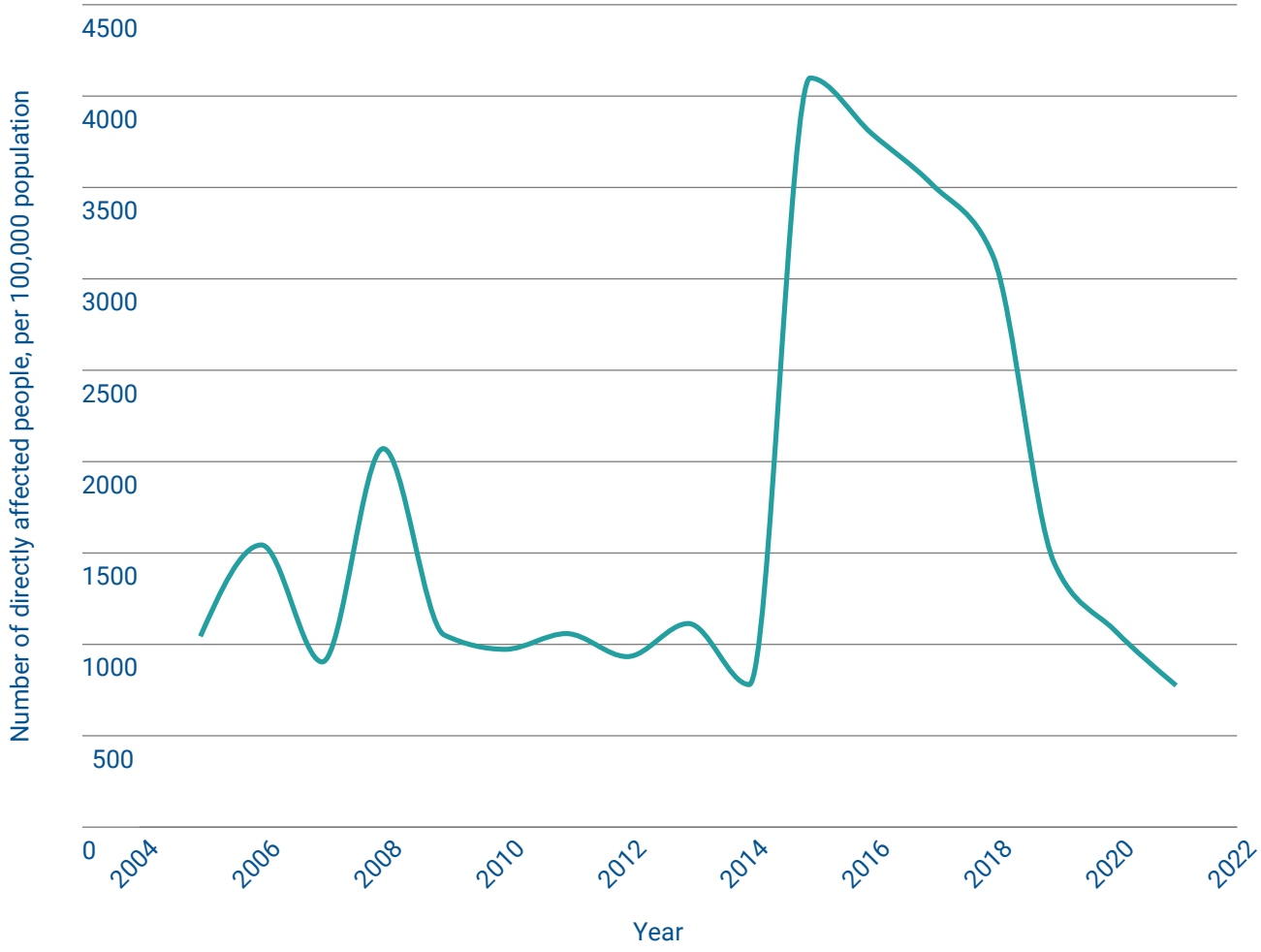
Figure 3. Disaster-related mortality per 100,000 population through the decade



5.1.2. Target B: Substantially reduce the number of disaster-affected people globally

The average annual number of disaster-affected people, comprising illness and injury as well as those affected by damaged and destroyed dwellings and disrupted livelihoods, **during 2015-2021 is 150,214,597 persons per year**. While the number of affected people per 100,000 people has been progressively decreasing since the establishment of the Sendai Framework (Figure 4), compared with the baseline decade of 2005–2014, the number has **increased from 1,147 to 2,066 in the decade 2012–2021**.

Figure 4. Disaster-affected people per 100,000 population through the decade



5.1.3. Target C: Reduce disaster-related direct economic losses

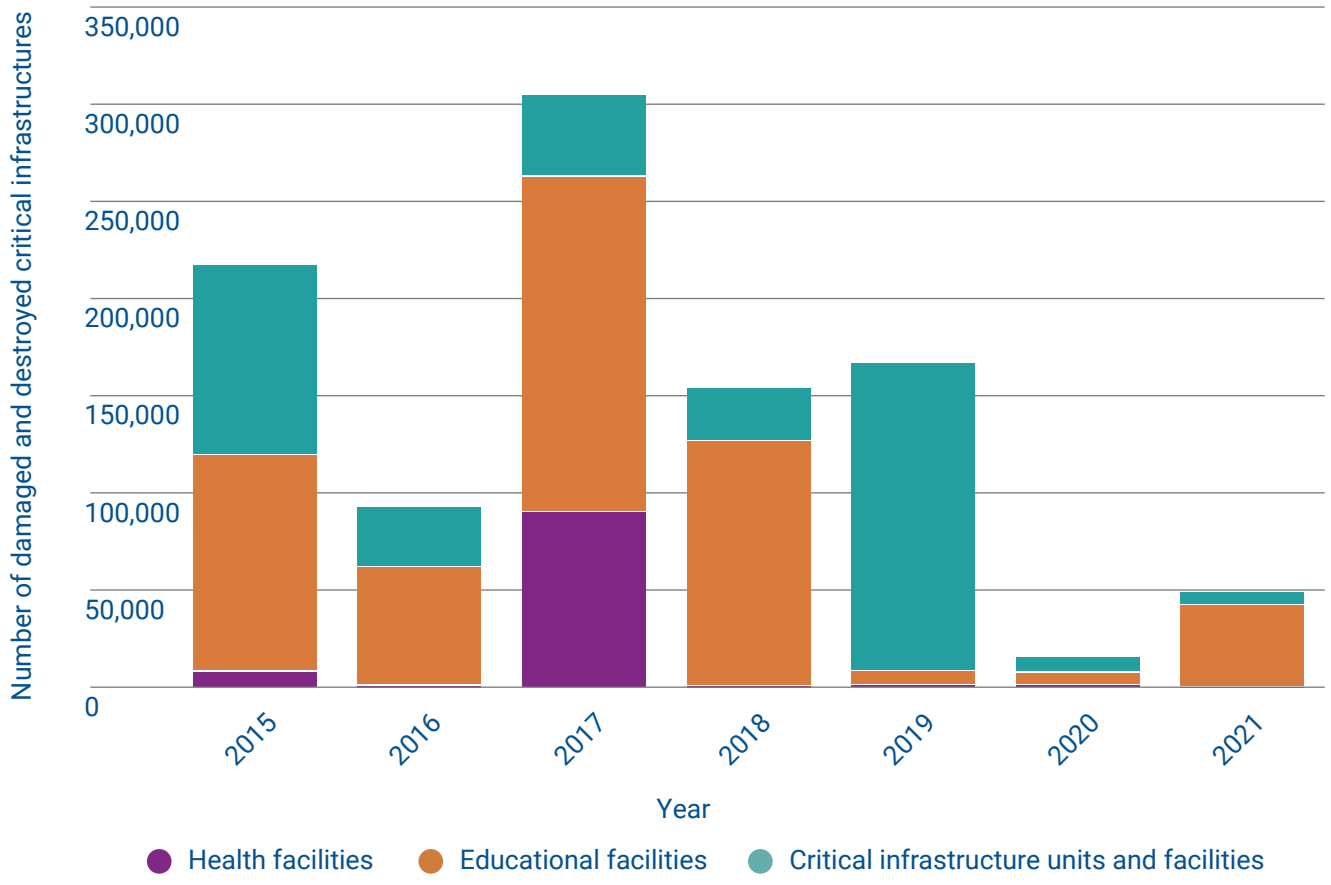
Disasters and their widespread economic impacts can reverse development gains, decelerate poverty reduction and curb hunger alleviation. The World Bank estimated that the global COVID-19 pandemic pushed 97 million more people into poverty in 2020.[30]

Direct economic losses due to disasters remain high with an average above **US$ 330 billion per year** between 2015 and 2021, which is estimated to be significantly undervalued. In proportionate terms, this amounts to **1 per cent of total GDP** from the countries reporting. Real direct economic losses are likely even higher, for instance estimations do not account for economic losses from the COVID 19 pandemic.

5.1.4. Target D: Reduce disaster-related critical infrastructure damages and basic services disruptions

In addition to quantifiable economic losses, several countries have reported damages to housing, critical infrastructure and other sectors as a result of disasters. The average number of critical infrastructure units and facilities destroyed or damaged by **disasters between 2015 and 2021 was 142,852 per year** (Figure 5). In 2020 and 2021, disasters, including the COVID-19 pandemic, also disrupted the provision of over 363,184 basic services in 44 reporting countries, including health and educational services. Such losses highlight the significant impact that disasters can have on societies and economies.

Figure 5. Number of damaged and destroyed critical infrastructure



30 Daniel Gerszon Mahler and others, "Updated estimates of the impact of COVID-19 on global poverty: Turning the corner on the pandemic in 2021?", *World Bank Blogs*, 24 June 2021. Available at https://blogs.worldbank.org/opendata/updated-estimates-impact-covid-19-global-poverty-turning-corner-pandemic-2021.

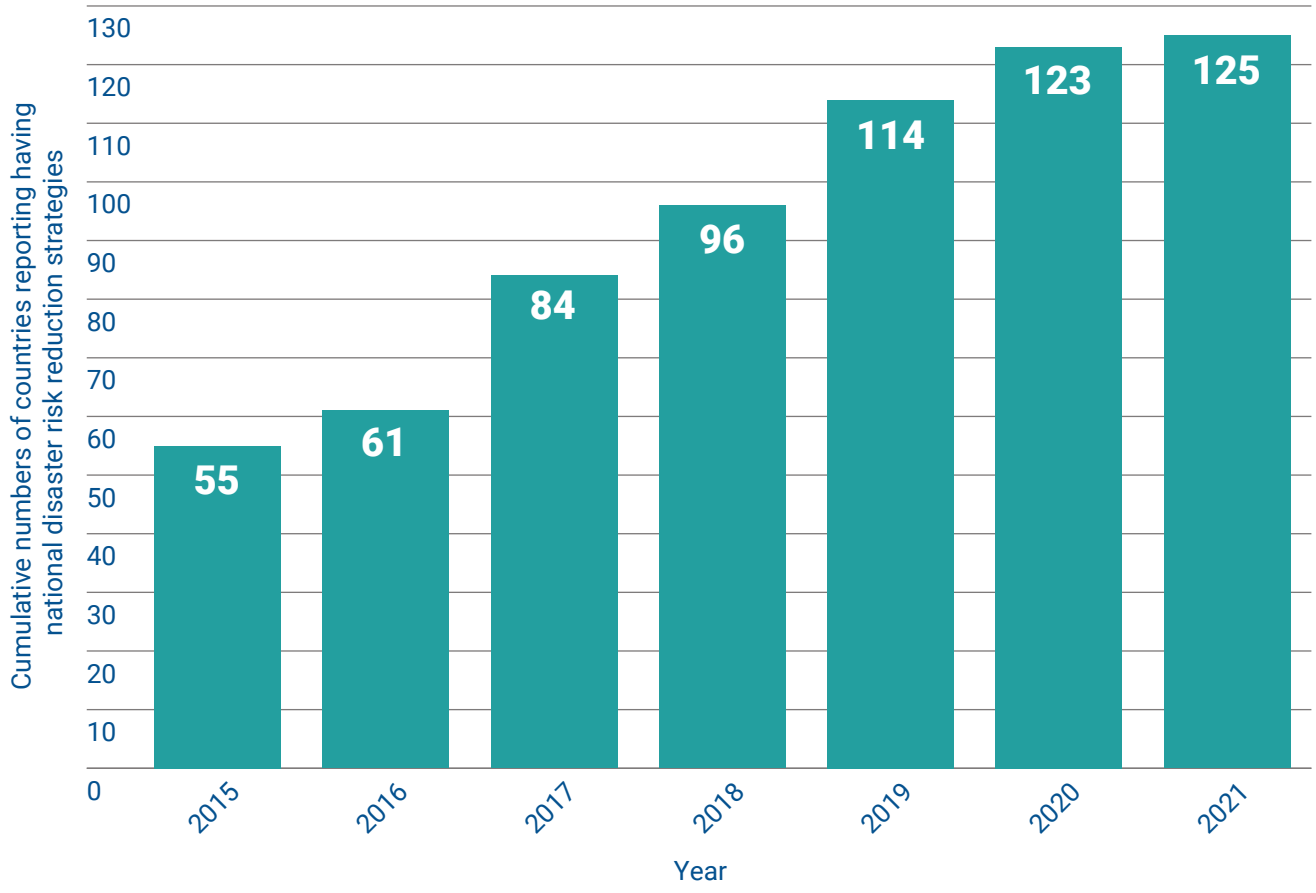
5.1.5. Target E: Increase national and local disaster risk reduction strategies

National level:

Disaster risk governance has been strengthened at all levels since the adoption of the Sendai Framework in 2015. The number of countries with national strategies for DRR has risen from 55 in 2015 to 125 as at March 2022 (Figure 6).

Qualitative improvements have also been observed (Figure 7). Using SFM, Member States assessed the alignment of DRR strategies with the Sendai Framework on a scale of 0 to 1 (with scores between 0.75 to 1 representing comprehensive alignment). According to Member State reporting, the number of countries with DRR strategies that follow a comprehensive alignment with the Sendai Framework has quadrupled compared with 2015, rising from 15 to 63 countries. The number of countries with DRR strategies that promote policy coherence and compliance, notably with the SDGs and the Paris Agreement, has reached 118 countries, compared with only 44 countries in 2015.

Figure 6. Number of countries reporting having national disaster risk reduction strategies[31]



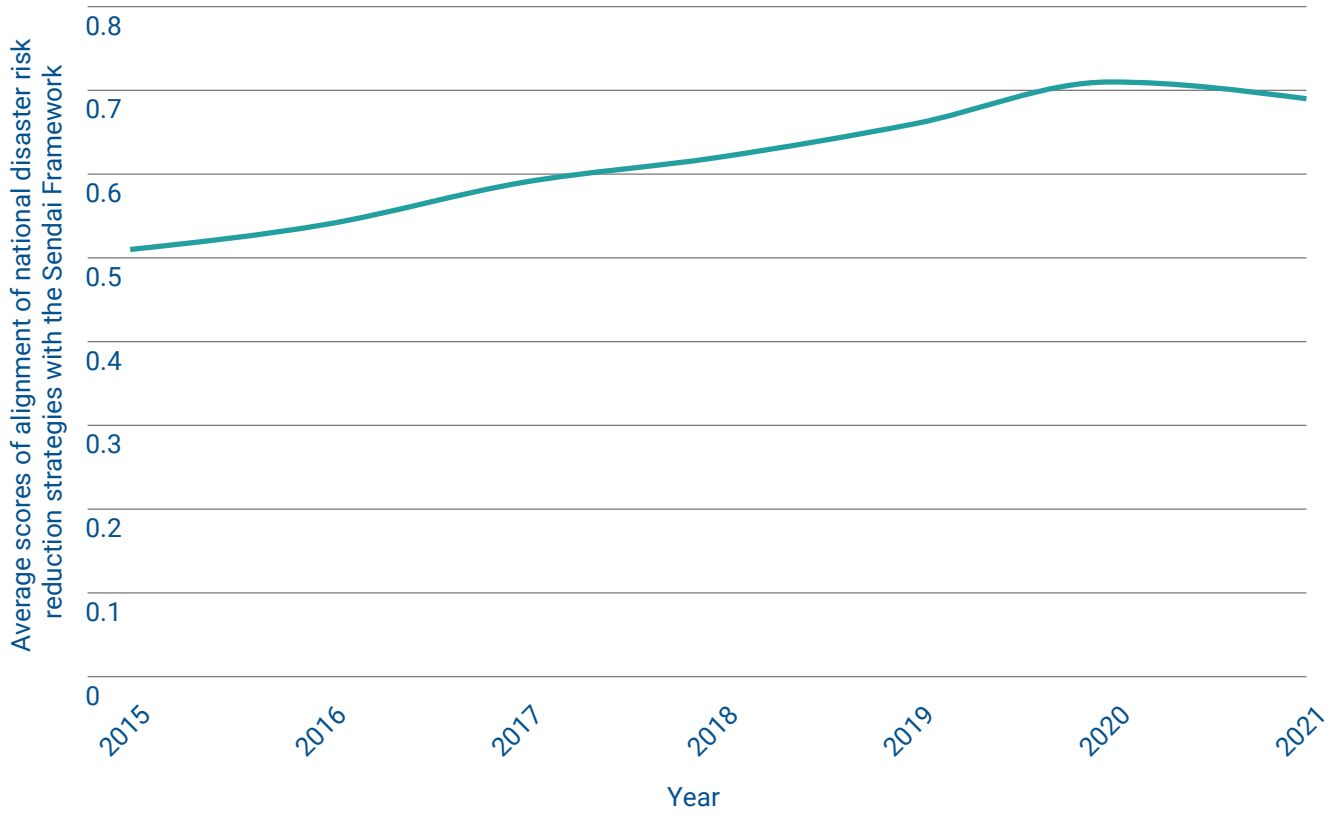
31 UNDRR, *Status Report on Target E 2023*, (Geneva, 2023). Available at https://www.undrr.org/publication/status-report-target-e-2023

The United Nations system continues to provide technical support and capacity-building for their enhancement and implementation. Progress has also been made in establishing national platforms for DRR to strengthen intersectoral, inter-institutional and inter-stakeholder coordination mechanisms, which has been included as a target in the Doha Programme of Action for the Least Developed Countries.

Despite significant progress, and although the COVID-19 pandemic has triggered global awareness of the urgent need to adopt multi-hazard risk reduction approaches that address all risks at source before they manifest as shocks or disasters, the development and implementation of multisectoral, multi-scale DRR strategies still need further concerted effort.

These efforts should include coherent institutional architectures, clear legislative mandates, partnerships and sufficient financial resources at both national and subnational levels. In line with the recent findings of the Intergovernmental Panel on Climate Change, DRR strategies and national adaptation plans should further align with a comprehensive risk management approach.

Figure 7. Average scores of alignment of national disaster risk reduction strategies with the Sendai Framework, as reported by countries

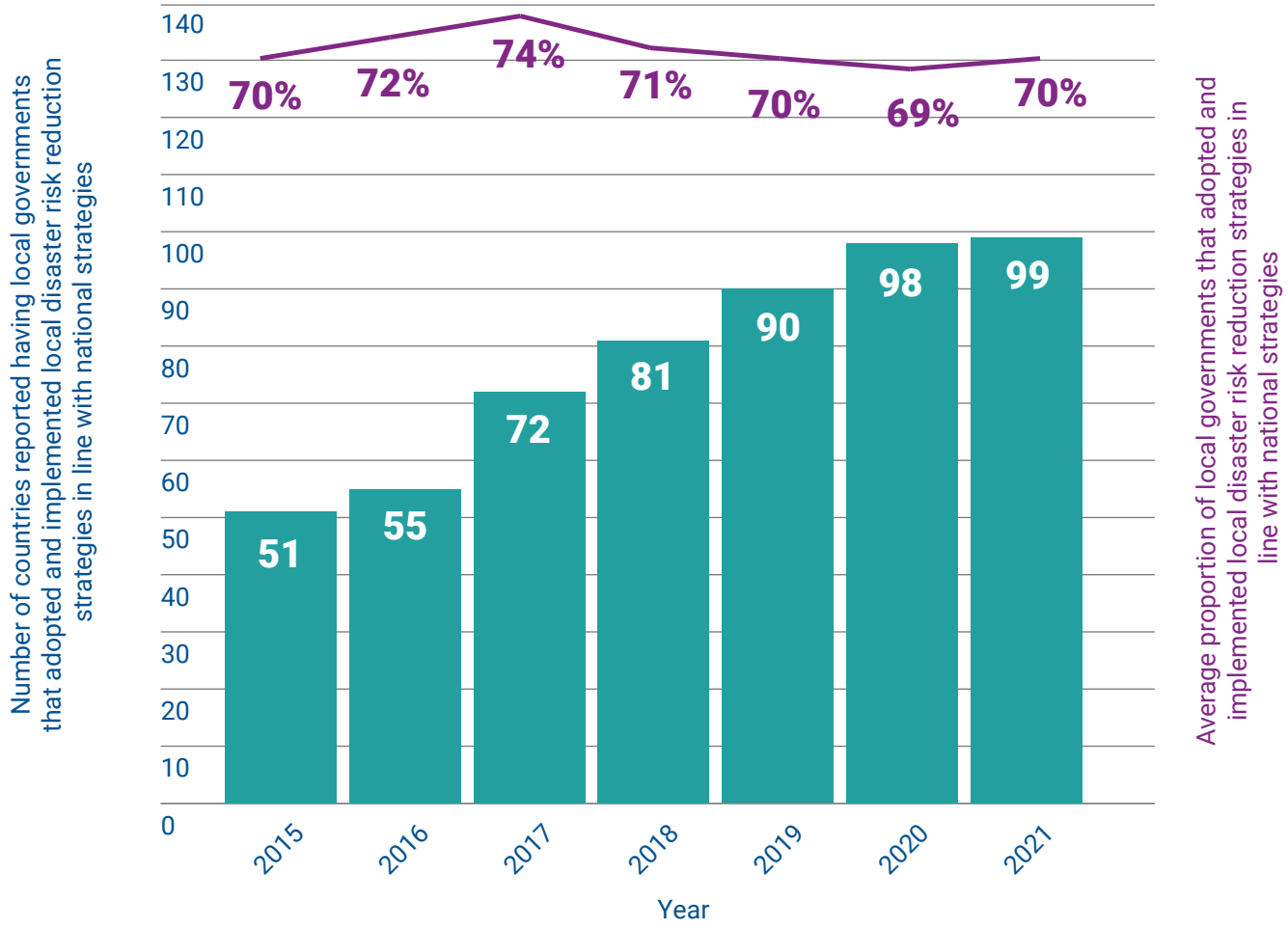


Subnational or local level:

As at March 2022, a total **of 99 countries have reported having local governments that adopt and implement DRR strategies in line with national strategies** (Figure 8). This represents almost twice the number from 2015 when only 51 countries reported the existence of such local strategies. However, within these countries, the average proportion of local governments with DRR strategies has remained around 70 per cent from 2015 to 2021 with slight fluctuations in the interim.

At the local level, countries have made efforts to align DRR, climate change adaptation and development plans. The systemic and cascading nature of risk, frequently fuelled by the climate emergency and more recently by the COVID-19 pandemic, has demonstrated the importance of a multi-hazard approach to local resilience building.

Figure 8. Trends in countries reporting local disaster risk reduction strategies (light blue) and average proportion of local governments with local strategies (purple)



5.1.6. Target F: Increase international cooperation for disaster risk reduction[32]

Target F of the Sendai Framework highlights the role of international cooperation in accelerating its implementation, and measures this cooperation through progress in **financing, technology transfer and capacity development**. Despite being a core target on assessing international support for DRR, Target F is the least reported of all the targets of the Sendai Framework. In the last decade, only 42 developing countries reported receiving official development assistance (ODA) support for national DRR actions, and during that period, only 26 countries have reported providing ODA support.

The cost-benefit of investing in prevention and resilience has repeatedly been demonstrated. While this varies widely between contexts, as little as US$ 1 invested in risk reduction and prevention can save up to US$ 15 in post-disaster recovery.[33] However, investments in DRR continue to remain low for the world's most vulnerable countries even against a backdrop of major planetary emergencies, including a doubling of major disaster events over the last 20 years.

Of the total disaster-related ODA made available between 2011 and 2020, only 5.2 per cent was spent on disaster prevention and preparedness.[34,35] Further, while ODA correlates well with disaster response and reconstruction needs in countries, there is insufficient investment to prevent future disasters in high-risk geographies.

Disasters and extreme events stimulate enhanced international funding and cooperation for risk prevention and preparedness. However, this funding is not consistent in most countries, making it more difficult to build long-term resilience. Despite the establishment of a policy marker for DRR in the Creditor Reporting System of the Development Assistance Committee of the Organisation of Economic Co-operation and Development (OECD), better and systematic tracking of financing for DRR is needed at national and international levels to include development budgets and investments focused on risk management. Better tracking of international cooperation is critical in accelerating the implementation of the Sendai Framework.

Despite limited reporting, 1,113 instances of technology transfer and 2,203 examples of capacity development over the 2005–2020 period demonstrate a significant level of international cooperation among countries. Seven countries reported a contribution of US$ 394 million towards technology transfer during this period. Moreover, 10 countries reported providing capacity development support for DRR valued at US$ 648.9 million.

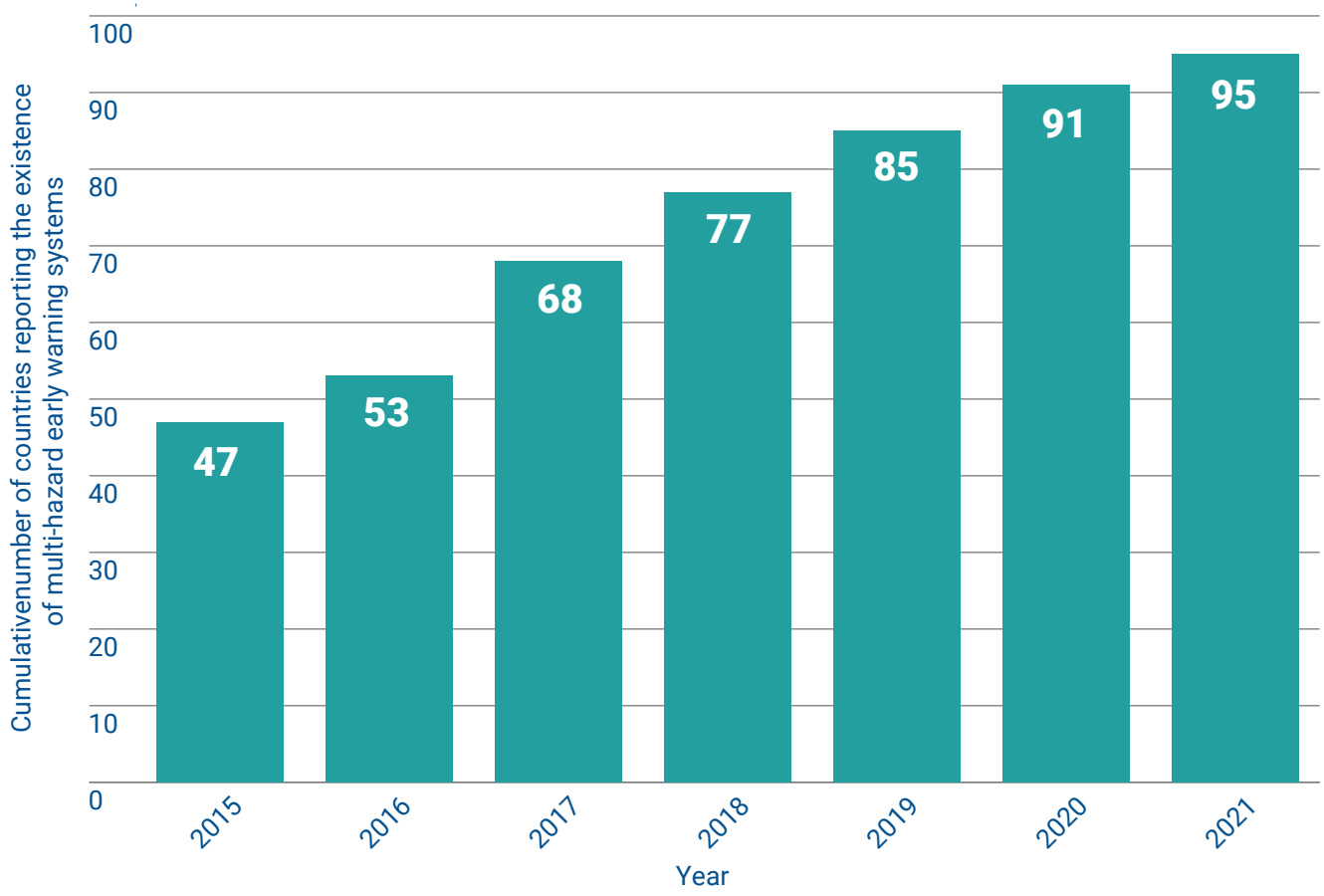
5.1.7. Target G: Increase availability and access to early warning systems and risk information[36]

If it has not been possible to prevent the creation of risks or reduce existing risks before they manifest as disasters, effective MHEWS can help exposed and vulnerable populations reduce the negative impacts of such shocks. Evidence suggests that countries reporting good coverage of MHEWS have far lower mortality rates compared with countries that have little or no early warning systems.

The number of countries participating in SFM has increased iteratively and, as at March 2022, 120 countries had provided information on their status of indicator G1, which measures the number of countries that have MHEWS. Of those 120 countries, **95 reported the existence of MHEWS** (Figure 9). While this represents a twofold increase from achievement reported in 2015, this still represents less than half of the countries in the world.

32 UNDRR, *International Cooperation in Disaster Risk Reduction: Target F*, (Geneva, 2021a). Available at www.undrr.org/publication/international-cooperation-disaster-risk-reduction-target-f.
33 Ibid.
34 OECD, "Aid activities", OECD DAC Creditor Reporting System Aid Activity Database. Available at https://www.oecd-ilibrary.org/development/data/creditor-reporting-system_dev-cred-data-en. Accessed on 25 September 2022.
35 Estimates of total official development assistance financing for disaster prevention and preparedness are not readily available.
36 UNDRR and World Meteorological Organization (WMO), *Global status of multi-hazard early warning systems: Target G* (Geneva, 2022). Available at https://www.undrr.org/publication/global-status-multi-hazard-early-warning-systems-target-g.

Figure 9. Cumulative number of countries reporting existence of multi-hazard early warning systems



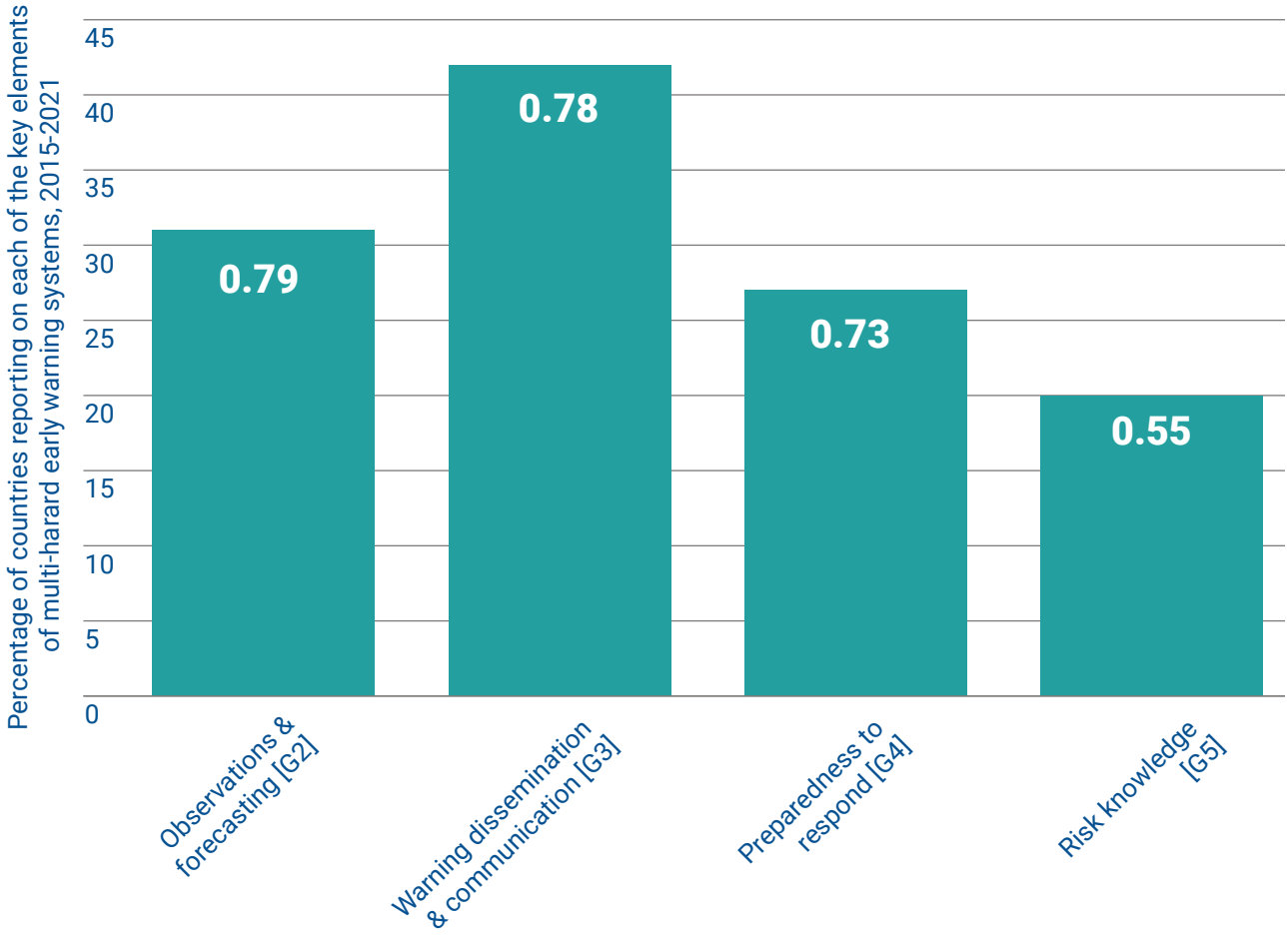
The four key elements of MHEWS, namely (respective Target G indicators in brackets) (i) disaster risk knowledge (G5), (ii) observations, monitoring and forecasting systems (G2), (iii) warning dissemination mechanisms (G3), and (iv) preparedness and response capability (G4), show varied coverage (Figure 10).

More countries have reported on G2 and G3 (31 per cent and 42 per cent respectively) than for G4 and G5 (27 per cent and 20 per cent respectively). The average scores[37] (out of a maximum of one) reported by these countries have also remained very low for the G5 element (0.55), followed by G4 (0.73).

While some progress has been made in all four key elements globally, advancing MHEWS across all the countries still requires considerable investments in all its interrelated elements.

37 While reporting on Target G, each country self-assesses its early warning status through providing a score (out of a maximum of 1) on each of the four MHEWS elements (covering G2 to G5). The compounded G-1 score is measured as the arithmetic average of the scores of the four indicators.

Figure 10. Status of multi-hazard early warning system elements



Notes: Numbers in bars are the average scores

5.2. Countries in special situations

The least developed countries (LDCs), landlocked developing countries (LLDCs), and Small Island Developing States (SIDS) face numerous resource and capacity challenges that limit implementation of overall strong national and regional commitment to DRR.

According to Member States' progress reports through SFM, from 2012 to 2021, these three groups of countries combined **recorded around 25 per cent of deaths** and missing persons (global target A), even though they accounted for only 11.6 per cent of the total population of countries reporting. Between 2012 and 2021, disaster mortality rates averaged 1.28 and 2.54 deaths annually per 100,000 population in reporting LDCs and LLDCs, and 2.88 deaths per 100,000 population annually in SIDS (Figure 12). These mortality rates are significantly higher than the 0.84 per 100,000 population global average.

Between 2015 and 2021, the global average economic losses among reporting countries formed 1 per cent of their GDP. By comparison, the LDCs, SIDS and LLDCs together accounted for **11.3 per cent of reported economic losses** (global target C) although they form only 2.2 per cent of total GDP of reporting countries. Further, Africa sustained economic losses equivalent to **12.3 per cent of its total GDP** in these years.

Figure 11. Disaster-related mortality per 100,000 population of countries in special situations (through the decade 2012–2021)

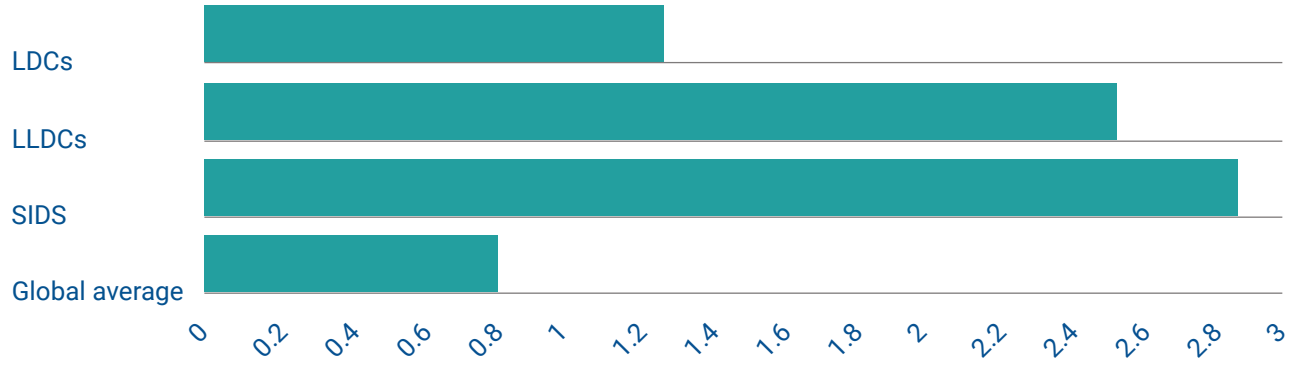


Figure 12. Disaster-affected people per 100,000 population of countries in special situations (through the decade 2012–2021)

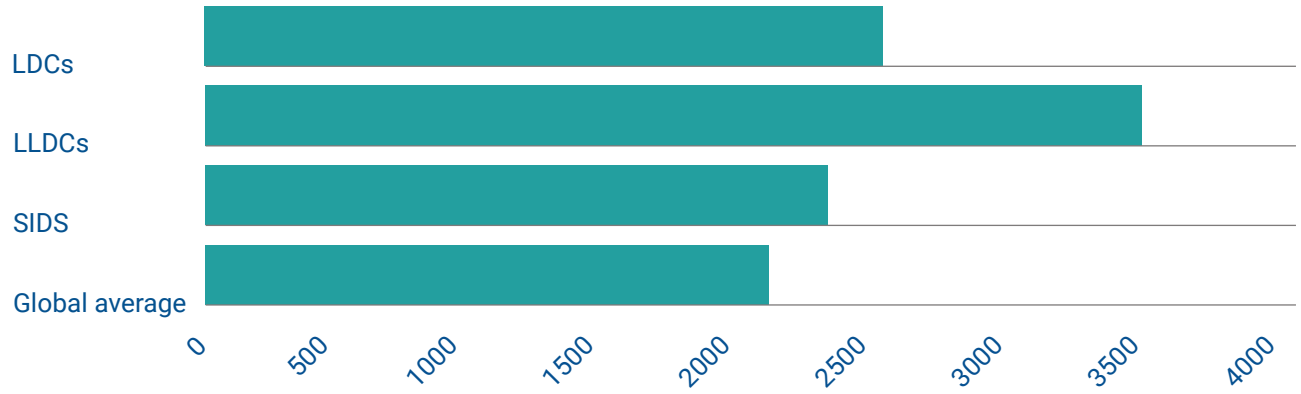
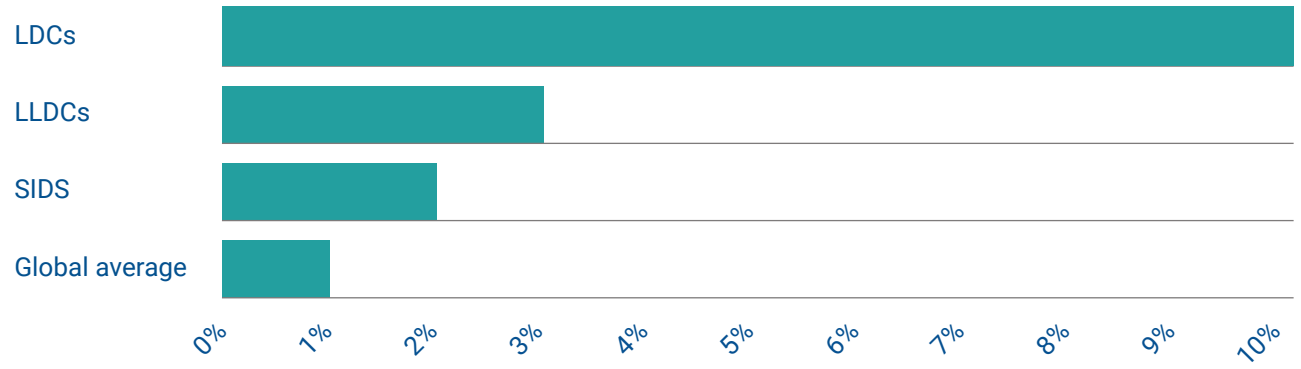


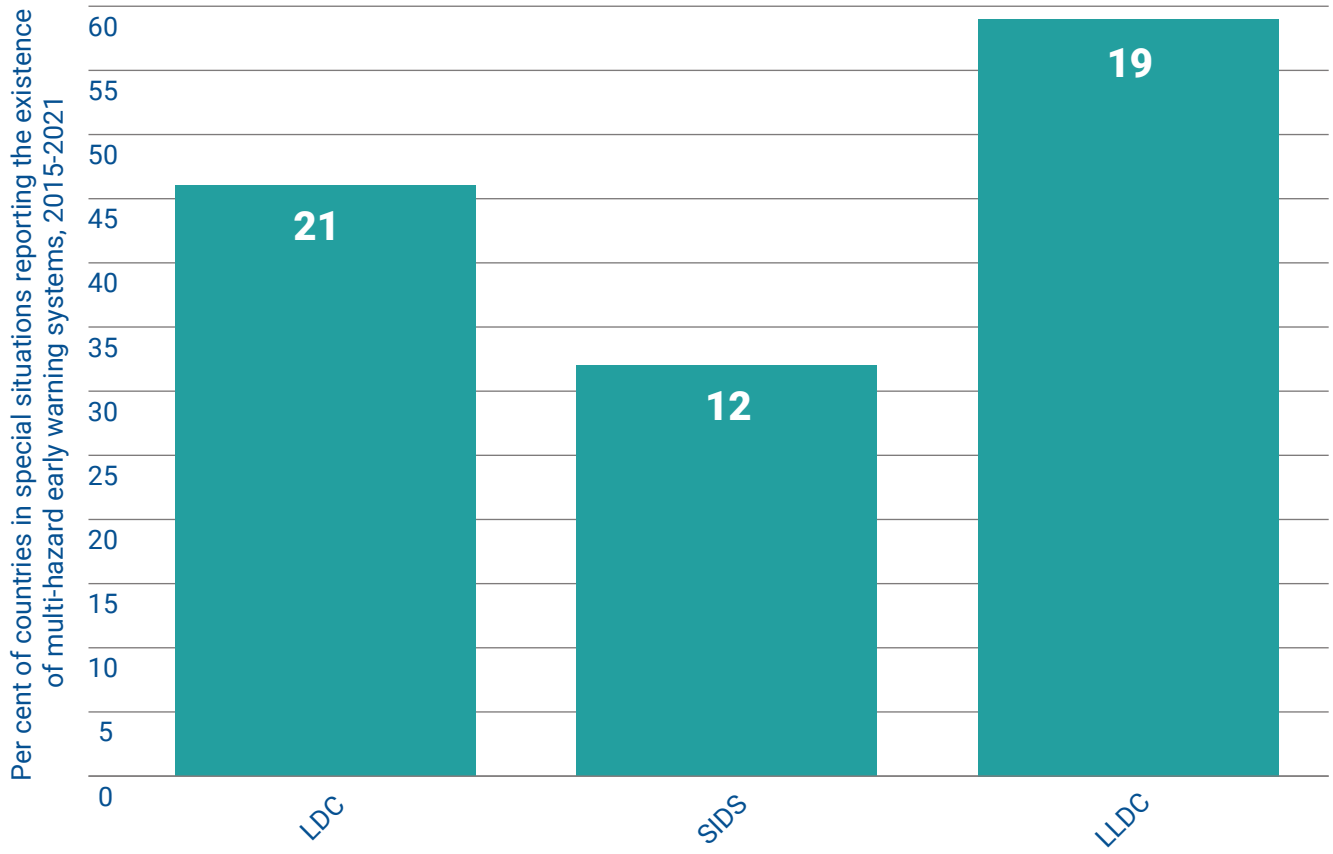
Figure 13. Share of direct economic losses as a percentage of GDP, 2015–2021



This is a significant amount of loss, bringing harsh economic consequences, major disruptions to national, regional and international markets, with far-reaching impacts on the socioeconomic well-being of its citizens. This demonstrates the exceptional challenges countries in Africa face, and how the impacts of disasters have a disproportionate burden for developing countries, not least regarding climate-related disasters.

Only 61 per cent of LDCs reported having national DRR strategies (global target E). 46 per cent reported having access to MHEWS and only 17 per cent to disaster risk information (global target G), respectively. Moreover, only 32 per cent of SIDS, 59 per cent off LLDCs and 41 per cent of countries in the sub-Saharan Africa region reported having MHEWS.

Figure 14. Proportion of LDCs, LLDCs and SIDS reporting the existence of multi-hazard early warning systems



Note: Numbers on the bars indicate the number of countries reporting

5.3. Data standards and metrics

5.3.1. Terminologies

In developing standard DRR terminology, OIEWG has supported Sendai Framework implementation as well as the implementation and monitoring of progress of other agendas, agreements and intergovernmental processes.

Work undertaken with the International Science Council (ISC) and the engagement of more than 800 partners from scientific institutions, including national scientific advisers, the research funding community and numerous international organizations, led to the groundbreaking **Sendai Hazard Definition and Classification Review Technical Report**. The report, which contains 302 **hazard information profiles**, is a key tool for building common definitions for developing comparable data sets for monitoring and review. It provides a common set of hazard definitions to governments and stakeholders to inform approaches, policies and investments, whether integrated in sectoral interventions or DRR strategies and actions.

5.3.2. Sendai Framework metrics

The development of Sendai Framework target indicators by OIEWG (also used for SDGs 1, 11 and 13) as well as methodologies and metadata for SFM (e.g., through the Technical Guidance note[38]) has helped standardize monitoring calculations across countries. These have also supported calculation of disaster losses and damages. Furthermore, having an agreed basis to track the quality and coverage in DRR strategies and early warning systems assists the monitoring of related processes, including the Early Warnings for All initiative, which seeks to provide early warning system coverage for every person on Earth by 2027.

5.3.3. Disaster-related statistics

Strengthening collaboration between the statistical and DRR communities at the global, regional and national levels was a key recommendation of OIEWG. Engaging National Statistical Offices to integrate SFM data into national statistics promotes the reporting and use of disaster risk data by all sectors. To enhance standards and quality in disaster data collection and analysis, UNDRR led efforts to advance official disaster-related statistics as a core area of Sendai Framework monitoring. Following the decision of the United Nations Statistical Commission at its fiftieth session (Decision 50/116), UNDRR is now taking a central role in developing a **global framework on disaster-related statistics** in partnership with the United Nations Statistical Division under the United Nations Department for Economic and Social Affairs (DESA) and the statistical divisions of all five United Nations regional commissions. An IAEG on disaster-related statistics has been established, co-chaired by UNDRR and the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP). Work continues on the development of a common disaster-related statistics framework, facilitating increased collaboration between National Statistical Offices and National Disaster Management Offices.

5.3.4. Disaster loss and damage tracking

UNDRR's DesInventar system (https://www.desinventar.net), implemented in partnership with the United Nations Development Programme (UNDP) and other organizations, has been recording information on the consequences of disasters worldwide for almost three decades. The system collects data on the human and socioeconomic consequences of events of all dimensions and magnitudes at the national and local levels and is used by 110 Member States.

This data set has the advantage of being developed in a bottom-up manner and has been developed, tested and scaled up over time. In addition, the system's ability to disaggregate disasters at relatively small geographic scales is a vital feature. As a result, the DesInventar database can provide information to help track progress on Sendai Framework Targets A–D. UNDRR in partnership with the UNDP and WMO is currently reconfiguring the system to better align with weather and climate observations, releasing more user-friendly customized outputs.

5.3.5. Custom indicators

The 38 agreed-upon global indicators of the Sendai Framework targets are supplemented by **custom targets and indicators.** Custom targets and indicators are optional national instruments defined by Member States to strengthen the monitoring of progress against the four priorities of the Sendai Framework. They are contextual, based on the priorities of respective countries. In facilitating the integration of other data

38 See https://www.undrr.org/publication/technical-guidance-monitoring-and-reporting-progress-achieving-global-targets-sendai.

sets, for instance from sectoral line ministries or ministries of finance, the custom targets and indicators can promote collaboration of *all State institutions* in systematizing risk-informed decision-making across government, as called for in the Guiding Principles of the Sendai Framework, paragraph 19(e).

Most recently, a set of custom indicators have been developed to better understand the effectiveness of MHEWS (Box 2).

Box 2. Strengthening metrics for early warning effectiveness

To strengthen analyses of early warning effectiveness, UNDRR and WMO, with support from Climate Risk and Early Warning Systems, have coordinated the development of custom indicators to complement reporting on Target G. The custom indicators help understand (i) if we are on track to deliver the Sendai Framework, and (ii) if national adaptation efforts guided by article 4 of the Paris Agreement, specifically on early warning systems, are building resilience.

A total of 53 custom indicators have been developed, structured on five themes: governance; disaster risk knowledge; detection, monitoring, analysis and forecasting; dissemination and communication; and preparedness and response. Countries can self-assess their status on all or selected indicators on a scale of 0 to 1. The indicators can be tailored to specific situations in countries. Implementing partners have developed training packages for capacity development that have been piloted with least developed countries and SIDS in different regions.

The custom indicators have been added to the Sendai Framework Monitor, and countries can select indicators from a menu. Between official Target G indicators and the custom indicators, countries have a strong basis to track both coverage and effectiveness of multi-hazard early warning systems.

Source: UNDRR (2022b).

5.3.6. Application of Sendai Framework metrics and data

The adoption of a set of global targets and indicators, negotiated through an intergovernmental process and endorsed by the United Nations General Assembly,[39] allowed Member States to use these metrics in other international frameworks and mechanisms. Adopted by the IAEG on SDG indicators, Sendai Framework indicators are also employed in measuring progress on SDGs 1, 11 and 13.

Further, the monitoring frameworks of the SAMOA Pathway[40] and the New Urban Agenda[41] also share indicators with the Sendai Framework. Work is additionally under way to ensure coherence between the global targets and indicators of the Sendai Framework and the internal United Nations monitoring framework for the Doha Programme of Action for the LDCs, as well as the supplementary LDC graduation indicators used by the Committee for Development Policy. The successor to the Vienna Programme of Action for LLDCs provides a further opportunity to use Sendai Framework indicators.

Sendai Framework metrics and data have also been employed in climate change processes. For instance, the ongoing discussions on climate-related loss and damage have the potential to benefit from both the loss-related and action-related targets of the Sendai Framework. Importantly, in the context of the Global Goal on Adaptation, Sendai Framework metrics have been discussed as an option in the recent UNFCCC report

39 A/RES/71/276.
40 DESA, *Revised Draft Development of a Monitoring Framework for the Samoa Pathway* (2021). Available at: https://sdgs.un.org/sites/default/files/2021-08/Draft_%20Statistics_Report.pdf.
41 See www.urbanagendaplatform.org/data_analytics.

on Global Goal on Adaptation indicators, approaches, targets and metrics. Furthermore, the Global Stocktake of the Paris Agreement, which runs in parallel to the MTR SF, also benefits,[42] as can the recently adopted Sharm el-Sheikh Implementation Plan.

Similarly, the Midterm Review of the Water Action Decade also uses Sendai Framework metrics. Furthermore, in adopting the Kunming-Montreal Global Biodiversity Framework at the fifteenth Conference of the Parties to the Convention on Biological Diversity in 2022, countries made risk reduction a key focus, and so Sendai Framework metrics and data may serve an additional purpose (e.g. for targets 8, 11 and 15).

© Shutterstock/Fly_and_Dive

42 UNDRR, *Inputs to the Paris Agreement's First Global Stocktake* (Geneva, 2022c). Available at https://unfccc.int/documents/462141.

6. Seven years on: what have we achieved?

This section presents the progress that has been made during the first half of the implementation of the Sendai Framework. Evidence has been drawn principally from the Voluntary National Reports of Member States that were received following national consultations and review, from regional synthesis reports, global and regional thematic reports, and contributions from non-State stakeholders.

6.1. Priority 1: Understanding disaster risk

Sendai Framework Priority 1 seeks to ensure that policies and practices for DRR and risk management are based on an evidence-based understanding of disaster risk in all its dimensions of vulnerability, capacity, exposure of persons and assets, hazard characteristics and the environment.

The Sendai Framework has undoubtedly played a decisive role in generating international momentum in improving risk knowledge and information, providing a common language and a framework of significant national efforts to which governments have responded. The steady growth in the number of countries that reported on Sendai Framework implementation over the years is itself an indicator of increasing commitment to a more nuanced understanding of risk. 93 per cent of Member States conducting voluntary national reviews **are reporting improvements in risk information and management**. However, there is still room for improvement, as fewer than half the countries reporting against Sendai Framework targets indicate having fit-for-purpose, accessible and actionable risk information.

6.1.1. Improved access to high-quality disaggregated data has been recognized as key to effective disaster risk reduction by most countries

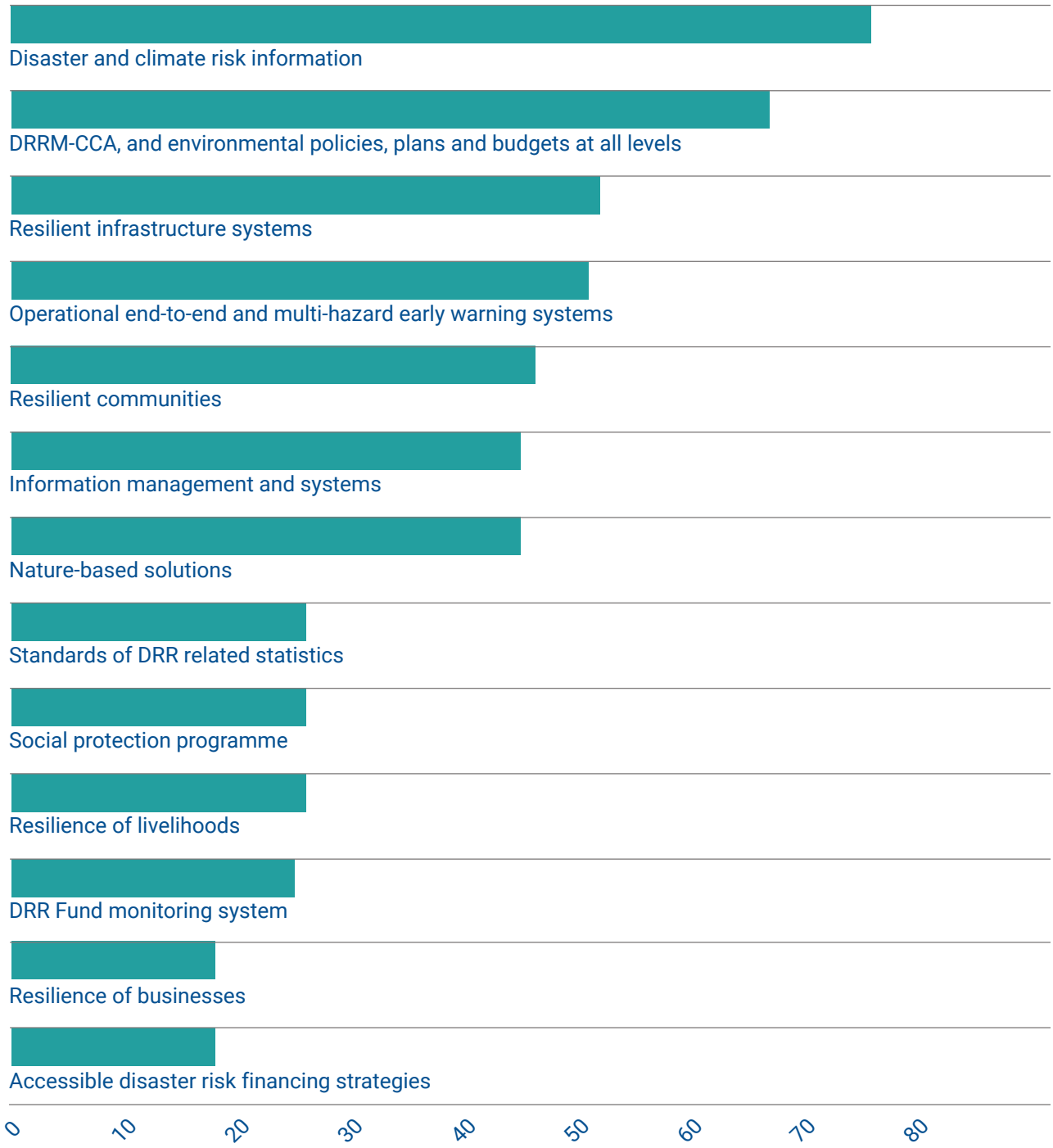
Since 2015, Member States have recognized the critical importance of **reliable and interoperable data in capturing various aspects of disaster risk**. This data ranges from the underlying drivers of vulnerability, exposure and resilience among at-risk populations, assets and ecosystems, to the physical nature of natural and anthropogenic hazards, to the direct, indirect and cascading consequences of realized risks or disasters. In light of this, most countries have reported improvements in data access and collection since 2015. As outlined above, 110 countries now have national disaster loss databases using the DesInventar system.

Furthermore, practical initiatives have ensured that **data is generated at the local level** and that it is useful for DRR purposes. For example, the Government of the Philippines has made significant progress in identifying, characterizing and disseminating elements of risk through the development of robust tools for risk assessment, including geohazard maps of and for cities and municipalities.[43] In addition to making these hazard maps available to local governments, training is provided to ensure that they can be used effectively in planning. Additionally, many Member States have made efforts to **increase access to databases**. The Government of Norway, for instance, has a unified disaster information database that translates data into a common language, making it easier to find data even when sources use different terms.[44]

43 Philippines, Office of Civil Defense, National Disaster Risk Reduction and Management Council, *The Philippines' Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015–2030 with a Short-term Review of the National Disaster Risk Reduction and Management Plan (2020–2030)* (2022). Available at https://sendaiframework-mtr.undrr.org/publication/philippines-voluntary-national-report-mtr-sf.

44 Norway, *Sendai Midterm Review 2022* (Oslo, 2022). Available at https://sendaiframework-mtr.undrr.org/publication/norway-voluntary-national-report-mtr-sf.

Figure 15. Data and information are perceived among the key components for disaster risk reduction and resilience in the Philippines



Source: Philippines, Office of Civil Defense, National Disaster Risk Reduction and Management Council (2022, p. 67).

However, despite efforts to improve data access and collection, more needs to be done to develop tools that can synthesize the large amount of data generated by various sectors and build interfaces between knowledge management systems. **Data ecosystems, including for disaggregated data, must be strengthened** through enhanced interoperability across systems as well as the incorporation of Indigenous wisdom and local

knowledge feedback and expert opinion.[45] Only a few countries have made progress in this area. For example, in Zimbabwe, local traditional leaders and counsellors are incorporated as the basis for developing local-level disaster preparedness plans.[46] This **inclusion of local, traditional and Indigenous knowledge (LTIK) provides valuable information** about the needs and vulnerabilities of local communities as well as effective strategies and practices for DRR. Furthermore, it ensures that DRR efforts are culturally sensitive and appropriate, fostering a sense of ownership and empowerment among the local community.

Similarly, with globalization, increased connectivity and networked risks,[47] there has been growing recognition of the **need for a more comprehensive understanding of systemic risks**. Often characterized by non-linear cause-effect relationships and unknown tipping points, conventional risk assessment and risk management are often challenged.[48] Systemic risks can combine, for example, natural hazard-related data with data on biological threats, protracted crises, violence and armed conflict, economic insecurity, among other measures.

Notable advancements have been made, including in the pursuit of a more comprehensive **understanding of risk in the context of protracted crises**, specifically in relation to the interaction of violence and conflict with disaster risk. Many submissions to the MTR SF highlighted that efforts have been made to document and summarize the numerous ways in which structural drivers in protracted crises interact with and exacerbate vulnerability to disaster risk. To this end, the *Hazard Definition and Classification Review*,[49] for example, includes an expanded set of societal hazards such as international armed conflict, explosive remnants of war, environmental degradation from conflict, and violence.[50]

While all countries are vulnerable to systemic risks, the nature and extent of their vulnerabilities varies. The broader use of a Multidimensional Vulnerability Index (MVI) has been cited by many countries as promising for deepening the understanding of systemic risks. The MVI developed for the SAMOA Pathway goes beyond the traditional measures of income and gross national income to better measure a country's vulnerability to shocks, allowing those most in need to define their solutions to risk information and management. While useful for SIDS, which are highly vulnerable to systemic risks and have often played a leading role in global discussions on the climate crisis and sustainable development,[51] an MVI is most valuable when it is applied in all vulnerable countries.

6.1.2. There is an increasing use of risk information in development planning, but evidence-based monitoring and evaluation is required to adequately assess policy uptake and impact

Most countries noted that while risk information and sharing are increasingly integrated into national development planning, improvements could be made in **strengthening and mainstreaming monitoring and evaluation**. Australia reported that the lack of effective monitoring and evaluation can often be attributed to the fragmented and regionally disparate nature of reporting against the Sendai Framework, especially where data are frequently collected by a wide range of local-, state- and national-level government agencies.[52] **Similarly, learning processes and their underpinning knowledge-management platforms must be better employed to assess the effectiveness of multisectoral and multi-scalar responses** and capture lessons for supporting the transfer or scaling-up of successes. Submissions identified that it would be useful to strengthen public service capabilities in undertaking systems-based risk assessments, developing subsequent interventions and translating them into coordinated policy responses.

45 UNDRR, *From Risk to Resilience: Towards Sustainable Development for all in a COVID-19 Transformed World. Proceedings of the 7th Session of the Global Platform for Disaster Risk Reduction, Bali, Indonesia, 23-28 May 2022* (2022d, p. 12). Available at https://globalplatform.undrr.org/sites/default/files/inline-files/Global%20Platform%202022%20Proceedings_DIGITAL_1.pdf.

46 Zimbabwe, *Progress Report on Sendai Framework Mid Term Review* (2022). Available at https://sendaiframework-mtr.undrr.org/publication/zimbabwe-voluntary-national-report-mtr-sf.

47 ISC, on behalf of the United Nations Scientific and Technological Community Major Group (STC MG), *Report for the Mid-term Review of the Sendai Framework for Disaster Risk Reduction* (Paris, 2023). Available at https://council.science/current/press/mtrsendai/.

48 Emmy Wassénius, and Beatrice I. Crona, "Adapting risk assessments for a complex future". *One Earth*, vol. 5, No. 1 (2022), pp. 35–43.

49 Available at https://www.undrr.org/publication/hazard-definition-and-classification-review-technical-report.

50 The full list of societal hazards includes international armed conflict, non-international armed conflict, civil unrest, explosive remnants of war, environmental degradation from conflict, violence, stampede or crushing (human), and financial shock.

51 See https://www.un.org/ohrlls/mvi.

52 Australia, National Emergency Management Agency, *Australia's National Midterm Review of the Sendai Framework for Disaster Risk Reduction 2015-2030 Report – Are we Succeeding at Making Australian Communities Safer in the Face of Growing Disaster Risk?* (2022). Available at https://sendaiframework-mtr.undrr.org/media/84384/download.

6.1.3. Justice, social inclusion, and human rights in disaster risk reduction continue to be critical factors in addressing risk

Since 2015, countries have had concerns about the operationalization of a human rights-based approach to DRR at the national and international levels. DRR stakeholders have made repeated calls for the issues of justice, citizenship, and rights to be addressed, including those related to politics and ethics. This focus on justice, social inclusion and human rights is consistent with the Guiding Principles of the Sendai Framework, which outline that DRR should be pursued "while promoting and protecting all human rights, including the right to development."[53] It is noteworthy, however, that few Voluntary National Reports have used language explicitly referencing human rights, despite many addressing human rights issues through initiatives on gender and social inclusion, as well as participatory processes. Most countries agree that, **in accordance with the Declaration on the Right to Development, all individuals should be entitled to participate in the planning and decision-making processes related to DRR**.[54]

This right to participate in the DRR-related planning and decision-making process has been supported by international human rights obligations, including binding treaty commitments under the International Covenant on Economic, Social and Cultural Rights, the International Covenant on Civil and Political Rights, and, of particular relevance to the Sendai Framework, the Convention on the Elimination of All Forms of Discrimination Against Women and the Convention on the Rights of Persons with Disabilities. These treaties, along with others that make up the core human rights treaties, have positive obligations to promote rights through measures such as promoting equality of outcomes, including the meaningful participation of women, persons with disabilities and other priority groups, gender-responsive and gender-inclusive risk and needs assessments, early warning systems, recovery programming, and infrastructure.[55]

UN Women, for example, has supported gender-responsive DRR and resilience policy frameworks and targeted action in 51 countries, covering a population of 778 million people. This has been achieved through technical support and close cooperation with national governments and 1,407 women's organizations, as well as 50 United Nations entities.[56]

Many countries identified public trust and public engagement during crises as fundamental for ensuring that questions of social inclusion are included in addressing risk. While interpersonal trust and trust in crisis management authorities is generally reported as stronger in high-income countries, increasing income disparity, increased levels of violence, and the marginalization of vulnerable communities are compromising national efforts on social cohesion and an *all-of-society* approach to an integrated understanding of risk and subsequent action.[57] Recognizing this, most submissions reported making greater efforts to communicate disaster risks to the public since 2015. Moreover, many countries recognize the crucial role of education systems in enhancing resilience, leading to the development of DRR modules.[58] For example, the Government of Türkiye declared 2021 a Disaster Training Year with the goal of providing training to 51 million people, or over 60 per cent of the population, through various channels, including online and in-person programmes, aiming to instil preparedness habits in the citizens.[59]

To advance social inclusion in DRR, countries have made efforts to **ensure that their DRR policies are understandable and actively engage with the communities they aim to help**. For example, Japan has strengthened its efforts to provide easy-to-understand evacuation information to the public. Furthermore, Japan's disaster management legislation has been amended to enhance smooth and prompt evacuation in the event of a disaster, such as by consolidating evacuation recommendations and instructions into a single "evacuation instruction."[60] Similarly, many countries have followed the example of Kazakhstan,

53 United Nations, *Sendai Framework for Disaster Risk Reduction 2015-2030*, para. 19(c)
54 A/74/163.
55 See https://www.ohchr.org/en/core-international-human-rights-instruments-and-their-monitoring-bodies.
56 UN Women, *Report for the Midterm Review of the Sendai Framework for Disaster Risk Reduction (2015-2030)* (Geneva, 2022a).
57 Sweden, Swedish Civil Contingencies Agency, *Sendai Framework Midterm Review: Country Report, Sweden* (Stockholm, 2022). Available at https://sendaiframework-mtr.undrr.org/publication/sweden-voluntary-national-report-mtr-sf.
58 For instance, Georgia noted significant efforts toward this aim in its Voluntary National Report.
59 Türkiye, *Disaster and Emergency Management Presidency, Mid-term Review of the Sendai Framework: National Report of Türkiye* (2022). Available at https://sendaiframework-mtr.undrr.org/publication/turkiye-voluntary-national-report-mtr-sf.
60 Japan, *The Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030* (2022). Available at https://sendaiframework-mtr.undrr.org/publication/japan-voluntary-national-report-mtr-sf.

using mass SMS messaging and social media to share disaster risk information.[61] In Thailand, the Government has developed the "Thai Disaster Alert" application that allows people to access information about disaster situations and receive alerts about disaster situations.[62] In Mauritius, community disaster response programmes have been introduced to build the capacity of communities to respond to disasters and foster a culture of risk reduction within the population.

However, **access to risk information at the local level has been inconsistent**. For example, among Pacific SIDS, it has been reported that despite the significant improvements in the State's understanding of risk, this understanding has not sufficiently cut through to the community level. Additionally, in countries such as Viet Nam, there is still a misperception that disasters are "natural" and inevitable.[63] Several Member States have emphasized the need for further capacity development in this area, including the development of communication channels to make key disaster information accessible to communities. Currently, **efforts have overly focused on disaster response rather than pre-disaster communication and knowledge-sharing**.

Additionally, most countries in the MTR SF and at the seventh session of the Global Platform for Disaster Risk Reduction in Indonesia in 2022 highlighted challenges around participation in data collection and risk assessment, pointing to **data gaps on women, older persons, persons with disabilities, and children**. The challenges of these data gaps are summarized by the Government of Bosnia and Herzegovina, which noted that "without data, problems remain invisible and thus are not solved within the policy framework."[64] To address this, the Philippines and numerous other Member States have called for efforts to integrate existing data and generate data on "exposure, specifically who and what are affected, such as household income, population characteristics and social groups, such as women, children, youth and persons with disabilities".[65] Ensuring that all decisions are supported by disaggregated data and robust evidence, including the reporting of disaggregated data related to disasters and impact analyses disaggregated by age, gender and disability, must be a defining feature of countries' DRR strategies towards 2030.

Efforts to address this gap have included **creating central-level bodies with sufficient budget and capacity to conduct consultations with various stakeholders in a participatory manner**, using **advanced technology to collect disaggregated data, translating information on risk reduction measures and protocols into all official languages and widely used languages**, and **incorporating local knowledge into national DRR initiatives**.

The United States of America uses information about social vulnerability to inform operational decisions such as identifying geographic areas that may require additional assistance in registering for individual assistance, and the Federal Emergency Management Agency (FEMA) may use this information to provide targeted Disaster Survivor Assistance support.[66] In Burundi, risk and vulnerability analysis sessions were conducted at the local level in all 119 of the country's municipalities where communities themselves identified the risks and vulnerabilities they faced and developed action plans to address them.[67] By incorporating local knowledge, Burundi was able to more effectively include marginalized voices, target DRR interventions more effectively, and do so with fewer resources.

The Government of Canada has employed an open and inclusive approach to risk assessment, including leading *all-of-society* consultations to develop the all-hazard National Risk Profile.[68] This strategic assessment uses

61 Kazakhstan, *Kazakhstan's Voluntary National Report for the Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030 (MTR SF)* (2022). Available at https://sendaiframework-mtr.undrr.org/publication/kazakhstan-voluntary-national-report-mtr-sf.

62 Thailand, Department of Disaster Prevention and Mitigation and Ministry of Interior, *National Voluntary Report of Thailand* (Bangkok, 2022). Available at https://sendaiframework-mtr.undrr.org/publication/thailand-voluntary-national-report-mtr-sf.

63 Viet Nam, *Mid-Term Review of the Sendai Framework for Disaster Risk Reduction* (Ha Noi, 2022). Available at https://sendaiframework-mtr.undrr.org/publication/viet-nam-voluntary-national-report-mtr-sf.

64 Bosnia and Herzegovina, *The Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030* (2022, p. 12). Available at https://sendaiframework-mtr.undrr.org/publication/bosnia-and-herzegovina-voluntary-national-report-mtr-sf.

65 Philippines, Office of Civil Defense, National Disaster Risk Reduction and Management Council, *The Philippines' Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015–2030*.

66 United States of America, *The Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030: National Consultations, Review and Reporting* (2022, p. 8). Available at https://sendaiframework-mtr.undrr.org/publication/united-states-america-voluntary-national-report-mtr-sf.

67 Burundi, *Rapport de l'examen a mi-parcours de la mise en œuvre du cadre de Sendai 2015-2030 pour la reduction des risques de catastrophe au Burundi* (Bujumbura, 2022). Available at https://sendaiframework-mtr.undrr.org/publication/burundi-voluntary-national-report-mtr-sf.

68 Canada, Public Safety Canada, *Canada's Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030* (Ottawa, 2022). Available at https://sendaiframework-mtr.undrr.org/publication/canada-voluntary-national-report-mtr-sf.

scientific evidence and stakeholder inputs to assess scenarios, gather data from relevant experts, and create a forward-looking picture of risk to strengthen resilience to natural and human-induced hazards. Similarly, Costa Rica has committed to generating better disaggregated data over the next five years to facilitate the measurement of progress and better account for the number and location of people affected by disaster events and progress in inclusive data.[69]

6.1.4. New technology is helping overcome data gaps to enable better decisions

As risks continue to become increasingly complex, there is a growing need for data-driven solutions in DRR. However, as previously noted, many contributing countries have identified a lack of quality, interoperable, or accessible data as a major barrier to effective DRR. In addition, even when data is available or tools such as weather station networks exist, many countries report a **lack of capacity to interpret and use the data for decision-making purposes**. Therefore, several countries have called for increased donor support for capacity-building programmes focused on improving data collection. While long-term investments in capacity-building may improve data and risk information use within some countries, the availability of costly local data-collection tools may still present limitations for others.

Data availability and capacity-building on DRR pose significant challenges. However, new and emerging technologies have the potential to address these challenges, for instance by providing timely, reliable data for early warning of climate-induced disasters. Earth observation techniques, which use satellite, drone and aerial technology to observe the planet and monitor potential disasters, have the potential to provide some of these data, even in areas without comprehensive weather station networks.[70] These **technologies generate large data sets that can be analysed with machine learning algorithms to provide insights** that it would not be feasible to obtain through manual methods.[71,72] By incorporating socioeconomic data and adopting a hive-mind approach to data collection and verification that emphasizes the role of stakeholders, co-design of solutions, and transparent linking of hazards with socioeconomic data, Earth observation data can be further enhanced and data-driven solutions can improve local ownership and increase investment in risk management.[73]

6.1.5. Novel collaborations in improving understanding of the systemic nature of risk

Understanding of the drivers of risk and the interconnected, systemic nature of risk has evolved significantly since 2015. This has been a result of concerted efforts by DRR stakeholders and other relevant stakeholders.

Knowledge-sharing platforms, expert networks and other mechanisms for exchanging technical knowledge and good practices have been created in response to a clear need to further expand our understanding of the systemic nature of risk and how it affects different sectors.[74]

In 2018, following extensive consultations with a diverse range of constituencies, the Global Risk Assessment Framework was launched. It was designed to approach risk from a systems perspective, to explore and reveal the interactions and relationships between hazards or shocks, exposure, and vulnerabilities, across social, ecological, economic and financial systems. The INFORM Risk Index – developed by the Inter-Agency Standing Committee Reference Group on Risk, Early Warning and Preparedness and the European Commission – and the United Nations Climate Security Mechanism are other examples.

In addition, the Intergovernmental Panel on Climate Change is moving from what could be characterized as a static framing of risk as a function of hazard, exposure

69 Costa Rica, *Costa Rica: Examen de mitad de período de la aplicación del Marco de Sendai para la reducción del riesgo de desastres 2015-2030.* Available at https://sendaiframework-mtr.undrr.org/publication/costa-rica-voluntary-national-report-mtr-sf.

70 UNDRR *Global Assessment Report on Disaster Risk Reduction 2022: Our World at Risk – Transforming Governance for a Resilient Future* (Geneva, 2022a, chap. 11).

71 Ibid.

72 For example, Cambodia highlights in its Voluntary National Report that it has collaborated with the United Nations Satellite Centre (UNOSAT) to introduce FloodAI, a fully automated processing method that uses satellite imagery of flood-prone areas to provide actionable flood risk assessments.

73 UNDRR, *Global Assessment Report on Disaster Risk Reduction 2022: Our World at Risk – Transforming Governance for a Resilient Future* (Geneva, 2022a, chap. 11).

74 See, for example, submissions from the FAO, STC MG, ESCAP, United Nations Educational, Scientific and Cultural Organization (UNESCO), the United Nations University (UNU), and the Women's Resilience to Disasters Knowledge Hub for the MTR -SF.

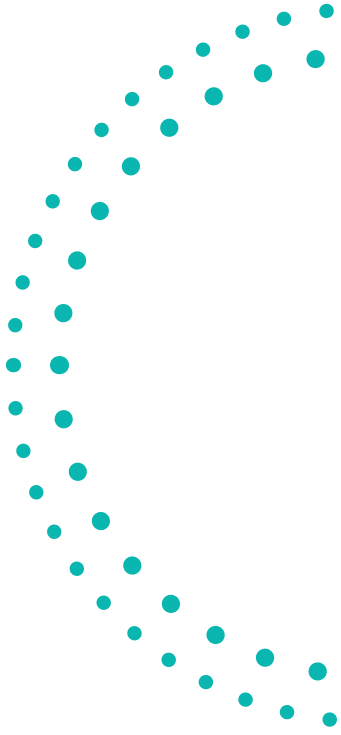
and vulnerability to a more dynamic framing where responses to the risks with potential side effects and interactions among risks are more strongly considered.[75]

Moreover, LTIK is recognized as essential to better understand the multiple dimensions of risk, with various approaches and initiatives, integrating diverse knowledge systems.

While solutions to better understanding the systemic nature of risk are emerging, the current rate of implementation is not keeping up with trends in biodiversity loss, ecosystems' vulnerabilities and other existential threats resulting from the expanding agency of humans.[76]

Box 3. Local and Indigenous Knowledge Systems programme

UNESCO's Local and Indigenous Knowledge Systems programme promotes local and Indigenous knowledge and its inclusion in global climate science and policy processes. Run in six countries in Africa, the Knowing our Changing Climate project aims to empower and build the capacity of pastoralist communities to engage in science-policy dialogue; at the same time, it supports the development of transdisciplinary research that bridges Indigenous and scientific knowledge on climate change to reinforce community resilience.



75 Simpson, Noelle, Ramona Pérez, and Mary Goldberg, "Semi-structured interviews on disaster and emergency preparedness for people with disabilities in two states in Mexico", *Natural Hazards* vol. 106, No. 1, (2021), pp. 1037–1064.

76 ISC, on behalf of STC MG, *Report for the Mid-term Review of the Sendai Framework for Disaster Risk Reduction*.

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6.2. Priority 2: Strengthening disaster risk governance to manage disaster risk

The Sendai Framework outlines the importance of a clear vision, plans, competence, guidance and coordination with and across sectors, as well as participation of relevant stakeholders as key for managing disaster risk. It states that effective governance should consider the interconnected elements and interdependencies of individual risks.[77]

There has been varied progress towards Priority 2 since 2015. Across nearly all reporting countries, there has been an increased awareness of the need to strengthen disaster risk governance to manage risk. Most Member States have been successful in developing national and regional DRR plans. At the local level, however, progress in risk governance and decentralization of DRR strategies remains confined to high-income countries.

Similarly, there has been minimal evidence of improvement in transdisciplinary and multisectoral coordination mechanisms. Siloed DRR agencies and policies continue to hinder the integration of DRR policies into development planning. As respondents outline, even when they have legal disaster risk management (DRM) provisions, they are often insufficient in providing powers to implement necessary DRR policies. Finally, countries are slowly recognizing that with the onset of a planetary emergency, conventional forms of risk and environmental governance are insufficient, yet few concrete steps have been taken to translate related global commitments into action.

6.2.1. Countries have developed disaster risk reduction plans across national and regional levels, yet critical gaps remain in its implementation at the local level

The Sendai Framework emphasizes the importance of enhancing DRR governance at the regional, national and local levels. At the national level, there has been considerable progress in DRR governance. Currently, 123 countries have reported the development of national DRR strategies.[78]

There have also been significant advances in regional cooperation and DRR governance. More effective regional planning across countries can improve the allocation of limited resources and address the root causes of risks:[79] the Pacific Resilience Program is one such example. To facilitate this, regional risk atlases have been developed to share the responsibility of collecting and disseminating risk data. One example of this is the Mesoamerican Network for Comprehensive Risk Management, which was established with the assistance of the Inter-American Development Bank and provides a real-time, publicly accessible atlas of disaster risks in the region.[80]

Regional governance has been particularly important for the LDCs and SIDS, which stand to benefit the most from regional collaborative efforts, including pooled funds and technical support. Many LDCs and SIDS reported improvements in regional DRR governance. This has been particularly evident in the Caribbean region, where 19 national governments have combined resources to establish the Caribbean Disaster Emergency Management Agency, which has enabled the development of a guided regional strategy, common indicators, and the mapping and systematization of common DRR priorities in the region.[81] By sharing DRR resources, LDCs and SIDS can better overcome capacity and financial constraints. Overall, the increase in national and regional DRR governance mechanisms has been a notable success for many countries.

In contrast to the progress made in national and regional DRR governance, progress at the local level has been less significant. There are some successful examples of local-level DRR governance, particularly in European countries where regions and municipalities are increasingly recognized as important stakeholders. For example, the global Making Cities Resilient 2030 (MCR2030) initiative, which in Europe encompasses 141 municipalities with a population of 55 million people,

77 UNDRR, "Systemic risks, the Sendai Framework and the 2030 Agenda". In *Global Assessment Report on Disaster Risk Reduction 2019* (2019). Available at https://gar.undrr.org/.

78 UNDRR, *Co-Chairs' Summary: Bali Agenda for Resilience: From Risk to Resilience: Towards Sustainable Development for all in a COVID-19 Transformed World* (2022e). Available at https://globalplatform.undrr.org/publication/co-chairs-summary-bali-agenda-resilience-risk-resilience-towards-sustainable.

79 UNDRR, *Global Assessment Report on Disaster Risk Reduction 2022: Our World at Risk – Transforming Governance for a Resilient Future*.

80 Mexico, *Marco de Sendai para la Reducción del Riesgo de Desastres 2015-2030: Informe Voluntario de Medio Término* (2022). Available at https://sendaiframework-mtr.undrr.org/publication/mexico-voluntary-national-report-mtr-sf.

81 UNDRR, *Caribbean Sub-regional Report*. Paper prepared for the Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030 (2022f).

has been established to support capacity-building and knowledge exchange for risk management.[82]

However, many respondents to the MTR SF **reported little devolution of DRR governance to the local level. When local DRR responsibilities do exist, they are often not accompanied by adequate financing**. For example, a survey of Polish ministries conducted at the subnational level found that one third of respondents reported that the budget available for risk management was insufficient.[83] As Slovenia noted, this is a significant challenge as local governments are generally five times more financially burdened by disasters than the national government.[84] To address this issue, several respondents called for better distribution of financial resources at the local level to meet the relatively high financial burden of disasters at that level. Lastly, several Member States have outlined that risk governance continues to exclude the majority of locally registered civil society organizations.[85]

6.2.2. Progress in incorporating disaster risk reduction within legal frameworks has been primarily confined to high-income countries

Member States have recognized the importance of updating legal frameworks to enable action towards implementing DRR plans. Progress has been made in incorporating DRR into legal mandates at all levels of governments. For example, in Ecuador, risk management is legally mandated and given the same level of consideration as other key sectors, such as education and health.[86] In Thailand, all provinces and local administrative bodies are mandated to develop DRM plans for their jurisdictions at the subnational level.[87] Countries in the European Union are mandated to conduct national, subnational and sectoral risk assessments. In Armenia, DRM policies are prescribed at the community level, with the support of approved national templates and methodologies.[88]

MTR SF contributors outline that risk assessment is an area of strength in Europe (given that it is mandatory for European Union member countries).

Furthermore, **countries that have experienced the most success in this area are those that mandate adequate financial resources**. For example, in the Philippines, laws that delegate responsibility to the local level are supported by laws that require the allocation of related financing.[89]

There have also been **significant improvements in terms of legislation addressing new and emerging risks**, such as the intensifying impacts of climate change or cybersecurity. For instance, the United States has passed multiple pieces of legislation since 2015 with explicit references to cyber and technological risks.[90] Similarly, in Sweden, the large wildfires that occurred in 2014 and 2018 prompted a review of the rescue services, leading to changes in legislation to improve the management of large fires and other major accidents.[91]

Improved legal frameworks have been observed as contributing to significant structural changes in how different sectors of society assess disaster risk or their contribution to risk vulnerabilities. For instance, in Switzerland, there is a legal requirement to consider hazard risk maps related to floods, avalanches, landslides, and rockfalls in spatial planning.[92] In the Republic of Korea, the Disaster Impact Assessment (DIA) system was introduced in 2018 to identify disaster risk

82 UNDRR, *Regional Synthesis Report – Europe and Central Asia*. Paper prepared for the Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030 (2022g).
83 Poland, *National Voluntary Review of the Republic of Poland: Produced as part of the Midterm Review of the Sendai Framework,* Beata Janowczyk, Wiktoria Królikowska, and Agnieszka Szajnert (Warsaw, Government Centre for Security, 2022). Available at https://sendaiframework-mtr.undrr.org/publication/poland-voluntary-national-report-mtr-sf.
84 Slovenia, *National Voluntary Report of the Republic of Slovenia: Produced as part of the Midterm Review of the Sendai Framework* (2022). Available at https://sendaiframework-mtr.undrr.org/publication/slovenia-voluntary-national-report-mtr-sf.
85 For instance, this was noted by respondents in UNDRR (2022f).
86 Ecuador, Servicio Nacional de Gestión de Riesgos y Emergencias, *Informe nacional de revisión de mitad de período de la implementación del marco de Sendai para la reducción del riesgo de desastres 2015 – 2030* (2022). Available at https://sendaiframework-mtr.undrr.org/publication/ecuador-voluntary-national-report-mtr-sf.
87 Thailand, Department of Disaster Prevention and Mitigation and Ministry of Interior, *National Voluntary Report of Thailand*.
88 Armenia, *Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030* (2022). Available at https://sendaiframework-mtr.undrr.org/publication/armenia-voluntary-national-report-mtr-sf.
89 Philippines, Office of Civil Defense, National Disaster Risk Reduction and Management Council, *The Philippines' Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015–2030* (p. 14).
90 United States of America, *The Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030: National Consultations, Review and Reporting*.
91 Sweden, Swedish Civil Contingencies Agency, *Sendai Framework Midterm Review: Country Report*.
92 Switzerland, *Switzerland's Voluntary National Report to the Mid-Term Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015 – 2030*, Franziska Schmid (Bern, Federal Department of Foreign Affairs, 2022). Available at https ://sendaiframework-mtr.undrr.org/publication/switzerland-voluntary-national-report-mtr-sf.

factors associated with development projects, such as flooding, slope failure, or land subsidence, and to devise hazard mitigation strategies.[93] The DIA system is unique in that it requires development projects to include the task of assessing disaster impacts as a separate and independent process.

The European Union recently **passed regulations on sustainable finance, including overarching conditions that economic activity must meet to qualify as environmentally sustainable**. The Taxonomy Regulation also establishes climate change adaptation as one of six environmental objectives, requiring companies in all industries to be more sustainable in order to obtain financial support. This has also been implemented into law in Norway in 2022. This type of regulation has significant implications for reducing vulnerabilities and illustrates the importance of using legal frameworks to advance DRR objectives.

However, **many countries, particularly low-income countries, still lack DRR strategies and policies with supporting legal frameworks**. Several countries identified that this is due to a lack of financial resources, organizational capacity, or political will to enact adequate legal frameworks. In Poland, for example, there are no existing legal obligations to prepare risk management plans or DRR strategies, and one-third of surveyed ministries in Poland noted that the budget available for risk management was insufficient.[94]

To address these issues, a **significant number of countries identify assistance with establishing legal frameworks to support risk reduction strategies and policies across and between multiple sectors and scales as a priority**. Ethiopia, for instance, identifies the development of legal enforcement mechanisms as key to enhancing risk-informed development planning and budgeting.[95] To address this gap, the International Federation of Red Cross and Red Crescent Societies, alongside United Nations donors and organizations, have developed several tools to strengthen legal and policy frameworks for DRR and climate change adaptation.[96]

The Inter-Parliamentary Union and UNDRR have created a "practical toolkit for parliamentarians."[97] This toolkit **highlights the crucial role that parliaments and parliamentarians play in driving, overseeing, and evaluating the implementation and impact of DRR laws and policies at the local level**. The toolkit offers 10 specific actions that parliamentarians can take to effectively shape and implement DRR policy, legal, financial, and oversight frameworks that are tailored to the needs of their country.

However, submissions to the MTR SF noted that the provision of these tools may be insufficient. Some Member States reported that even when they have legal provisions for DRM, they often lack the necessary powers to implement DRR policies. For instance, in Seychelles, although a Disaster Risk Management Act was introduced in 2014, the implementation of DRM policies has been limited by capacity for implementation. The country noted that achieving DRM policies that emphasize the notion of "shared responsibility" may be difficult, as most agencies do not have adequate legal mandates, jurisdictions or budgets to act.[98]

As the lack of adequate resources and capacities impedes implementation, there is a continued need to enhance both legal frameworks for DRR and ensure that governments have the resources to enact them.

6.2.3. There is a persistent lack of coordination within countries among disaster risk reduction agencies, sectoral line ministries and across policies, which is hindering risk-informed decision-making and the effectiveness of disaster risk reduction efforts

Since the onset of the COVID-19 pandemic, there has been **increased recognition of the importance of transdisciplinary, intersectoral and multi-scale coordination** within countries in building and improving

93 Republic of Korea, Ministry of the Interior and Safety, *Mid-term Review for the Implementation of the Sendai Framework: 2022 Voluntary National Report of the Republic of Korea* (2022). Available at https://sendaiframework-mtr.undrr.org/publication/republic-korea-voluntary-national-report-mtr-sf.

94 Poland, *National Voluntary Review of the Republic of Poland: Produced as part of the Midterm Review of the Sendai Framework*, Beata Janowczyk, Wiktoria Królikowska, and Agnieszka Szajnert.

95 Ethiopia, The *Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030: Ethiopian Voluntary National Report* (2022). Available at https://sendaiframework-mtr.undrr.org/publication/ethiopia-voluntary-national-report-mtr-sf.

96 UNDRR, *Global Assessment Report on Disaster Risk Reduction 2022: Our World at Risk*.

97 Inter-Parliamentary Union and UNDRR, *Disaster Risk Reduction to Achieve the Sustainable Development Goals: A Toolkit for Parliamentarians*.

98 Seychelles, Disaster Risk Management Division, *Sendai Framework for Disaster Risk Reduction, Mid Term Review – Seychelles: Sendai Framework for Disaster Risk Reduction. Midterm Review Report* (2022). Available at https://sendaiframework-mtr.undrr.org/publication/seychelles-voluntary-national-report-mtr-sf.

DRR capacities, reducing duplication of efforts or financing, and facilitating less reactive approaches to managing risk.

One effective strategy for addressing siloed DRR agencies and policies has been the establishment of national task forces. For instance, in Australia, the National Resilience Taskforce was created to lead national efforts to mitigate the impacts of natural hazards on the country's critical infrastructure, economy, cities and regions.[99]

This type of coordination, promoting the engagement of all State institutions, has been observed in other countries as well. Egypt and Kyrgyzstan have both established unified data and DRR planning bodies to enhance cooperation among DRR stakeholders to enable more coordinated responses to disasters.[100] Furthermore, several countries have implemented intragovernmental, multisectoral working groups to overcome centralized and siloed DRR policies. For example, in Montenegro, working groups were established in efforts to enact the Guiding Principles of the Sendai Framework, with ministries, agencies, services, academia, research communities, and non-governmental organizations all participating in the development of the country's National Disaster Risk Assessments.[101] Sweden's practice of forest fire risk governance has incorporated new mechanisms, including creating and maintaining semi-formal and informal coordination structures that facilitate cooperation, collaboration and partnerships that transcend territorial and administrative boundaries and foster the exchange of disaster risk-specific expertise and knowledge.[102]

In many countries,[103] national platforms for DRR represent multi-stakeholder coordination mechanisms for DRR implementation and monitoring at the national level. Nationally owned and country-led, they are composed of representatives from key line ministries, civil society and other core stakeholders including academia, scientific and technical institutions, the private sector, and the media and represent the collective wisdom of a formidable range of expertise, knowledge and capacity in the given country. National platforms have played a core role in the pursuit of Target E of the Sendai Framework to "increase the number of countries with national and local disaster risk reduction strategies by 2020", including facilitating coherence among DRR, climate change and sustainable development, and receive regional recognition as important for effective and efficient DRR.[104]

To reduce silos and increase integration, **many countries have made efforts to incorporate DRM into the overall development process rather than treating it as a separate, ad hoc action**. In Malawi, the government has made significant efforts to embed DRM into the fabric of all development plans.[105] Rather than viewing DRR as a stand-alone process, the government has stated in its overarching growth and development strategy that DRM must be the responsibility of every development organization at all levels, both within and outside the government.

Donors and United Nations entities have also made concerted efforts to further integrate DRR throughout development governance. This is evident in Tajikistan, where UNDP launched the initiatives "Strengthening Disaster Risk Reduction and Response Capacities" and "Strengthening Disaster Risk Governance in Tajikistan" to support the Government of Tajikistan in conducting a nationwide disaster risk assessment.[106] These efforts assist in reducing silos and ensure that DRR remains the responsibility of all government agencies.

However, **many countries identify that silos continue to limit DRR effectiveness**. Examples from the Mediterranean region demonstrate that the division of roles across different ministries and departments

99 Maddison Merrin-Davies, "Implementation of the Sendai Framework for Disaster Risk Reduction in Australia", *Australian Journal of Emergency Management*, vol. 33, No. 3 (2018). Available at https://search.informit.org/doi/pdf/10.3316/ielapa.792303961410982.

100 Egypt, *Midterm Review on Implementation of Sendai Framework for Disaster Risk Reduction for 2015-2030* (2022). Available at https://sendaiframework-mtr.undrr.org/publication/egypt-voluntary-national-report-mtr-sf.

101 Montenegro, Ministry of Interior Rescue and Protection Directorate, *The Midterm Review on the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030: Voluntary Review and Report of Montenegro* (Podgorica, 2022). Available at https://sendaiframework-mtr.undrr.org/publication/montenegro-voluntary-national-report-mtr-sf.

102 Sweden, Swedish Civil Contingencies Agency, *Sendai Framework Midterm Review: Country Report*.

103 See, for example, the Voluntary National Reports of Bangladesh, Cambodia, Gambia, Kyrgyzstan, Liberia, and Russian Federation.

104 Gambia, *Report on the Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030* (2022). Available at: https://sendaiframework-mtr.undrr.org/publication/gambia-voluntary-national-report-mtr-sf.

105 Malawi, *The Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030* (2022). Available at https://sendaiframework-mtr.undrr.org/publication/malawi-voluntary-national-report-mtr-sf.

106 Tajikistan, *Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction in the Republic of Tajikistan* (2022). Available at https://sendaiframework-mtr.undrr.org/publication/tajikistan-voluntary-national-report-mtr-sf.

often hinders effective and timely implementation of DRR programmes. In Algeria and Greece, for instance, the forestry and fire departments continue to operate as separate entities, frequently resulting in disaster prevention efforts hindered by bureaucratic processes between departments.[107]

While countries have made ambitious plans to enhance collaboration, **without transforming organizational structures and mandates or developing incentives, little change can be expected**. For example, Caribbean and Pacific Island States have identified a continued lack of cooperation between institutions and policies responsible for DRR, climate change adaptation, and development.[108]

By taking advantage of initiatives like this, revisiting mandates to facilitate transdisciplinary, multisectoral risk prevention and reduction, enhancing horizontal and vertical cooperation and collaboration mechanisms, Member States can take concrete steps to reduce silos and strengthen risk governance during the second half of the Sendai Framework.

Box 4. The need to better coordinate climate change adaptation financing and disaster risk reduction financing

Climate change adaptation and mitigation can be considered part of attempts to reduce disaster risk, in that they seek to reduce vulnerability, strengthen the resilience of societies and share common concepts included in risk management. Dedicated funds available for climate adaptation work are many orders of magnitude greater than those available for DRR. Such artificial division presents numerous disadvantages:

- Redundancy/duplication of activities
- Investments not optimized intersectorally
- Risk management not systematically integrated in climate change adaptation, which can lead to maladaptation
- Lack of resources targeted for DRR
- Political salience of climate change adaptation rather than DRM due to being able to mobilize more resources
- Policy divisions; lack of policy coherence and integration
- DRR can be seen as the responsibility of National Disaster Management Offices alone and are therefore not sufficiently owned/managed by other sectoral partners
- DRR-friendly activities go unmeasured

Source: ECOSOC and UNDRR (2022).

107 Alexander Clapp, "The fires in Greece are a terrifying warning", Asharq Al-Awsat, 30 August 2021. Available at https ://english.aawsat.com/home/article/3160216/alexander-clapp/fires-greece-are-terrifying-warning.

108 UNDRR, *Caribbean Sub-regional Report*. Paper prepared for the Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030 (2022f).

6.2.4. Inclusion in disaster risk reduction strategies is steadily improving, but further efforts are necessary

Member States have reported that national DRR plans and institutional frameworks are increasingly inclusive of women, children and youth, persons with disabilities, older persons, Indigenous Peoples, migrant and displaced persons. One such example is Cambodia, where the National Committee for Disaster Management, has issued a "Guideline for Mainstreaming Gender in Inclusive Disaster Management". The country's Disaster Risk Reduction Framework 2019–2030 and National Action Plan 2019–2023 also prioritize social inclusion, ensuring sufficient representation from women, persons with disabilities, children and youth, older persons, and other most-at-risk segments of society. Mainstreaming is identified as the key strategy for reducing the risk of these most-at-risk with specific attention on social inclusion (e.g., women, children, older persons, and persons with disabilities).[109]

Furthermore, **ensuring inclusivity in DRR governance structures at all levels has been a focus for many countries**. For example, national systems for DRR involving multiple institutions and levels are common in the Americas. Costa Rica's system involves 77 institutions and takes a broadly inclusive approach, and the National Risk Management Plan sets out the relationship between risk management and social inclusion. It cites the different needs of women and most-at-risk groups including people in poverty, children, older persons, migrants, and displaced people, and the importance of reducing the number of people living in situations of risk.[110] Elsewhere, Morocco has adopted principles for DRR including stakeholder engagement, a gender-responsive approach, and integration of climate change and environmental protection, with a priority of promoting women's empowerment and leadership.[111] In Mexico, the Government's concept of comprehensive DRR frequently refers to closing inequality gaps and includes the welfare and environment sectors.[112] Recognizing the importance of fostering an *all-of-society* approach in DRR,[113] UNDRR engages with stakeholders through the SEM, which convenes a self-organized space for United Nations Major Groups and other stakeholders identified in Agenda 21 (1992) and the Rio+20 outcome "The Future We Want" (2012).

Box 5. Beyond vulnerability to gender equality and women's empowerment and leadership in disaster risk reduction: critical actions for the United Nations system[114]

With the support of more than 20 United Nations entities, UN Women, UNFPA and UNDRR led the development of a joint report on the status of gender equality and women's leadership in DRR. The report explores how the United Nations system can better support Member States to empower women and promote women's leadership in disaster and climate risk governance. It outlines nine recommendations for the United Nations system to accelerate gender equality and women's empowerment, ranging from reviewing DRR/CCA methodologies and tools to enhancing gender reporting through the United Nations Plan of Action, to promoting sex-disaggregated disaster data reporting.

109 Cambodia, *The Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030. National Voluntary Report – Cambodia* (2022, pp. 26–27). Available at https://sendaiframework-mtr.undrr.org/publication/cambodia-voluntary-national-report-mtr-sf.

110 Costa Rica, *Costa Rica: Examen de mitad de período de la aplicación del Marco de Sendai para la reducción del riesgo de desastres 2015-2030*.

111 Morocco, Ministère de l'Intérieur and Direction de la Gestion des Risques Naturels, *Rapport National pour l'évaluation à mi-parcours du Cadre d'Action de Sendai sur la Réduction des Risques de Catastrophes 2023* (2022). Available at https://sendaiframework-mtr.undrr.org/publication/morocco-voluntary-national-report-mtr-sf.

112 Mexico, *Marco de Sendai para la Reducción del Riesgo de Desastres 2015-2030: Informe Voluntario de Medio Término*.

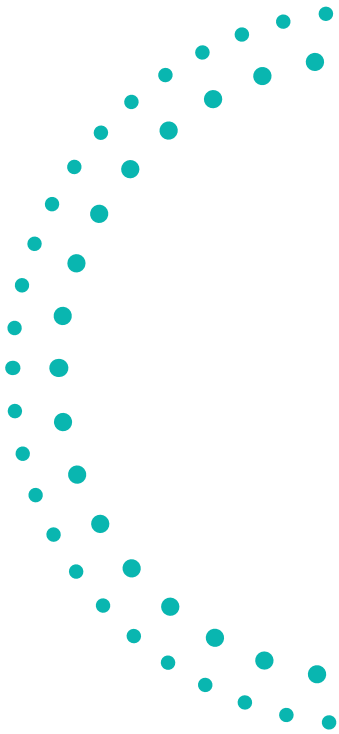
113 UNDRR, *Report for Consultations: Stakeholder Perspectives – Midterm Review of the Sendai Framework* (Geneva, 2022k).

114 Mary Picard, *Beyond Vulnerability to Gender Equality and Women's Empowerment and Leadership in Disaster Risk Reduction: Critical Actions for the United Nations System. A United Nations Joint Study on the Status of Gender Equality and Women's Leadership in DRR* (Geneva, UN Women, UNFPA, and UNDRR, 2022).

Noticeable progress has been made since 2015 on incorporating the voices of women in DRR governance structures. For example, the National Disaster Risk Management Commission of Ethiopia has established gender working groups and developed a draft gender strategy,[115] while Liberia and Tunisia have recognized the unique knowledge and perspectives of women and children in adaptation efforts. Inclusive governance structures have also enhanced DRR planning.[116,117] For instance, Gambia formulated contingency plans for emergency response at the national, regional and district levels, led by stakeholders and facilitated by the National Disaster Management Agency with the participation of "women, children, older persons, men, individuals with disabilities, local community members, private sector, civil society, United Nations agencies, and civil servants."[118,119] Furthermore, Türkiye has worked through the women's branches of the Red Crescent to increase the participation and empowerment of women in DRR.[120]

This is no coincidence. **Many Member States take a systemic approach to risk governance with a gender and inclusion lens**. For example, New Zealand highlights the use of a general online gender-analysis tool "Bringing Gender In" to support policymakers in all areas, including DRR.[121] It also addresses social risks that increase disaster risk, such as introducing equal pay legislation, a national strategy to improve employment pathways for marginalized women, and a programme to close pay gaps in the public sector for "women, Māori, Pacific peoples, and other ethnic groups."

Systematizing an *all-of-society* approach and strengthening inclusion in DRR will be crucial in achieving the outcome and goal of the Sendai Framework and building resilient communities.

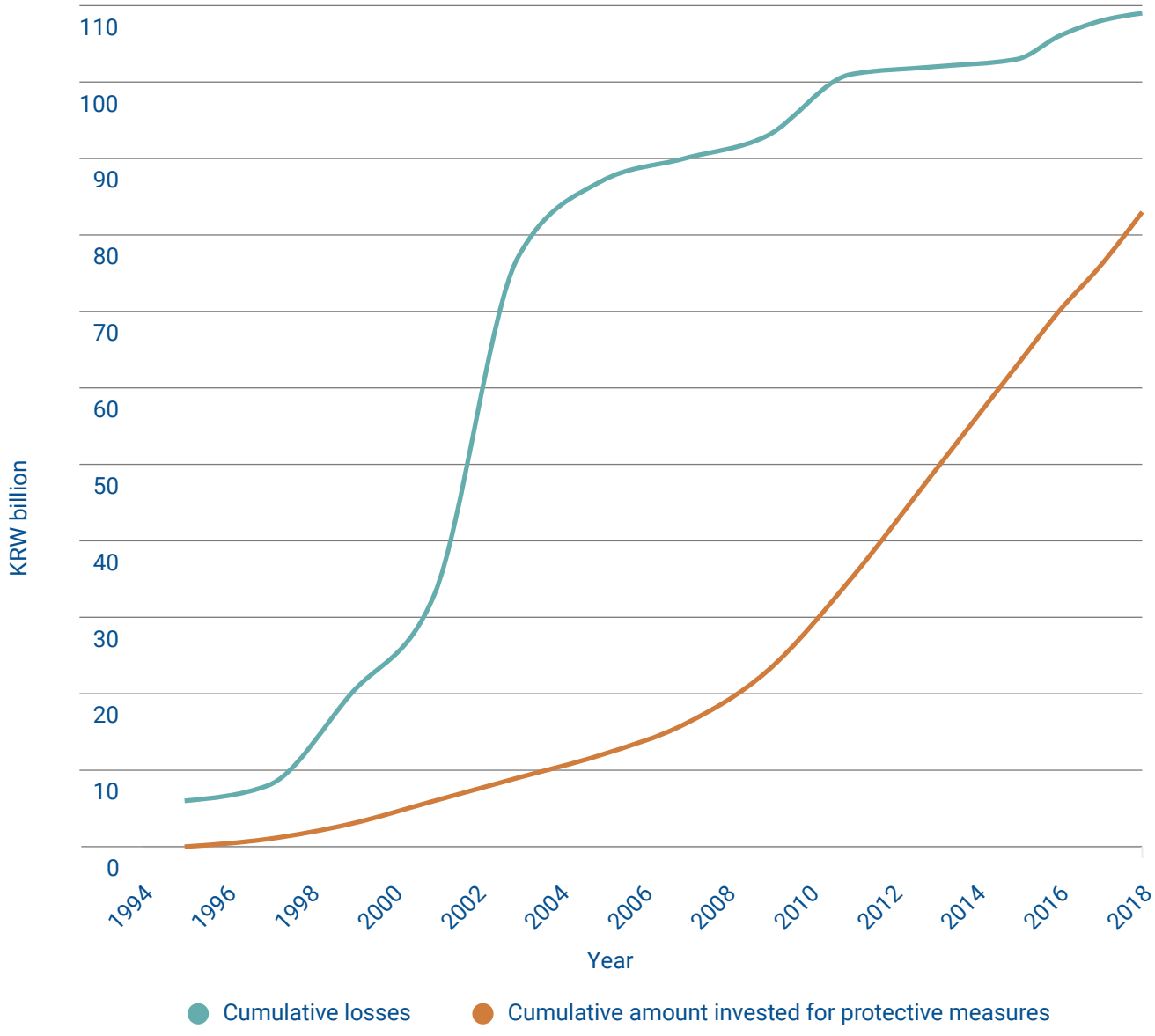


115 Ethiopia, *The Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction* (2022, p. 14).
116 Liberia, *The Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030: Liberia MTR SF Report* (2022) Available at https://sendaiframework-mtr.undrr.org/publication/liberia-voluntary-national-report-mtr-sf.
117 Tunisia, Ministry of Environment, *Mid-Term Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030: National Voluntary Report of Tunisia* (2022). Available at https://sendaiframework-mtr.undrr.org/publication/tunisia-voluntary-national-report-mtr-sf.
118 Gambia, *Republic of The Gambia: Report on the Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030* (2022, p. 2). Available at https://sendaiframework-mtr.undrr.org/publication/gambia-voluntary-national-report-mtr-sf.
119 Ibid, p. 4.
120 Türkiye, *Disaster and Emergency Management Presidency, Mid-term Review of the Sendai Framework: National Report of Türkiye*.
121 New Zealand, *Aotearoa New Zealand's National Midterm Review of the Sendai Framework for Disaster Risk Reduction 2015-2030 Report* (2022, pp. 6–27). Available at https://sendaiframework-mtr.undrr.org/publication/new-zealand-voluntary-national-report-mtr-sf.

6.3. Priority 3: Investing in disaster risk reduction for resilience

Since 2015, there has been a global consensus on the need for greater and more diverse investments in DRR. Many countries are increasingly recognizing that investments in disaster prevention can yield higher returns. However, any growth in investment in DRR for resilience has not been sufficient to meet the increasing direct and indirect costs of disasters.

Figure 16. Cumulative disaster losses versus cumulative preventive investment



Source: Republic of Korea (2022, p. 89).

In 2020, total insured losses from natural hazards and human-induced disasters were estimated at US$ 187 billion, a 25 per cent increase from the previous year.[122] The indirect socioeconomic costs of disasters, which impact current and future generations, are even greater. Despite this, in many countries where risk prevention is earmarked as a primary objective within domestic public finances, this allocation is on average less than 1 per cent of national budgets, indicating chronic underinvestment in DRR.[123] Many countries continue to report that financing is a major barrier to the implementation of the Sendai Framework, particularly the LDCs, LLDCs and SIDS – those least able to cope with increasing disaster losses and recovery costs.

However, despite ongoing challenges related to financing DRR efforts, some notable progress has been made globally. T**he Sendai Framework has advanced new and innovative approaches to resource allocation and capital deployment in pursuit of its outcome and goal**. These include **risk disclosure initiatives, resilience bonds, financial regulatory inquiries, principles for infrastructure investments and stress-testing**, which have made encouraging progress in addressing these challenges.

6.3.1. Disaster risk reduction investments have been insufficient to cover increased costs

Over the past 20 years, climate-related disasters have nearly doubled in frequency, while the economic costs of such disasters have continued to rise, exacerbating inequalities within and between countries. And yet, only 0.5 per cent of total official develop ODA from 2011 to 2020 was dedicated to DRR in the pre-disaster phase, representing only a slight improvement from the 0.4 per cent of the 1990 to 2010 period.[124] It is crucial that in the second half of the Sendai Framework implementation period, there is a substantial increase in funding for DRR from all sources. The human impact of major disasters related to natural hazards may have declined somewhat, but the economic impact continues to escalate and underscores the need for increased investments in DRR.

Despite significant investments from donor countries, **the increasing economic costs of disasters are not proportionately addressed**. For example, in the Caribbean, the Delegation of the European Union to Barbados and the Eastern Caribbean States, the Organisation of Eastern Caribbean States and the Caribbean Community (CARICOM)/Caribbean Forum of African, Caribbean and Pacific States report that approximately € 590 million have been invested in projects to alleviate disaster risk and loss – a significant increase since 2015.[125] However, these investments alone are insufficient to meet rising costs. Currently, developing countries require an estimated US$ 70 billion annually for climate adaptation measures, a figure that is expected to rise to between US$ 140 billion and US$ 300 billion by 2030.[126] In an effort to meet this need, United Nations system entities continue to advocate for increased domestic and international public and private finance for DRR, including through the Inter-agency Task Force on Financing for Development.

Furthermore, the MTR SF has reiterated that **investments that are made at the post-disaster phase continue to predominantly focus on settlements, infrastructure and service development**. While these investments are important, it is crucial to recognize that investments in DRR are vital for reducing the impacts of future disasters and safeguarding current development gains.

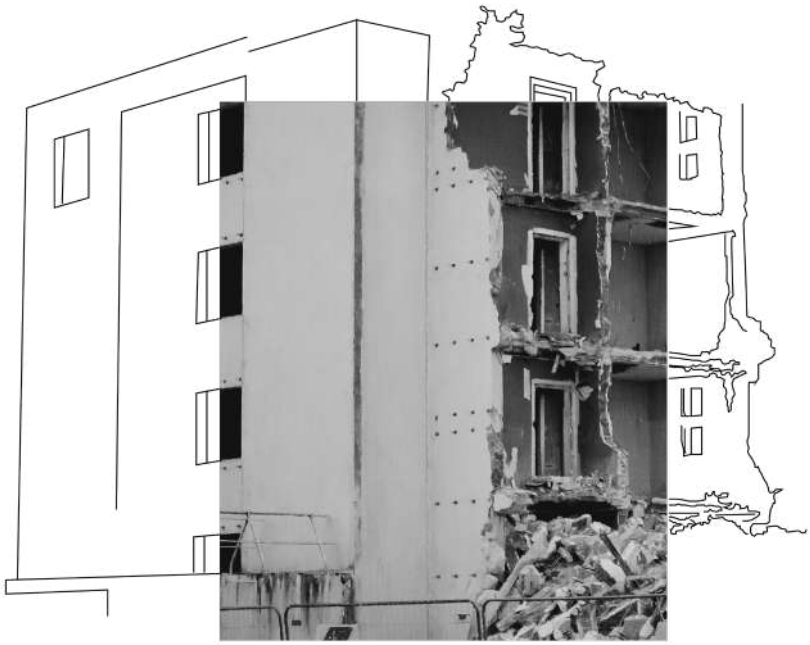
The importance of taking action and investing in DRR cannot be overstated, as **disaster risks have the potential to significantly surpass losses recorded in previous events due to their cascading impacts on the financial system**. This can result in capital flight from critical sectors and communities, an increase in sovereign credit risk, sovereign defaults, sudden and sharp write-downs from devaluation, and rising insurance premiums. **It is no coincidence that countries with the highest exposure to disaster risk often overlap with some of the most economically at-risk nations**. To face these challenges, it is essential to intensify efforts to address the insufficient investment in DRR in order to mitigate the economic impacts of disasters and reduce the likelihood of future disasters.

122 International Cooperative and Mutual Insurance Federation, "Swiss Re Institute estimates USD 83 billion global insured catastrophe losses in 2020, the fifth-costliest on record", 17 December 2020. Available at https://www.icmif.org/news_story/swiss-re-institute-estimates-usd-83-billion-global-insured-catastrophe-losses-in-2020-the-fifth-costliest-on-record/.
123 UNDRR, *Policy brief: Financing prevention and de-risking investment*. (2021b). Available at: https://www.undrr.org/publication/policy-brief-accelerating-financing-and-de-risking-investment.
124 UNDRR, *International Cooperation in Disaster Risk Reduction: Target F*.
125 UNDRR, *Caribbean Sub-regional Report*. Paper prepared for the Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030 (2022f).
126 UNDRR, *International Cooperation in Disaster Risk Reduction: Target F*.

6.3.2. Investments in disaster risk reduction have been poorly targeted and reactive

A significant number of countries, as well as the Major Group on Science and Technology, outlined that the **investments in DRR that do occur are still overly focused on responding to disaster rather than building resilience**. In fact, 90 per cent of international funding in this area is geared towards recovery work, with only 10 per cent spent on prevention.[127] They state that **this has limited their ability to build long-term resilience**. Undoubtedly, ODA continues to be poorly targeted. A comparison of disaster-related ODA and disaster-related mortality shows that, while there seems to be a clear association between mortality levels and international financing dedicated to emergency response and reconstruction, there is no clear association between mortality levels and financing for disaster prevention and preparedness. Currently, there appears to be no association between aid provided and human costs of disasters.

Furthermore, **measuring the impact of disasters continues to be a problem for targeting investments and measuring needs**. There is an ongoing challenge of under-reporting and underestimation of losses. For instance, between 2016 and 2020, losses reported by an average of 62 countries totalled US$ 293 billion. This is likely an underestimation, considering the insurance sector estimates global disaster losses from natural hazards in 2020 alone to be US$ 210 billion. In fact, over a four-decade period starting in 1980, total losses due to such disasters have been estimated to be US$ 5.2 trillion.[128] Of this damage, LDCs reported 17 per cent of total economic losses between 2018 and 2020. Several countries explained that the **challenges related to accurately measuring the economic costs of disasters are a result of low technical capacity and resources for quantifying, registering and converting disasters into monetary losses**. Strengthening this technical capacity could improve assessments of losses from disasters and help improve the targeting of investments in DRR to achieve greater impact.



© Unsplash/Sarah Crego

127 Natalie Donback, "What we can learn from disaster risk reduction efforts in small islands", *Devex*, 12 February 2020. Available at https://www.devex.com/news/what-we-can-learn-from-disaster-risk-reduction-efforts-in-small-islands-96072.

128 Ibid.

6.3.3. Domestic investment in disaster risk reduction remains a challenge for lower-income countries

The limitations of international support for DRR activities continue to place a burden on domestic structures of DRR finance. Since 2015, **many reporting countries have established integrated national DRR financing frameworks and DRR funds, and a significant proportion of countries have noted improvements in regulations related to Priority 3**.

However, most Member States have also identified that public-sector budget allocations and expenditures towards DRR have been significantly lower than for other national development priorities. In fact, for many countries, DRR accounts for less than 1 per cent of their national budgets, limiting their ability to adequately implement their planned or necessary DRR initiatives.[129] As Viet Nam notes, current domestic budget allocations only meet 50 per cent of DRR needs.[130] Without adequate allocation of actual resources, DRR financing frameworks and funds are likely to be ineffective.

Furthermore, some countries still lack formal DRR financing frameworks, which limits the efficient allocation of available resources. For example, in the Philippines, it has been highlighted that substantial allocations of DRR investments are not only still predisposed to post-disaster spending, but that also up to 81 per cent of funds remain unused.[131] Reasons cited for this non-use of funds include unclear fiscal guidelines for local government units, faulty reporting, and a lack of prioritization of DRR by many local chief executives or mayors.

The absence of domestic DRR financing frameworks can often lead to an overreliance on donor funding for DRR investment strategies, which limits the ability of countries to implement measures that ensure long-term disaster resilience. As respondents from SIDS outlined, a key hindrance to DRR is the donor-driven nature of projects and grants, which are often not entirely based on nationally identified priorities. This reliance was identified by Ethiopia, which received US$ 3.8 billion in aid flows – equivalent to 50–60 per cent of its national budget.[132] Although donor organizations have been cited as attempting to incorporate DRR into national development planning, actual engagement, both financially and technically, with national governments can be inadequate.[133] For instance, Ethiopia notes that two-thirds of DRR aid was distributed using non-governmental development partners.[134] As previously stated and identified by most countries, **this funding structure likely reduces coordination, contributes to overlap, and reduces DRR funding effectiveness**.

Additionally, access to donor funding as an alternative to national investments remains a challenge. In the Pacific for example, survey results highlight prominent barriers to accessing disaster risk financing, such as complex and lengthy application processes and stringent donor requirements, with civil society organizations rarely qualifying for funding. This is because the grant-making architecture is often complicated; with numerous donors, differing (and at times overlapping) proposal requirements and timelines, which prove challenging to manage given the limited availability of human resources in SIDS. It is **recommended that access to funding should be simplified and responsive to beneficiary needs**, not donor agendas, and that specifically labelled DRR funding should be made available. Donors should also make more small-scale funds available for direct engagement with civil society stakeholders.

To ensure that financing is more "needs-based," countries such as the United Republic of Tanzania call for increasing civil society involvement in finances through the use of citizen engagement platforms, which can allow non-governmental organizations to better participate and assist governments and donors in targeting DRR investments.[135] Efforts to address this challenge can be seen in Argentina, where the Government is in the process of creating a National Registry of Non-Governmental Response Organizations

129 UNDRR, *Policy Brief: Financing Prevention and De-risking Investment*.
130 Viet Nam, *Mid-Term Review of the Sendai Framework for Disaster Risk Reduction*.
131 Philippines, Office of Civil Defense, National Disaster Risk Reduction and Management Council, *The Philippines' Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015–2030*.
132 Ethiopia, *The Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030*.
133 Some countries, such as Guinea, outline in their Voluntary National Review that all investment in disaster risk reduction is donor-funded.
134 Ethiopia, *The Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030*.
135 United Republic of Tanzania, *The United Republic of Tanzania – Sendai Framework 2015-2030: Midterm Review. Tanzania Country Report*, Wilhelm Kiwango (2022). Available at https://sendaiframework-mtr.undrr.org/publication/united-republic-tanzania-voluntary-national-report-mtr-sf.

to enable better coordination and use of civil society organizations.[136] **It is crucial that donor funding is led by recipient countries' needs and prioritized accordingly**.

Lastly, **data limitations and the lack of interoperability between risk and financial data remain a challenge for many countries**. Many countries outlined difficulties in even quantifying resources dedicated to DRR activities. **DRR-sensitive budget reviews are important** for determining the direct and indirect proportion of DRR allocation and expenditures, thus better informing decision-making and budget prioritization. Combined with robust risk assessments, these reviews could provide evidence of potential losses emanating from various hazards and identify various sectors in the short and long term that require increased investment. To ensure that budget reviews do not remain only an ad hoc one-time exercise, **specific tagging and tracking systems need to be developed and institutionalized** for holistic and financially sustainable management of disaster risks.[137]

6.3.4. There have been innovations in insurance and other risk transfer mechanisms but their scale and penetration remain inadequate

Since 2015, most reporting countries recognize that some progress has been made in increasing access to risk transfer measures such as insurance. In New Zealand, progress has involved doubling earthquake insurance caps to increase the insurance risk taken on by the government for buildings exposed to earthquake risks.[138] This ensures that private insurance cover can remain available and affordable in a country with considerable exposure to earthquake risks.

Recognizing the need for stronger guidance in this area, UNDRR and the International Cooperative and Mutual Insurance Federation provide seven practical mechanisms for the cooperative and mutual insurance sector to drive prevention and DRR in addition to risk transfer, thus changing gear from "protection to prevention".[139]

However, despite some good examples, global penetration rates for disaster risk insurance remain low. For LDCs, SIDS and other developing countries with business profiles characterized by small and medium enterprises (SMEs) and large informal sectors, progress is even more limited. **When disasters strike, SMEs continue to face greater impacts, with fewer insurance options available to them**.

In the wake of the adoption of the Sendai Framework, donors have also increasingly recognized the importance of insurance mechanisms as a means of addressing disaster risks. In 2022, the **G7 Development Ministers committed to strengthening the global infrastructure for climate and disaster risk financing and insurance, including by providing insurance premium subsidies and capital support**.[140] Individual countries have also taken action to expand access to climate risk insurance, such as Canada's Can$ 100 million commitment to support the expansion of such coverage in vulnerable countries, including SIDS and LDCs.[141] Many MTR SF contributors also reported that governments have made efforts to strengthen relationships with insurance providers, although insurance coverage remains low in many regions. For instance, in the Middle East and North Africa (MENA) region, insurance as a percentage of GDP is only 1 per cent, well below the global average of 3 per cent. Similarly, in Guatemala, insurance market penetration is only 1.27 per cent for public assets.[142,143] Overall, while progress has been made in both increasing awareness of the need for DRR and in actions developing insurance mechanisms for DRR, there is still a significant gap in insurance coverage, particularly in lower-income countries.

136 Argentina, *Revisión de mitad de período de la implementación del Marco de Sendai para la Reducción del Riesgo de Desastres 2015-2030 de la República Argentina: Período 2015-2022* (2022). Available at https://sendaiframework-mtr.undrr.org/publication/argentina-voluntary-national-report-mtr-sf.

137 UNDRR, *Disaster Risk Reduction Investment in Africa – Evidence from 16 Risk-sensitive Budget Reviews* (2020b). Available at https://www.undrr.org/publication/disaster-risk-reduction-investment-africa-evidence-16-risk-sensitive-budget-reviews.

138 New Zealand, *Aotearoa New Zealand's National Midterm Review of the Sendai Framework for Disaster Risk Reduction 2015-2030 Report*.

139 International Cooperative and Mutual Insurance Federation and UNDRR, *From Protection to Prevention: The Role of Cooperative and Mutual Insurance in Disaster Risk Reduction*.

140 Zoë Scott, *Finance for Early Action: Tracking Commitments, Trends, Challenges & Opportunities* (Risk-Informed Early Action Partnership, 2022). Available at https://www.early-action-reap.org/finance-early-action-tracking-commitments-trends-challenges-and-opportunities.

141 Canada, Public Safety Canada, *Canada's Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030*.

142 UNDRR, *The Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030 in the Arab States* (2022i). Available at https://www.preventionweb.net/media/85834/download.

143 Guatemala, Coordinadora Nacional para la Reducción de Desastres, *Revisión de medio término sobre la implementación del marco de Sendai en Guatemala (2015-2022): Informe nacional voluntario* (2022). Available at https://sendaiframework-mtr.undrr.org/publication/guatemala-voluntary-national-report-mtr-sf.

Box 6. V20-led Sustainable Insurance Facility

Launched in 2019 through the United Nations Environment Programme Principles for Sustainable Insurance Finance Initiative, and under the leadership of Vulnerable 20 (V20) Group of Ministers of Finance of the Climate Vulnerable Forum, the Sustainable Insurance Facility[144] contributes towards Vision 2025 of the InsuResilience Global Partnership. It is focused on the 20 countries most vulnerable to climate change risk, where there is at least a 90 per cent coverage gap. Backed by various development finance institutions, it supports climate-smart insurance solutions for micro-, small- and medium-sized enterprises, addressing the lack of insurance cover for climate-related events in these countries. Responding to these events in these countries can, in some cases, take up to 80 per cent of GDP. Technical understanding, data, regulation and trust in the markets for these risks is described as low to non-existent. The V20 is working to build country-level knowledge, entrepreneurship, distribution, and product innovation that could increase take-up and trust.

Source: Sustainable Insurance Facility (2021).

Another emerging risk since 2015 identified by reporting countries has been an increasing **issue with insurance affordability and availability**. With increased risks, some regions and disaster-prone areas are becoming uninsurable, thus limiting tools for mitigating economic losses of disasters and hindering socioeconomic development opportunities. To address this, governments have stated that "the promotion of the development of the insurance market is seen as a complementary public policy, in which the role of the State is fundamental, ranging from promotion, supervision and regulation of the market to its role as purchaser of insurance policies."[145]

There have been notable innovations to address growing gaps in risk transfer mechanisms. At the global level, these include the InsuResilience Global Partnership,[146] the Insurance Development Forum[147] and the Global Shield Financing Facility (GS-FF),[148] accompanied by expansions of regional risk-pooling mechanisms in Africa and the Caribbean.

In the Caribbean, **climate disaster and hurricane clauses have been introduced in debt negotiations as a means of enhancing risk transfer mechanisms** for countries that are unable to afford traditional insurance coverage, particularly those that are facing increased premiums due to climate change and pandemics.[149] Barbados and Grenada were the first two countries to include such clauses, which provide for an immediate debt moratorium in the event that the economy is impacted by a disaster. Another example of innovation in risk transfer mechanisms is the introduction and use of catastrophe bonds. These are already in use in the Philippines, where they enabled the quick disbursement of US$ 52.5 million to respond to Typhoon Rai (locally known as Super Typhoon Odette).[150]

144 Sustainable Insurance Facility, *The V20-led Sustainable Insurance Facility* (2021). Available at https://v20sif.org/. Accessed on 22 October 2022.
145 Ibid.
146 See https://www.insuresilience.org/.
147 See https://www.insdevforum.org/.
148 World Bank, "World Bank Group launches global shield financing facility to help developing countries adapt to climate change", 14 November 2022. Available at https://www.worldbank.org/en/news/press-release/2022/11/14/world-bank-group-launches-global-shield-financing-facility-to-help-developing-countries-adapt-to-climate-change.
149 UNDRR, *Caribbean Sub-regional Report*. Paper prepared for the Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030 (2022f).
150 Philippines, Office of Civil Defense, National Disaster Risk Reduction and Management Council, *The Philippines' Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015–2030*.

Box 7. Innovative financing mechanisms could decrease funding gaps, but problems remain

- Current DRR financing mechanisms have limitations requiring innovative financing solutions such as blue bonds, green bonds, debt swaps and blended finance.
- Nature-based solutions are an integral part of DRR. With risk reduction featuring prominently in the Kunming-Montreal Global Biodiversity Framework, there is an opportunity to drive risk reduction in biodiversity protection and natural resources management and vice versa.
- Funds made available through biodiversity financing windows should be open to DRR financing for an integrated risk-informed approach to sustainable development.
- Despite the emergence of innovative financing approaches challenges remain:
  - DRR requires political finessing to convince stakeholders that it is an investment that can prove profitable in the future.
  - Innovative tools still often require backing from other institutions that can guarantee loans.
  - Processes to secure innovative loans require complex negotiations that could take years.

Source: ECOSOC and UNDRR (2022).

6.3.5. Adaptive social protection is slowly gaining ground in disaster risk reduction financing, especially in contexts of protracted crises

Attempts to better understand and address the multidimensional nature of vulnerability and risk have been ongoing, with a view to supporting governments to prioritize funds for infrastructural investments. For example, the Global Facility for Disaster Risk Reduction and Recovery supported the development of detailed vulnerability maps of Maputo, Mozambique. To identify the most vulnerable and disadvantaged neighbourhoods, data on flood risk, poverty, urban crime, gender-based violence, climate change and access to infrastructure were combined using multiple geospatial layers. The findings helped inform the government's funding decisions.[151]

Over the past few years, at the international level, interest in and appetites for exploring risk sharing and transfer mechanisms have been growing, as has, more recently, so has consideration of how existing mechanisms can be adapted to become operational in contexts where risks intersect. **More investments have been made in anticipatory actions, including prepositioned finance and preparedness actions**.[152] Financing anticipatory action, for example, has been enhanced by the Risk-informed Early Action Partnership,[153] and the InsuResilience Global Partnership. Other initiatives such as the Crisis Lookout Coalition – launched in 2021 – are leading global advocacy and innovations in disaster financing.

Combining improved prediction capabilities with pre-agreed financing could help improve the quality and timeliness of responses. In a similar vein, efforts under the Grand Bargain to address the humanitarian financing gap are calling for greater investment in anticipatory finance.[154]

151 World Bank and others, *Joint Communique on Reconstructing for a Sustainable Future- World Reconstruction Conference 5* (Bali, 23-24 May 2022). Available at https://recovery.preventionweb.net/sites/default/files/inline-files/JOINT%20COMMUNIQUE%20ON%20RECONSTRUCTING%20FOR%20A%20SUSTAINABLE%20FUTURE_2.pdf.

152 See Russian Federation, Ministry of Emergency Situations and others, *Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030* (2022). Available at https://sendaiframework-mtr.undrr.org/publication/russian-federation-voluntary-national-report-mtr-sf; and submissions from FAO, United Nations Office for the Coordination of Humanitarian Affairs, and WFP for the MTR SF.

153 Zoë Scott, *Finance for Early Action: Tracking Commitments, Trends, Challenges & Opportunities*. Risk-Informed Early Action Partnership (2022). Available at https://www.early-action-reap.org/finance-early-action-tracking-commitments-trends-challenges-and-opportunities.

154 Katie Peters, *Evidence of positive progress on Disaster Risk Reduction in the Humanitarian-Development-Peace nexus* (Geneva, UNDRR, 2022).

Regarding protracted crises, the World Food Programme (WFP) describes various interventions and mechanisms for supporting integrated climate risk management to improve prospects for peace. This includes tailoring climate risk insurance services for food-insecure populations, enabling access to weather index insurance (through the R4 Rural Resilience Initiative), and working in partnership with the African Risk Capacity Group to establish a climate protection mechanism (ARC Replica) to allow humanitarian agencies to purchase climate risk insurance policies to leverage finance to respond to extreme drought.

Adaptive social protection is another example of approaches with the potential to address multiple vulnerabilities associated with systemic risks. Originally conceived as bringing together social protection, DRR and climate change, adaptive social protection has evolved to adapt to multiple shocks a community might face. This has been pursued by scaling up and scaling out (enlarged geographical area, broader range of shocks covered, additional beneficiaries, additional benefits). One such example is the adaptive approaches used to reorientate existing social safety net and social protection programmes to respond to food insecurity, lack of basic services and livelihood loss due to armed conflict.[155]

There is a swath of social protection investments in play across the globe. Of note is the Sahel Adaptive Social Protection Program, which strengthens adaptive social protection systems across Burkina Faso, Chad, Mali, Mauritania, Niger and Senegal to bolster climate resilience among highly vulnerable households. It is also expanding the reach of shock-responsive cash transfer programmes. Progress has been made on establishing social registries in Chad and Mali, and in several countries, governments are providing co-finance.[156]

6.3.6. Private investment in disaster risk reduction continues to be impeded by remoteness, agency and a strong focus on profits

Globally, the private sector has increased its awareness and investments in DRR for resilience. As represented in the Bali Agenda for Resilience, the Co-Chairs' summary of the 2022 Global Platform for Disaster Risk Reduction, the private sector plays a critical role in fostering risk-informed business behaviour, which includes incorporating risk into investment decisions, disclosing risk, communicating contributions to DRR, and ensuring workplace safety. In 2015, UNDRR established the Private Sector Alliance for Disaster Resilient Societies (ARISE Global network) to support the private sector in becoming a key partner in reducing disaster risk. The ARISE community, which currently comprises over 400 members and 29 national networks, voluntarily commits to supporting and implementing the Sendai Framework.

A significant number of countries have reported notable progress in engaging with the private sector on DRR since 2015. For example, in the Caribbean, 21 chambers of commerce across the region launched the Network of Caribbean Chambers of Commerce (CARICHAM) in 2019, which incorporates 100,000 businesses and aims to share best practices and build partnerships, with a key pillar focusing on DRR.[157] Governments have also implemented strong incentives to encourage private sector investment in DRR. Austria, for instance, has introduced new regulations to set incentives for private actors to invest in DRR.[158] To incentivize investment in DRR in Japan, the government offers preferential interest rates on business continuity planning loans from the Japan Finance Corporation to organizations certified as "organizations contributing to national resilience".[159] These initiatives demonstrate the commitment of both the private sector and governments to DRR and highlight the progress that has been made in engaging with the private sector in this regard.

155 World Bank and others, *Joint Communique on Reconstructing for a Sustainable Future- World Reconstruction Conference 5*.
156 Ibid.
157 UNDRR, *Caribbean Sub-regional Report*. Paper prepared for the Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030.
158 Austria, *Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030* (Vienna, 2022, p. 31). Available at https://sendaiframework-mtr.undrr.org/publication/austria-voluntary-national-report-mtr-sf,
159 Japan, *The Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030* (2022, p. 10).

However, despite some progress on collaboration and knowledge-sharing, private funding has largely failed to adequately invest in DRR or effectively incorporate disaster risks. As contributors to the MTR SF have noted, there continues to be a **lack of disaster risk accounting in financial modelling and on balance sheets**. For example, of the United Kingdom of Great Britain and Ireland (UK)'s pension schemes, GBP 2 trillion of assets under management are exposed to climate-related risks, and yet there is little evidence that these investments have considered disaster risk.[160] This issue, largely unaddressed since 2015, **highlights the continued tendency of investors to treat disaster risk as temporary, remote or unquantifiable**. While policy and regulatory improvements have been made in some instances to incorporate risk, these efforts have primarily been limited to climate risks. Overall, private sector incorporation of disaster risk continues to be limited by a **pervading sense that DRR is the sole responsibility of governments**.

6.4. Priority 4: Enhancing disaster preparedness for effective response and to "build back better" in recovery, rehabilitation and reconstruction

The Sendai Framework brought a holistic notion of resilience incorporating well-balanced DRR measures through its fourth priority, from building back better to restoring sustainable livelihoods, using participatory, local knowledge to enhance preparedness and promoting inclusive growth within planetary boundaries. Risk and resilience have since served as useful framing concepts for addressing disasters more proactively and for supporting global efforts to achieve the 2030 Agenda and all the key global environment and development processes. Putting resilience at the centre enhances prevention of economic, environmental and human losses in the event of a crisis, thereby reducing human suffering and protecting development gains. Building resilience can also stimulate risk-informed economic activity through the diversification of investments in businesses, households and livelihoods.[161]

The provisions of Priority 4 of the Sendai Framework are diverse. They centre on preparedness, understood as "the knowledge and capacities developed by governments, response and recovery organizations, communities and individuals to effectively anticipate, respond to and recover from the impacts of likely, imminent or current disasters".[162]

While reporting on Priority 4 has been the least comprehensive, **there is considerable evidence of increased understanding among Member States of the need for enhanced, risk-informed preparedness**. Since 2015 there has been a growing demand for guidance on preparing disaster recovery frameworks such as those provided by the European Union, the International Recovery Platform (IRP),[163] UNDP and the World Bank. These show the process and the decision-making involved in policy, planning, financing, and implementation for effective recovery, and have accompanied the increase – by one-third since the 2019 Global Platform on DRR – in national DRR strategies.[164] These involve measures such as contingent reconstruction plans, pre-approved contracts, and financial arrangements to cover more vulnerable populations.

There has also been increased effort to better **connect humanitarian with development programmes, to ensure any response and recovery action is truly geared towards building back better**,[165] with several United Nations organizations strengthening the integration of DRR into humanitarian action and humanitarian-development programmes.[166] The Inter-Agency Standing Committee is supporting United Nations organizations and Member States in this endeavour. In an effort to strengthen humanitarian-development coordination, programmes designed to prepare and respond to emergency situations while at the same time tackling underlying vulnerabilities have been established – the Food and Agriculture Organization of the United Nations (FAO) is one such example. Moreover, there is increased collaboration among United Nations organizations to systematically embed risk information and DRR interventions into humanitarian planning processes.[167]

160 UNDRR, *Policy Brief: Financing prevention and de-risking investment*.
161 United Nations, *Executive Summary: United Nations Common Guidance on Helping Build Resilient Societies* (New York, 2020).
162 A/71/644.
163 See https://recovery.preventionweb.net/.
164 UNDRR, *Co-Chairs' Summary: Bali Agenda for Resilience: From Risk to Resilience*.
165 However, there is currently no indicator for this and therefore no systematic data collection on how the United Nations is working to risk-inform humanitarian action. See UNDRR, *2020 Progress Report on the Implementation of the UN Plan of Action on DRR for Resilience* (Geneva, 2021c).
166 Ibid.
167 Ibid.

Changes in organizations' strategic objectives and operational capacities have led some United Nations organizations to better link their humanitarian work with long-term development activities: examples include activities on labour migration schemes in areas affected by slow-onset hazards, engaging diaspora groups in DRR or capacity-building of governments on assisting migrants in countries in crisis.[168]

The COVID-19 pandemic has underscored the urgent need for more effective DRR strategies that focus on pre-disaster preparation. However, progress in this area has been limited, with a continued emphasis on reactive measures rather than proactive approaches. This has resulted in missed opportunities to accelerate development and improve resilience in post-disaster contexts.

Box 8. Scaling up disaster risk reduction in humanitarian action

UNDRR, in consultation with the United Nations Office for the Coordination of Humanitarian Affairs and other partners, developed a set of recommendations and an accompanying checklist outlining specific actions to better integrate DRR into humanitarian response.[169] The recommendations are intended to support operationalization of humanitarian-development collaboration, and they aim to help practitioners strengthen risk-informed programming in different phases, while leaving them room to adapt to the country context. The checklist covers all the phases of the humanitarian programme cycle, from preparedness, to needs assessment, strategic planning, resource mobilization, and response monitoring, with the aim of preventing people at risk of becoming people in need.

Box 9. Words into Action guidelines: disaster displacement

Forced displacement is one of the most common and immediate impacts of disasters. To support government authorities to integrate disaster displacement and other related forms of human mobility into DRR strategies, several organizations developed a practical guide focused on disaster displacement. These "Words into Action guidelines on Disaster Displacement",[170] includes guiding principles and case studies to illustrate effective practices. It was published in 2019, and it is accompanied by a checklist on addressing disaster displacement in DRR policy and practice: this includes a list of elements to consider in assessing whether policies, strategies and practices align with the Sendai Framework's guidance on disaster displacement. The guidelines further contribute to achieving the goals of the United Nations Secretary-General's Action Agenda on Internal Displacement.

168 As noted by submissions from FAO, International Fund for Agricultural Development, and IOM for the MTR SF.

169 However, there is currently no indicator for this and therefore no systematic data collection on how the United Nations is working to risk-inform humanitarian action. See UNDRR, *2020 Progress Report on the Implementation of the UN Plan of Action on DRR for Resilience* (Geneva, 2021c).

170 UNDRR, *Disaster Displacement: How to Reduce Risk, Address Impacts and Strengthen Resilience* (2019). Available at https://www.undrr.org/disaster-displacement-how-reduce-risk-address-impacts-and-strengthen-resilience.

6.4.1. Improvements in cooperation have enhanced preparedness and effectiveness of responses

Regional cooperation mechanisms have been enhanced since 2015. Good examples are offered by the Latin America and the Caribbean region where progress includes the establishment of the Regional Response Mechanism (RRM),[171] established to address capacity constraints faced by SIDS. Since 2015, the RRM has implemented better prepositioning of emergency supplies, increased technical expertise and improved access to anticipatory financing. This has had a substantial impact on consolidating finance and reducing overlap. Responses are now increasingly needs-based, country-driven and better coordinated.

There have been efforts to improve cooperation and coordination in disaster response in other regions of the world. In the MENA region, there have been improvements in the allocation of responsibilities and coordination among key stakeholders in the region, as well as the introduction of drills and the establishment of operation rooms at various levels. These efforts have helped to reduce capacity constraints and improve disaster responsiveness in LDCs and SIDS in the region.

In Asia, there are several regional mechanisms that play a role in disaster management and emergency response, including the ASEAN Agreement on Disaster Management and Emergency Response, the ASEAN Coordinating Centre for Humanitarian Assistance on Disaster Management, the Asia Preparedness Partnership, the Asian Disaster Preparedness Center, the Asian Disaster Reduction Center, and the Mekong River Commission.

Similarly, in the Pacific SIDS, there are several initiatives aimed at improving disaster preparedness and resilience. For example, the United Nations Capital Development Fund's Pacific Insurance and Climate Adaptation programme supports microinsurance schemes to help Pacific peoples become more financially prepared for disasters and climate change. The European Union-funded Pacific Adaptation to Climate Change and Resilience Building programme works on private sector mapping and capacity-building for disaster risk financing and climate change in various Pacific island countries.

6.4.2. There has been some progress on addressing risks, as outlined in the Build Back Better framework

There have been notable improvements in addressing the systemic nature of disaster risks since 2015. The Government of Japan has made significant investments in addressing the country's disproportionate earthquake and tsunami risk, informed by past lessons. In 2013, the Basic Act for National Resilience Contributing to Preventing and Mitigating Disasters for Developing Resilience in the Lives of the Citizenry was enacted, recognizing that structures like sea walls were not enough to prevent the tsunami in the 2011 Great East Japan Earthquake, resulting in many deaths and missing persons. Based on this act, the Government formulated the Fundamental Plan for National Resilience to systematically promote "strength and resilience" measures designed to protect human lives, prevent fatal damage to the economy and society, minimize damage, and enable quick recovery, always considering the worst-case scenario.[172] These measures were build back better (BBB) policies in action, building on lessons learned from 2011. In Zimbabwe, the Government has developed the National Traditional Grains Strategy which aims at promoting the production and commercialization of traditional drought-resistant grains in recognition of ongoing risks posed by droughts on food security and livelihoods.[173]

Investments in addressing systemic health risks have also yielded benefits during the COVID-19 pandemic. Notably, African nations that had previously implemented policies to address pandemic risks were better positioned to face the challenges of COVID-19. In Liberia, the National Public Health Institute of Liberia was established to overcome weaknesses in public health systems during the Ebola outbreak in 2014-2015.[174] The institute's collaboration with the Ministry of Health and other institutions strengthened the Government's infection prevention and control efforts. In the United Republic of Tanzania, enhanced border security during COVID-19 was a direct result of lessons learned from the Ebola outbreak.[175] These examples show the potential benefits of post-disaster investments in addressing the systemic nature of risk.

171 A harmonized approach led by Caribbean Disaster Emergency Management Agency Coordinating Unit, which coordinates a Caribbean regional response to disasters.
172 Japan, *The Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030*.
173 Zimbabwe, *Progress Report on Sendai Framework Midterm Review*.
174 Liberia, *The Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030: Liberia MTR SF Report*.
175 United Republic of Tanzania, *The United Republic of Tanzania – Sendai Framework 2015-2030: Midterm Review. Tanzania Country Report*, Wilhelm Kiwango (2022). Available at https://sendaiframework-mtr.undrr.org/publication/united-republic-tanzania-voluntary-national-report-mtr-sf.

However, globally, the lessons of COVID-19 may not have been fully integrated into DRR plans. According to the Global Health Security Index, which assesses countries' global health security capabilities, no country is yet fully prepared for future pandemic or epidemic threats.[176] If we are unable to learn from past failures and address systemic risks, countries will continue to face significant economic and human consequences of manageable, even avoidable disasters.

In a rapidly urbanizing world, progress in addressing systemic risks and vulnerabilities associated with urbanization has been largely inconsistent, particularly in lower-income countries where poverty challenges effective policy efforts. Even though the underlying drivers of disaster risk are better understood, trade-offs are often made that decrease long-term resilience. As one country remarked, "there is a drive to better understand the systemic nature of risk, however, society has yet to grasp the benefit as the priority for living comes first, for example, the price of housing often prompting squatting."[177] In Latin America, existing problems such as urban sprawl, the prevalence of informal settlements, and land-tenure inequality exacerbate disaster risks.[178] Tools such as the Republic of Korea's Urban Climate Change Disaster Impact Assessments, introduced in 2015, can address this challenge by including risk analyses related to urban land use and infrastructure.[179] Additionally, UNDRR's Making Cities Resilient 2030 (MCR2030) initiative aims to increase urban resilience by building a culture of prevention and promoting sustainable urban development. However, **in countries with less significant financial resources, these risk assessments still do not address the underlying problems of informal settlements and rapid urbanization**.

Despite efforts made by several reporting countries to improve DRR practices, efforts remain largely reactive rather than anticipatory. Governments have reported that they have learned from past disasters and have improved their systems, procedures and guidelines for preparedness and response to recovery and rehabilitation. However, most of these improvements continue to focus on compensatory DRM rather than prospective or corrective DRM that aim to strengthen individuals' and assets' socioeconomic resilience.

6.4.3. Progress on the thinking around the design and implementation of multi-hazard early warning systems in different contexts is evident, yet insufficient in terms of coverage and application

Progress on the design and implementation of MHEWS has been rather slow. Several countries report innovative solutions around the design, implementation and accessibility of MHEWS, with donor initiatives having largely acted as drivers for MHEWS. For example, following the adoption of the Sendai Framework, the Climate Risk and Early Warning Systems (CREWS) initiative was established to close the financing gaps of the LDCs and SIDS in risk-informed early warning services. In 2021, CREWS supported 60 countries through projects to improve their early warning systems.[180] In spite of such focused initiatives, there has generally been insufficient progress since 2015. As at 2022, only 95 countries have reported having MHEWS.[181] As a result, one in three people globally is still not adequately covered by early warning systems.[182] In Africa, the numbers are even more stark, with 60 per cent of people lacking coverage.

There is an increasing recognition of the importance of inclusion and community-based early warning systems in disaster response. Governments have learned that the effectiveness of emergency alerts depends on individuals' and businesses' ability to act upon them, and there is a growing understanding of the need for two-way communication between early warning institutions and at-risk communities. It is widely accepted that, for effective disaster response, early warning systems must be tailored to specific contexts by incorporating

176 Maxime Stauffer and others, *Existential Risk and Rapid Technological Change: A thematic study for the Midterm Review of the Sendai Framework* (Geneva, UNDRR, 2022); and Jessica A. Bell and Jennifer B. Nuzzo. *Global Health Security Index: Advancing Collective Action and Accountability Amid Global Crisis* (2021). Available at https://www.ghsindex.org/wp-content/uploads/2021/12/2021_GHSindexFullReport_Final.pdf.

177 Trinidad and Tobago, *The Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030: Voluntary National Report – Trinidad and Tobago* (2022, p. 11). Available at https://sendaiframework-mtr.undrr.org/publication/trinidad-and-tobago-voluntary-national-report-mtr-sf.

178 Guatemala, Coordinadora Nacional para la Reducción de Desastres, *Revisión de medio término sobre la implementación del marco de Sendai en Guatemala (2015-2022): Informe nacional voluntario*.

179 Republic of Korea, Ministry of the Interior and Safety, *Mid-term Review for the Implementation of the Sendai Framework: 2022 Voluntary National Report of the Republic of Korea*.

180 Climate Risk & Early Warning Systems Annual Report 2021: Rising to the Challenge in Complex Crises (2022). Available at https://reliefweb.int/report/world/crews-annual-report-2021-rising-challenge-complex-crises.

181 UNDRR, *Co-Chairs' Summary: Bali Agenda for Resilience: From Risk to Resilience*.

182 UNDRR and WMO, *Global Status of Multi-Hazard Early Warning Systems: Target G*.

local knowledge, recognizing community vulnerabilities, and including those who are often excluded from the decision-making process. To meet this aim, countries need disaggregated vulnerability data. Bhutan, for instance, has national databases that include geospatial information on demographics, poverty, food insecurity, access to roads, health stations, schools, and digital vulnerabilities to inform disaster response and early warning processes.[183]

However, several countries have reported that little progress has been made on integrating local or Indigenous and scientific knowledge in early warning systems, leading to concerns about the accuracy of vulnerability data and the legitimacy of early warnings. Additionally, in many countries, groups at higher risk, such as women and girls, persons with disabilities, people residing in rural areas, Indigenous Peoples, ethnic and linguistic minorities, migrants, displaced people, gender and sexual minorities, youth, and older persons, are still disproportionately excluded from coverage of early warning and post-disaster recovery.

6.4.4. Some progress has been made on promoting diversity and inclusion in disaster preparedness, response, recovery and rehabilitation

Many countries have reported that diversity and inclusion are critical throughout risk management, including in recovery planning, where community participation in a bottom-up co-creation process is considered essential.

Since 2015, efforts have been made to understand disability-inclusive disaster recovery by identifying principles, data requirements, enabling policies, institutional mechanisms, and financing. Most contributors now recognize that disability inclusion is necessary for effective, equitable and sustainable disaster resilience. In 2021, Japan revised the Basic Act on Disaster Management to oblige municipalities to create "individual evacuation plans" for those who require assistance evacuating, such as older persons and persons with disabilities.[184] Recognizing the "no one left behind" principle, the Republic of Korea also provides tailored post-disaster psychological support to most-at-risk groups, such as those with mobility or employment constraints.[185] However, Member States have **called for better identification and inclusion of the disability-specific needs of both adults and children before and after disasters, as well as greater collaboration with organizations dedicated to persons with disabilities to prepare and implement disability-inclusive DRR and response activities** in line with the Convention on the Rights of Persons with Disabilities and the Sendai Framework.

Efforts to prioritize and account for gender in disaster preparedness have increased, based on the understanding that gender mainstreaming in recovery ensures the integration of gender equality and women's empowerment principles into recovery planning. The Women's Resilience to Disasters programme – funded by the Government of Australia in the Pacific and by donors including the governments of Canada, Japan, Sweden and the UK in its sister programmes in Asia, Africa and the Caribbean – aims to make the lives and livelihoods of women and girls resilient to disasters and threats, contributing to sustainable, secure and thriving communities.[186] The goal is for countries that are part of the Women's Resilience to Disasters programme to adopt gender-responsive decision-making and governance systems and enable targeted action to build the resilience of women and girls. When women are empowered to take on leadership roles, safely and meaningfully participate in DRR and recovery decision-making, and influence and advocate for gender-responsive governance and processes, they can have significant positive impacts on disaster preparedness. This can allow underlying social norms and inequalities that drive unnecessary disaster risks to be challenged, and women's skills, knowledge, resources, experience and expertise to be leveraged.

Furthermore, there have been **notable efforts to promote diversity and inclusion in DRR policies** globally. In Gambia, for example, the COVID-19 Recovery Strategy was developed with an "all-inclusive approach," taking into consideration the health, socioeconomic recovery, and rule of law of the population, with a particular focus on a gender-sensitive approach. The BBB approach has been integrated into Gambia's COVID-19 response,

183 Bhutan, *Midterm Global Review: The implementation of Sendai Framework for disaster risk reduction in Bhutan 2015-2030* (2022). Available at: https://sendaiframework-mtr.undrr.org/publication/bhutan-voluntary-national-report-mtr-sf.
184 Japan, *The Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030*.
185 Republic of Korea, *Ministry of the Interior and Safety, Mid-term Review for the Implementation of the Sendai Framework: 2022 Voluntary National Report of the Republic of Korea*.
186 UN Women, *Report for the Midterm Review of the Sendai Framework for Disaster Risk Reduction (2015-2030)*.

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prioritizing "female-headed households, differently abled persons, old age, women and children".[187] Similarly, the Government of the United Republic of Tanzania has implemented inclusive practices in cross-sectoral infrastructure investment, engaging women, persons with disabilities, youth, and other most-at-risk groups in the design of roads (to which 30 per cent of project budgets are dedicated), providing them with opportunities to conduct minor repair and maintenance work or to be engaged as labour-based contractors.[188] In Viet Nam, local agencies have supported communities to BBB and have promoted the important role of women and small businesses in resilience programming, while also recognizing the increasing contributions of youth and the private sector in DRR, preparedness and response efforts.[189]

Yet overall, **women and girls' knowledge, skills and capacities continue to be underutilized in disaster preparedness and ensuring community resilience**. According to the UNDP and UN Women COVID-19 Global Gender Response Tracker, women comprised less than one-quarter of all national-level COVID-19 committees. Several countries noted that there has been limited inclusion or data on the inclusion of women in disaster preparedness. As stated in Priority 1, the implementation and establishment of inclusive disaster response mechanisms have been limited, partly due to the lack of interoperable and accessible data on the impacts of disasters on specific population groups, leading to exclusion in preparedness and recovery. To successfully achieve the outcome and goal of the Sendai Framework by 2030, it is essential to prioritize the inclusion and use of women and girls' knowledge, skills and capacities in disaster preparedness and recovery efforts. This supports women's human right to equal participation and is also a practical imperative. Research has demonstrated that the inclusion of women in risk management can lead to more effective and efficient preparedness, response and recovery.

6.4.5. Post-disaster needs assessments are increasingly risk-informed and more integrated

Conducting damage and needs assessments is a critical step in the recovery process. To support this, **methodologies and guidance continue to be developed**. These include assessing the human impact of disasters and integrating conflict sensitivity; the COVID-19 Recovery Needs Assessment, which draws on the methodology of the post-disaster needs assessment (PDNA), and the Recovery and Peacebuilding Assessment to assess the socioeconomic impacts of COVID-19. Other similar guidance on damage assessments has been developed, such as the Global Rapid post-disaster Damage Estimation, which provides an initial rapid estimation of the physical damage incurred by key sectors such as housing and infrastructure; the Disaster Rapid Assessment, which combines new methodologies for asset-based damage and loss estimates and innovations in technology and information[190] and FEMA's damage assessment operations manual, which sets out the national standards for assessing damage.[191]

Reflecting on a decade of experience in conducting PDNAs, a review finds that **PDNAs are valued by governments supporting not only physical reconstruction, but also resilient recovery linked to longer-term development, and building of institutional expertise and technical competence** towards ownership and leadership of the process.[192] The guidance for PDNA also includes gender assessment guidelines, although reporting on these parameters is often hampered by a lack of gender-disaggregated data. Furthermore, an analysis of PDNAs reviewed for estimates of infrastructure damages and service disruptions shows that data gaps such as lack of pre-disaster data and inadequate collection of data; and limited understanding of the estimation methodology, result in the non-estimation of these losses.[193]

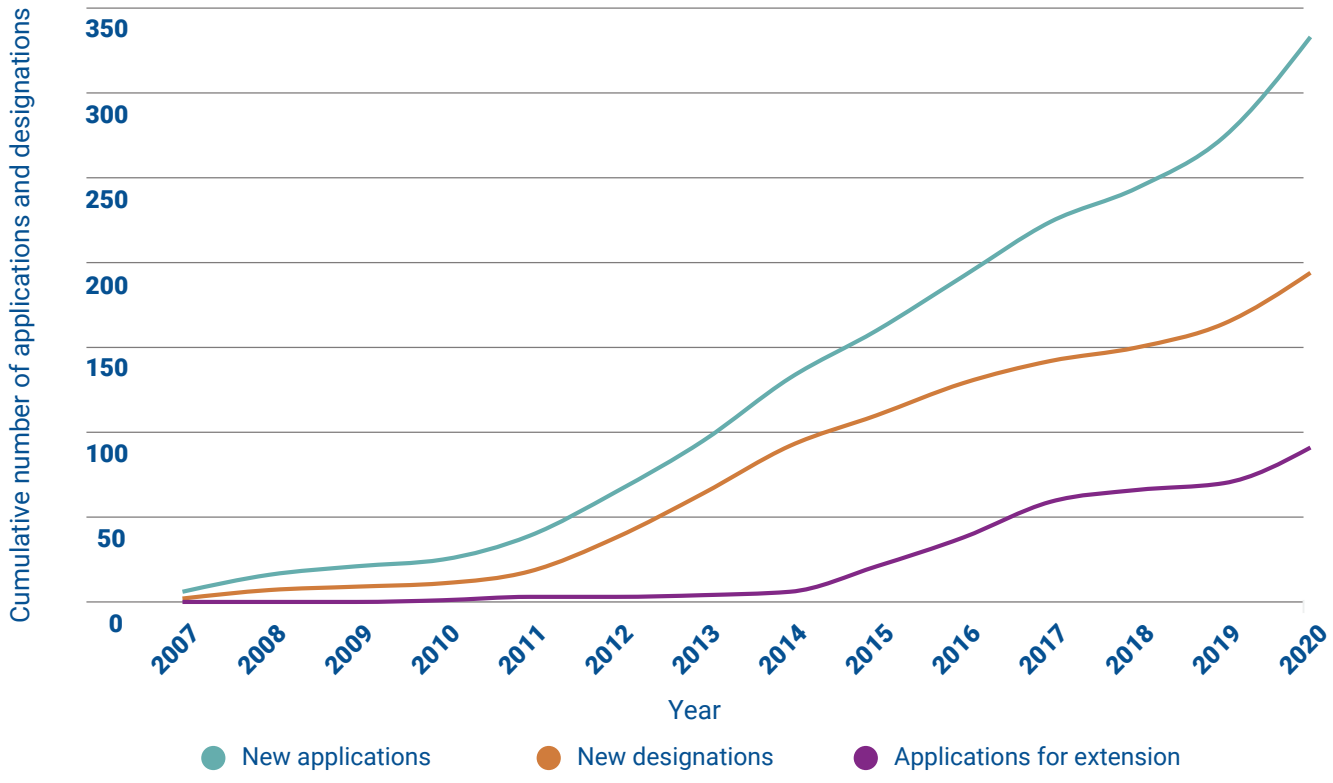
187 Gambia, *Republic of The Gambia: Report on the Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030*.
188 United Republic of Tanzania, *The United Republic of Tanzania – Sendai Framework 2015-2030: Midterm Review. Tanzania Country Report*, Wilhelm Kiwango.
189 Viet Nam, *Mid-Term Review of the Sendai Framework for Disaster Risk Reduction*.
190 ESCAP, *Innovations in Disaster Rapid Assessment: A Framework for Early Recovery in ASEAN Countries* (Bangkok, 2017). Available at https://www.unescap.org/publications/innovations-disaster-rapid-assessment-framework-early-recovery-asean-countries.
191 FEMA, *Damage Assessment Operations Manual: A Guide to Assessing Damage and Impact* (2016). Available at https://www.fema.gov/sites/default/files/2020-07/Damage_Assessment_Manual_April62016.pdf.
192 Terry Jeggle and Marco Boggero, *Post-Disaster Needs Assessment: Lessons from a Decade of Experience*. Washington, D.C., European Commission, Global Facility for Disaster Reduction and Recovery, (United Nations Development Programme, and the World Bank, 2018). Available at https://openknowledge.worldbank.org/handle/10986/30945.
193 IRP, *Review of the Build Back Better Component of Priority Four in support of IRPs contribution to the Sendai Framework Midterm Review* (Geneva, 2022).

6.4.6. Progress has been made on ensuring infrastructure is climate- and disaster-resilient

Investment in infrastructure will increasingly be a significant part of post-disaster recovery. It is important to ensure that post-disaster infrastructure investments can withstand the pressures of climate change. **Many countries are still in the early stages of investing in resilient infrastructure**, and many reporting countries have indicated that they are currently in the assessment phase. For example, the Australian Department of Home Affairs acknowledges that climate change will have operational impacts on critical infrastructure, and it is thus reviewing the resilience of Australia's road and rail supply chain to identify the most critical supply routes for communities and businesses and assess ongoing efforts to mitigate these risks.[194]

However, countries have also reported increased efforts to maintain critical infrastructure, such as roads and bridges. In Cambodia, education programmes have been implemented with development partners to inform the general population about the importance of building wind-resistant homes and planting trees to reduce wind.[195] Countries have also strengthened specific building codes to address their unique disaster vulnerabilities, such as Morocco's updated seismic building regulations to minimize economic and human losses from earthquakes.[196]

Figure 17. The increase in applications and designations for new disaster prevention technology in the Republic of Korea



Source: Republic of Korea, Ministry of the Interior and Safety (2022)., p. 149

194 Australia, National Emergency Management Agency, *Australia's National Midterm Review of the Sendai Framework for Disaster Risk Reduction 2015-2030 Report*.
195 Cambodia, *The Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030. National Voluntary Report*.
196 Morocco, Ministère de l'Intérieur and Direction de la Gestion des Risques Naturels, *Rapport National pour l'évaluation à mi-parcours du Cadre d'Action de Sendai sur la Réduction des Risques de Catastrophes*.

Donors are increasingly recognizing the importance of investing in resilient infrastructure initiatives, such as the Infrastructure for Resilient Island States Initiative by the Coalition for Disaster Resilient Infrastructure with support from various governments and agencies. This initiative, which is targeted for the Pacific region, will provide technical support for infrastructure in SIDS to promote disaster and climate resilience, recognizing the critical role that local capacity for design, construction, and maintenance plays in ensuring the resilience of infrastructure to climate disasters in the region.

In addition, countries with greater resources have also made significant investments in infrastructure resilience since 2015. For instance, Canada launched the Disaster Mitigation and Adaptation Fund, which provides Can$ 2 billion over 10 years for structural and natural infrastructure projects to increase the resilience of communities impacted by disasters caused by natural hazards, including climate change.[197]

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197 Canada, Public Safety Canada, *Canada's Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030*.

7. Progress in implementing the Sendai Framework: United Nations system contributions

7.1. Coordination in DRR has significantly advanced

Stronger coordination within the United Nations system is widely recognized as essential to advance disaster risk reduction and resilience, yet challenges related to multisectoral coordination remain.

Since the adoption of the Sendai Framework, with increased recognition of its multidimensional and interconnected aspects, there has been a shift in how the United Nations system understands risk reduction and resilience. The COVID-19 pandemic has further demonstrated the interconnectedness of risk across sectors and regions, stressing the importance of cross-sectoral, multi-scale integration in programming, planning and budgeting for improved efficiencies across the United Nations system.

The United Nations Plan of Action on Disaster Risk Reduction for Resilience: Towards a Risk-informed and Integrated Approach to Sustainable Development (United Nations Plan of Action) guides the United Nations system's joint efforts in supporting Member States in implementing the Sendai Framework and related aspects of the 2030 Agenda and other international agreements. Following its revision in 2016, the United Nations Plan of Action supports United Nations organizations to identify trends, gaps and opportunities, and report on progress. The establishment of the United Nations Senior Leadership Group on Disaster Risk Reduction for Resilience (United Nations SLG) in 2017[198] provided greater momentum for stronger inter-agency cooperation. The United Nations SLG was created to ensure cooperation, coordination, and mutual reinforcement for coherent system-wide actions on DRR and is supported by a technical-level inter-agency working group.

These coordination mechanisms have led to stronger coherence, while providing the basis for enhanced advocacy towards countries and other stakeholders on DRR.

Internal structures in several United Nations organizations have evolved since 2015, and in many instances DRR has been integrated as a cross-cutting issue or as part of specific organizational outcomes, outputs and indicators, **resulting in a more integrated approach to organizations' work – such as the International Fund for Agricultural Development, the International Labour Organization (ILO), United Nations Children's Fund, and United Nations Economic Commission for Europe (UNECE): 19 out of 50 United Nations organizations reporting on the United Nations Plan of Action have disaster/ climate risk and resilience indicators in their monitoring and evaluation systems**.[199]

198 A/72/259.

199 UNDRR, *Words into Action Guidelines: Implementation Guide for Addressing Water-related Disasters and Transboundary Cooperation* (Geneva, 2018a). Available at https://www.undrr.org/publication/words-action-guidelines-implementation-guide-addressing-water-related-disasters-and.

Box 10. United Nations system coordination and integration of a risk-informed approach

In addition to the United Nations Plan of Action and the establishment of the United Nations SLG, the United Nations system has made considerable effort to ensure DRR considerations and a risk-informed approach to development are mainstreamed across organizations. Following the United Nations SLG's creation, several initiatives and resolutions have amplified coordination. System-wide coherence in support of the Sendai Framework has been improved through, for instance, a tangible increase in guidance on the operationalization of the Sendai Framework with a growing number of United Nations organizations supporting its application (see the UNDRR's 2021 Progress Report on the Implementation of the United Nations Plan of Action on DRR for Resilience). The United Nations SLG endorses annual recommendations to guide joint implementation, including efforts on accelerating risk-informing humanitarian, development and peacebuilding actions, enhancing MHEWS, and scaling up localized DRR, for example.

The reform of the United Nations development system initiated in 2018[200] provided an opportunity to integrate DRR into the work of the United Nations country teams with risk-informed development approaches subsequently reflected in the new internal guidance for the United Nations Sustainable Development Cooperation Framework (UN SDCF) issued in 2019.

The adoption of the 2020 Resolution 75/233[201] on the Quadrennial Comprehensive Policy Review allowed further integration of DRR into the work of United Nations organizations. The Quadrennial Comprehensive Policy Review resolution introduced an explicit paragraph on DRR, which calls on entities to risk-inform planning instruments such as the UN SDCF. The resolution also recognizes that greater cooperation, coherence, coordination and complementarity in development, DRR, humanitarian action and sustaining peace is fundamental to achieving the Sustainable Development Goals.

Box 11. Integration of DRR into the United Nations Development Programme's 2022–2025 Strategic Plan

UNDP integrated DRR and resilience in its 2022–2025 Strategic Plan, following a clear mandate to work on DRR by the United Nations General Assembly, resulting in a dedicated work programme and team. The current Strategic Plan includes resilience building as one of the organization's three "directions of change", with specific resilience-related indicators mainstreamed across all areas of work. Resilience building is also one of this plan's six "signature solutions", which guide the organization's policy and programmatic work across all thematic areas, reinforcing the interlinkages between DRR and climate change adaptation, while also ensuring complementarities across governance, poverty eradication, gender and climate action, among other areas. The Strategic Plan has a dedicated outcome on "building resilience to risks, crises and shocks", taking a multi-risk approach to secure development gains and reduce structural vulnerabilities.

Regional mechanisms for cooperation are increasingly recognized as effective accelerators of DRR and resilience. These include, for example, Issue-based Coalitions on climate change and resilience building, which provide more effective technical support to United Nations country teams. Moreover, the SDG Gateways and the knowledge management hubs created at the regional level can also provide access to risk data and information across sectors.[202]

United Nations organizations have also ramped up their support to national governments and regional intergovernmental organizations to develop DRR and preparedness strategies.[203] Transboundary cooperation

200 A/RES/72/279.
201 A/RES/75/233.
202 A/75/226.
203 For example, FAO with CARICOM.

is understood as key for resilience at the regional level, and further guidance has been developed on effectively addressing disaster risks in situations where transboundary contexts add to existing complexities.[204] As UNECE states, the COVID-19 pandemic provided a clear demonstration of the need for regional- and global-scale collaboration in information-sharing, joint preparedness measures and coordinated response.

Significant progress is also being reported in integrating risk information in different sectors, with examples of risk and resilience now being mainstreamed into programmes and activities on employment, trade and infrastructure and agricultural practices.[205]

UNECE and ESCAP, among others, observe that United **Nations organizations have developed a deeper understanding of cascading and interconnected risks, especially in the wake of the COVID-19 pandemic**. Moreover, as United Nations Conference on Trade and Development identifies, the **pandemic has highlighted the interdependencies between risk and sectors traditionally outside the traditional DRR discourse**, such as global trade, international supply chains, and sustainable production and consumption processes.

United Nations organizations' support to countries has shifted from focusing on managing disasters to focusing on managing disaster risks, leading to **stronger multisector and multi-stakeholder governance frameworks, as well as increased coordination among different departments** (UNECE). UN-Water, for example, has been instrumental in mainstreaming DRR actions into water and sanitation programmes. In addition, knowledge-sharing and capacity-strengthening activities specifically on risk governance have been rolled out by various United Nations organizations: for example, the Capacity for Disaster Reduction Initiative, established prior to the Sendai Framework, has evolved to support these needs.

While there has been progress in United Nations system-wide coherence and coordination at the global level, policies and guidelines must translate to action on the ground. Focus on community-based approaches, strengthening the DRR expertise of United Nations Country Offices through maximal use of the United Nations coordination mechanism and supporting national mechanisms for data collection, analysis and sharing across sectors is recommended.[206]

Despite progress, the reactive approach to the COVID-19 pandemic has demonstrated that more efforts are needed to achieve the shift to prevention and risk management (according to WHO's suggestions) and to ensure that the full range of hazards, including first and foremost biological hazards, is effectively integrated into risk management.

Box 12. Employment and decent work for peace and resilience recommendation

In 2017, the International Labour Conference adopted a landmark recommendation focusing on the link between the world of work and employment, and peace and resilience. Recommendation no. 205 provides guidance to ILO members on the "measures to be taken to generate employment and decent work for the purposes of prevention, recovery, peace and resilience with respect to crisis situations arising from conflicts and disasters". The recommendation represents the shift in understanding disaster risk and its links to other sectors, outlining the need to mainstream risk and resilience considerations in employment and decent work policy decisions.

204 See, for example, UNDRR, *Words into Action Guidelines: Implementation Guide for Addressing Water-related Disasters and Transboundary Cooperation*.
205 As noted in submissions from FAO, ILO, and United Nations Conference on Trade and Development (UNCTAD) for the MTR SF.
206 As noted by submissions from FAO, United Nations Department of Economic and Social Affairs, UNECE, ESCAP, WHO for the MTR SF.

Box 13. Assessing risks: a comprehensive toolkit for all-hazards health emergency risk assessment

In 2021, WHO developed the Strategic Toolkit for Assessing Risks to support governments' efforts in integrating risk considerations in the public health sector. It provides guidance on how to rapidly conduct a strategic and evidence-based assessment of public health risks, as well as to plan and prioritize health emergency preparedness and DRM activities. The guidance is for use at the national and subnational levels and outlines six steps to perform a risk assessment formulating a country risk profile which can inform public health planning and health emergency strategizing.

Box 14. Disaster risk reduction at farm level: multiple benefits, no regrets

In 2019, FAO published a study on the cost-benefit of implementing DRR good practices in agriculture. The study found that DRR practices generated benefits 2.2 times higher than practices previously used by farmers. These benefits included both increases in agricultural production and avoiding hazard-associated risks. The study presented recommendations for upscaling farm-level DRR good practices through small incremental scaling (such as farmer-to-farmer replication), requiring lower investment, or larger-scale efforts with the support of the government or the private sector.

United Nations organizations have been providing support to Member States to enhance integrated risk management by **developing guidance and capacity-strengthening programmes across sectors, such as in public health, education, agrifood and trade**.[207] Concrete initiatives include the Global Alliance for Disaster Risk Reduction and Resilience in the Education Sector, the Partnership for Action on Green Economy, the Partnership for Environment and Disaster Risk Reduction, the Safe Hospitals initiative and the Secretary-General's Action Agenda on Internal Displacement. Furthermore, to enhance cross-sectoral understanding of risk, significant efforts have been made to standardize DRR terminology in different sectors and risk assessment methodologies[208] (WHO, UNECE).

The United Nations system's **deepening understanding of risk has led to the development of guidance notes and methodologies, including on technological hazards and risks**, such as natural hazards triggering technological disasters ("natech") and other cascading risks.[209] Information and guidance on addressing technological hazards are now available and several United Nations organizations are supporting Member States in strengthening their DRR actions accordingly. While there is a stronger understanding of technological and industrial hazards, enhanced cooperation is still needed between the natural and technological hazards communities (UNECE).

The governance architecture for artificial intelligence (AI), however, is nascent and fragmented, and currently ill-equipped to make progress. The few mechanisms that exist, such as those provided by the International Telecommunication Union, United Nations Office for Disarmament Affairs, and the Group of Governmental Experts, respectively, address the impacts of AI, the governance of lethal autonomous systems, and responsible State behaviour in cyberspace in the context of international security. In this respect, UNESCO Member States adopted an agreement on the ethics of AI on 25 November 2021,[210] which aims to highlight the advantages of AI, while reducing the risks it also entails.

207 As noted by submissions from FAO, WFP, WHO, and UNCTAD for the MTR SF.

208 See, for example, WHO, *Glossary of Health Emergency and Disaster Risk Management Terminology* (Geneva, 2020). Available at https://www.who.int/publications/i/item/9789240003699 and UNESCO, School Safety Assessment: VISUS Methodology. Accessed 15 November (2022). Available at: https://en.unesco.org/disaster-risk-reduction/education-school-safety/visus.

209 See for example, UNDRR, *Words into Action Guidelines: Implementation Guide for Man-made and Technological Hazards* (2018b). Available at https://www.undrr.org/publication/words-action-guideline-man-made/technological-hazards.

210 United Nations, "193 countries adopt first-ever global agreement on the Ethics of Artificial Intelligence", *UN News*, 25 November 2021 (2021b). Available at https://news.un.org/en/story/2021/11/1106612.

7.2. Cooperation in integrating and aligning risk reduction in other agendas, conventions and frameworks

Strengthened cooperation across institutions and organizations has promoted coherence and convergent activity among the main international agendas, in particular the Sendai Framework, the Paris Agreement and the 2030 Agenda,[211] but also the SAMOA Pathway, the Doha Programme of Action, the Vienna Programme of Action, the New Urban Agenda, the Addis Ababa Action Agenda, the Water Action Decade, and the Decade of Action on the Sustainable Development Goals.

For example, guidance has been developed (by UNFCCC, among others) on how to include DRR targets and indicators in National Adaptation Plans and Nationally Determined Contributions, and how to feed climate and forecast information into the development of DRR strategies. Key initiatives established to support integration of DRR and climate risk management include the Comprehensive Disaster and Climate Risk Management programme, the Risk-informed Early Action Partnership, the United Nations Climate Resilience Initiative: Anticipate, Absorb, Reshape (A2R), the Centre of Excellence on Climate and Disaster Resilience, and the United Nations Coalition to Combat Sand and Dust Storms.

Several climate-related mechanisms established with the UNFCCC, including National Action Plans, Nationally Determined Contributions, and the task forces of the Warsaw International Mechanism, not to mention the Global Stock Take of the Paris Agreement that runs in parallel to the MTR SF, can be leveraged to strengthen resilience and DRR at the country level.

Box 15. Kunming-Montreal Global Biodiversity Framework (2022)

By recognizing that biodiversity loss, poor environmental management and ecosystem degradation drive disaster risk, the Convention on Biological Diversity paved the way for the integration of DRR in the Kunming-Montreal Global Biodiversity Framework (GBF) adopted in December 2022. The GBF provides strategic direction for the protection of biodiversity and ecosystems through 2030, providing a strong foundation for living in harmony with nature, while enhancing nature's contribution to people, including the prevention of and protection from disasters by reducing exposure and vulnerability and increasing resilience. Targets 8 and 11 address DRR and climate change, ecosystem functions and services and/or nature-based solutions, and Target 15 addresses disclosure of risks, dependencies and impacts on biodiversity by the private sector.

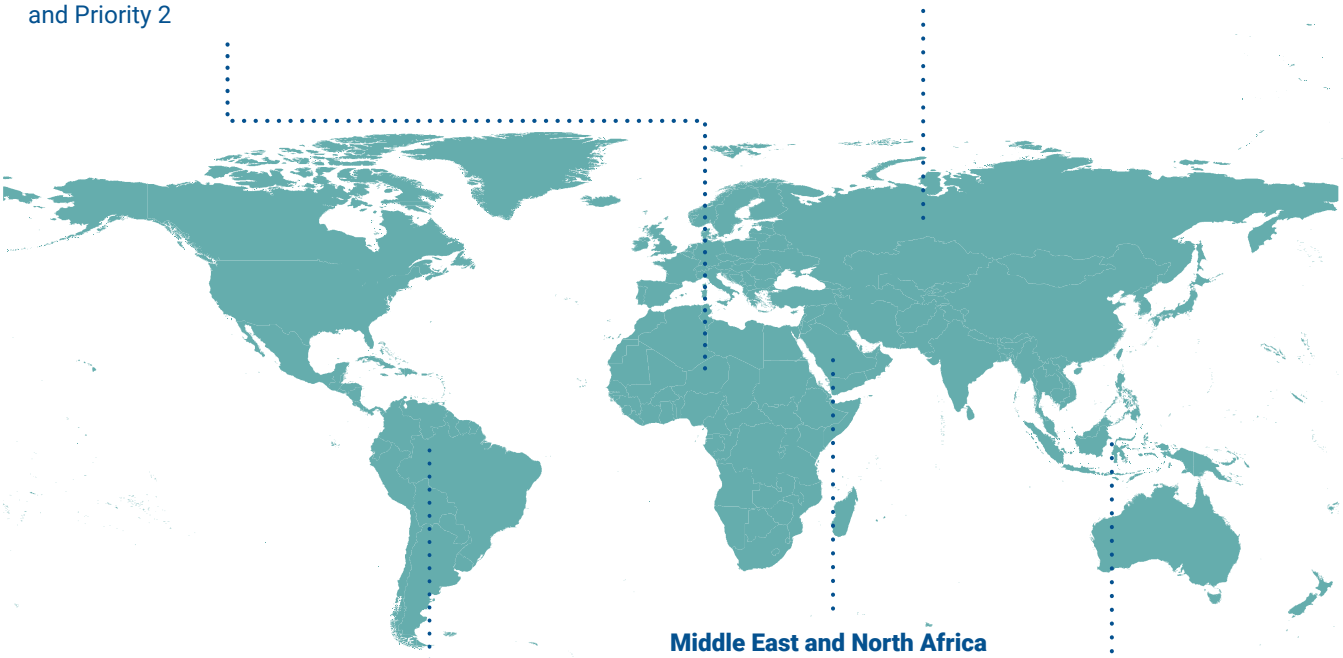
211 See, for example, United Nations, *Executive Summary: United Nations Common Guidance on Helping Build Resilient Societies* (New York, 2020).

8. Progress at the regional level

The Sendai Framework has generated significant momentum for DRR at the regional level, but progress has not been uniform across regions. This section summarizes a few of the unique DRR challenges observed in some countries in regions across the world – including those more vulnerable to climate change or the impacts of COVID-19 – and outlines elements of progress in advancing the four priority areas of the Sendai Framework.

Africa: Sub-Sahara
- Moderate progress towards achieving Priority 1
- Insufficient DRR investment towards Priority 3
- Progress towards Priority 4 has been mixed
- Measured improvements in risk governance and Priority 2

Europe and Central Asia
- Considerable progress towards Priority 1
- Significant improvements in DRR governance as called for in Priority 2
- Priority 3 has seen the least progress since 2015
- Progress towards Priority 4 has varied



Middle East and North Africa
- Significant progress on Priority 1
- Progress made towards Priority 2 of the Sendai Framework
- Limited progress on Priority 4 in the Arab region

Latin America and the Caribbean
- Some progress towards Priority 1
- Regarding Priority 2, disaster risk governance has improved
- Encouraging advances in Priority 3
- Progress towards Priority 4 has been limited

Asia and the Pacific
- Mixed progress in the region towards Priority 1
- Advancements towards Priority 2
- Some progress towards Priority 3
- Mixed progress towards Priority 4

Countries in special situations
- SIDS continue to struggle with achieving Priority 1 of the Sendai Framework
- Little improvements in achievement of Priority 2 in SIDS
- Significant challenges for SIDS in achieving Priority 3
- SIDS have made little progress towards Priority 4

8.1. Africa: Sub-Sahara[212]

The African Union's adoption of the African Programme of Action in 2016 aimed to improve DRR in the region through the implementation of the Sendai Framework.[213] However, the challenges posed by COVID-19, the Ebola Crisis, and more intense and frequent natural hazards and ensuing disasters such as floods and droughts, have hindered progress in advancing the DRR agenda in the region. The reliance of much of the population of sub-Saharan Africa on agriculture, coupled with the increasing frequency of disasters due to a changing climate, is of particular concern.[214] Despite the need for proactive and resilient measures, the high costs and economic impacts of recent disasters have led to a focus on responsive rather than preventive DRR expenditure. Without significant change, it is unlikely that the Sub-Saharan African region will achieve the outcome and goal of the Sendai Framework by 2030.

There has been **moderate progress towards achieving Priority 1** in the region. All States identified in the MTR SF have conducted some form of risk or vulnerability assessment. For instance, Ethiopia and the United Republic of Tanzania have established strong capacities for risk assessment, including the creation of hazard maps and tools for collecting data on vulnerabilities, particularly in high-risk rural areas. The Economic Community of Central African States has also developed a regional hazard and risk atlas. Additionally, States have strengthened the capabilities of their hydrometeorological services to generate risk information related to weather patterns, which supports agriculture and other food security sectors. However, there is recognition by African Member States of the ongoing lack of understanding of the systemic nature of risk and the need for enhanced capacities and tools to conduct nationwide, gender-sensitive, multi-hazard, and impact-based risk assessments. Finally, the lack of integration of risk assessments with planning processes in key development sectors or with the private sector remains problematic.

In respect of Priority 2, the COVID-19 pandemic and climate emergency have led to **improvements in DRR governance in the region**. National authorities have made a greater commitment to strengthening national structures for managing disaster risk. All States in the region have established a national platform for DRR and have increased staffing and equipment for civil protection organizations or national disaster management agencies. States have also developed national DRR strategies and plans aligned with the Sendai Framework, but these plans have often been insufficient in including women, local communities, and vulnerable groups in their implementation. In addition, there has been a lack of coordination between DRR, environment, and climate programmes and inadequate support for decentralized DRR structures at the local level.

Regarding **Priority 3 of the Sendai Framework, reports indicate that DRR investment in the region has been insufficient**. Some countries have attempted to address underlying risk factors through investing in infrastructure, health, and food security. However, States have identified insufficient funding for risk reduction as the primary challenge for effective DRR. Additionally, States identify the lack of analysis of national budgets to determine the allocation of funds for DRR activities.

Progress towards Priority 4 in the region has been mixed. While some States have established clear institutional structures and coordination mechanisms through disaster management acts and policies, including communications and early warning systems, coordination among stakeholders remains a challenge. Some countries, such as Gambia, Liberia, Mauritius and Togo, have made significant progress on training and equipping first responders, and others, such as Ethiopia, Gambia, Malawi and the United Republic of Tanzania have implemented a yearly mandatory budget for emergency preparedness and response. However, there has been little focus on disaster recovery, rehabilitation, and building back better, and States have requested urgent support in this area.

212 UNDRR, *Africa Regional Summary*. Paper prepared for the Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030 (2022h).

213 "To attain the expected global outcome in Africa, the Programme of Action seeks to pursue the following goal: Prevent new and reduce existing disaster risk through the implementation of integrated and inclusive economic, structural, legal, social, health, cultural, educational, environmental, technological, political and institutional measures that prevent and reduce hazard exposure and vulnerability to disaster, increase preparedness for response and recovery, and thus strengthen resilience." African Union Commission (AUC), *Programme of Action for the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030 in Africa* (Addis Ababa, 2016). Available at https://www.unisdr.org/files/49455_poaforsendaiimplementationinafrica.pdf.

214 UNDRR, *Disaster Risk Reduction and Climate Change Adaptation: Pathways for Policy Coherence in Sub-Saharan Africa* (2020c). Available at https://www.undrr.org/media/47688/download.

8.2. Middle East and North Africa[215]

In MENA, implementation of the Sendai Framework has been hindered by conflicts, climate change and the COVID-19 pandemic. The region is expected to continue facing intensifying and increasingly complex risk configurations. Climate change is imposing considerable additional pressures on the region, especially in countries experiencing water scarcity and food insecurity. The COVID-19 pandemic has revealed significant vulnerabilities in the societies, institutions and economies of countries in the region, exacerbating existing development challenges in many parts, making achieving the outcome and goal of the Sendai Framework a challenge. Limited progress has been made in implementing the Sendai Framework in least developed countries, SIDS, and post-conflict areas in the region.

There has been **significant progress on Priority 1** in this region. Nine of the 22 MENA countries have developed or initiated the development of national disaster loss databases, and 10 have a DesInventar database on loss and damage.[216] The knowledge of hazard frequency and intensity has improved through the creation of country hazard profiles, vulnerability analyses, risk modelling studies, spatio-temporal hazard mapping, the establishment of an atlas on natural hazards in the region, and the establishment of several research centres. The Arab Geographical Information Room was also established in 2015 to identify the relationship between emerging climate risks and other hazards, encourage regional cooperation, and establish development plans.[217] However, there is still a need for a better understanding of large-scale dynamic and transboundary risks,[218] and Indigenous knowledge needs to be more frequently included in risk assessments.

Progress has also been made towards Priority 2 of the Sendai Framework. In 2018 the Arab Strategy for Disaster Risk Reduction was developed to implement the Sendai Framework together with other global post-2015 frameworks. At the national level, 13 countries have developed and updated their national DRR strategies.[219] Several countries have reviewed and strengthened their legislative frameworks and enacted new laws for DRR, including Qatar with the creation of its National Civil Defence Council which bears some responsibility for national DRR. Building codes have seen improvements in the region since 2015.

In alignment with **Priority 3, resource allocation and investments in resilience have increased since 2015, but they continue to primarily focus on response and recovery**. DRR considerations are not yet integrated into fiscal instruments or taxes to encourage and incentivize risk-informed investment. Disaster insurance coverage in the region is low, as evidenced by the lack of comprehensive disaster loss information in insurance databases, with coverage only of 1 per cent of GDP in the Arab region. Private sector investment in DRR and resilience has grown due to the COVID-19 pandemic.[220]

Overall, there has been **limited progress on Priority 4 in the Arab region**. There have been improvements in the allocation of responsibilities, identification of roles, and coordination of response since 2015, including the introduction of periodic drills, the establishment of operation rooms at the national, local and ministerial levels, and the design of early warning systems. While some countries, such as Bahrain, Jordan, Qatar, Sudan and the United Arab Emirates, have advanced early warning technologies, the availability and access to people-centred MHEWS has not yet been achieved across the region as intended by Target G of the Sendai Framework. Relief efforts are still often hindered by a lack of proactive hazard plans, lack of coordination between intervening parties, outdated disaster preparedness strategies and plans, lack of coordinated risk communication, and lack of real-time data.

215 "The Arab Strategy for Disaster Risk Reduction (ASDRR) was developed in 2018 to coherently implement the SF with the other global post-2015 frameworks. It takes account of the SDGs, with specific emphasis on SDG 11 for sustainable cities. Furthermore, the ASDRR focuses on mitigating food insecurity, water access constraints and ongoing conflict in the region." UNDRR, *The Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030 in the Arab States* (2022i).
216 Ibid.
217 Ibid.
218 Ibid.
219 Ibid.
220 Ibid.

8.3. Asia and the Pacific

Asia and the Pacific are the most disaster-prone regions in the world, with urbanization, population growth, persistent poverty, and inequalities increasing vulnerability. From 1970 to 2021, 57 per cent of all disaster fatalities and 87 per cent of the population affected by natural hazards were recorded in Asia and the Pacific.[221] Pacific SIDS are particularly vulnerable to various geophysical and climate-related hazards due to their fragile terrestrial and marine ecosystems and reliance on imports for their economic sectors. As a result, Pacific countries are often disproportionately impacted by disasters. Due to these vulnerabilities and the growing impacts of climate change, there is increased urgency to implement the Sendai Framework in the region. However, progress has been inadequate, and despite the establishment of the Asia-Pacific Action Plan 2021–2024,[222] unless further efforts are made, it is unlikely that the outcome and goal will be achieved by 2030.

There has been **mixed progress in the region towards Priority 1**. While there has been some progress on understanding disaster risk among government officials, civil society, media, and communities due to successful disaster risk information initiatives implemented since 2015, issues remain, including fragmentation and limitations in risk data – which are not systematically disaggregated – and a lack of national capacities in DRR. Significant advances have been made in identifying and characterizing elements of risk, such as vulnerabilities and exposure, through the development of risk assessment tools, including geohazard maps. The Pacific Catastrophic Risk Assessment and Financing Initiative, supported by the World Bank, has provided disaster and climate risk information and tools to inform development planning and financing decisions in the Pacific region. One example of this is the strengthened Pacific Risk Information System, which is one of the largest collections of geospatial information for the region. However, there has been a continued siloing of national and international DRR institutions, which has hindered understanding of the connections between various hazards in the region.

Advancements towards Priority 2 were reported including, inter alia, the Asia-Pacific Action Plan 2021–2024 and the 2022 Asia-Pacific Ministerial Conference on Disaster Risk Reduction. Both seek to coordinate and affirm commitment to the Sendai Framework. While Member States declare that national DRM policies and planning frameworks have been well established, there are critical gaps in developing regional and provincial DRR plans that are specific to local conditions and hazards and in the subsequent delineation of responsibilities. Lastly, the lack of meaningful participation and leadership of inter alia, women, older persons, persons with disabilities, Indigenous Peoples, gender-diverse persons and youth, continue to be excluded from DRR decision-making.

There has been **some progress towards Priority 3** in the region, with the development of key regional frameworks and strategies guiding financial investments in DRR, such as the Framework for Resilient Development in the Pacific, the Pacific Resilience Standards, and the Pacific Climate Change Finance Assessment Framework. However, stakeholders have identified persistent barriers to accessing DRR financing, including complex and lengthy application processes and stringent donor requirements, which limit access for civil society organizations and women-led organizations, for example, which may have limited capacities and resources to administer such processes. Funding remains overly focused on post-disaster spending, with significant portions remaining unused due to unclear fiscal guidelines for local government units, faulty reporting, and a lack of prioritization of DRR as a public investment by many local officials. There have been investments in resilient infrastructure, including retrofitting, but gaps remain and there is a lack of funding for strengthening and upgrading key infrastructure. There have also been limited investments in "non-structural" measures, such as DRR education, health, and social protection, which may be exacerbating inequalities and vulnerabilities. Stakeholders in the region call for greater community involvement and targeted assistance to disproportionately affected communities.

221 ESCAP, *Resilience in a Riskier World: Managing Systemic Risks from Biological and other Natural Hazards* (Bangkok, 2021).

222 "Integrated and inclusive multi-level risk governance needs to be strengthened to manage risk in a systemic manner, which encompasses multiple hazards and sectors, with particular attention to climate and health-related hazards. Disaster risk reduction should be mainstreamed within and across all sectors. Diversity in decision-making and leadership and the meaningful participation of women, children, youth, persons living with disabilities, indigenous peoples, older persons, migrants and ethnic minorities represent a huge opportunity to strengthen the effectiveness of managing risk at- and between- each level." -UNDRR (2021f). *Asia Pacific Action Plan 2021-2024 for Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030*.

Mixed progress has been reported towards Priority 4 by stakeholders in the region. Progress has been made on expanding the coverage and timeliness of early warning messages through a variety of channels, such as the upgrading of cellular broadcast emergency alert systems. However, there are still challenges with BBB implementation, as investments in the immediate phases of response and short-term recovery are often limited to returning to a sense of normalcy, and there is a lack of indicators and guidance in place to define or characterize whether an area has recovered from disasters and has applied BBB principles in its rehabilitation efforts. Additionally, stakeholders have identified a need for greater emphasis on resilience and building back better to prevent displacement, citing the example of the 7.9 million people displaced by flooding in Pakistan that could have been mitigated with DRR efforts such as resilient housing and land use. Between 2010 and 2021, there were 225 million instances of displacement in the region due to disasters, highlighting the need for improvements in Priority 4 during the second half of the implementation of the Sendai Framework.

8.4. Europe and Central Asia

The Europe and Central Asia region is affected by natural hazards such as floods, earthquakes, droughts, landslides and wildfires,[223] as well as a range of natech and biological hazards. Countries in North and Central Asia are losing 4 per cent of their GDP in average annual losses to disaster, with agricultural drought being one of the key driving forces.[224] Progress in the region towards achieving the priorities of the Sendai Framework has been significant, especially when compared to global efforts. INFORM Climate Change analysis projects that all areas in the region – particularly in Central Asia, Eastern Europe and Southern Europe – will experience an increase in risks, disasters and crises by 2050.[225] Implementing the provisions of the Sendai Framework is therefore a regional urgency.

There has been **considerable progress towards Priority 1** in the Europe and Central Asia region. Thirty-three countries report progress on national DRR strategies using the SFM system, and 11 countries use DesInventar disaster loss databases. Furthermore, Member States outline that there has been improved risk understanding and awareness of the necessity for proactive and preventive risk management throughout national governments. MTR SF contributors outline that risk assessment is an area of strength in the region, with national, subnational and sectoral risk assessments implemented in many countries (risk assessments are mandatory for member countries of the European Union). However, risk assessment methodologies and capabilities that can deal with the cascading and non-linear nature of risk are required. There have also been improvements in risk communication and DRR education in the region.

The region has experienced **significant improvements in DRR governance as called for in Priority 2**. The European Forum for Disaster Risk Reduction Roadmap (EFDRR) 2021–2030 and the Strategy for the Development of Cooperation of Countries of Central Asia in Disaster Risk Reduction for 2022–2030 have established a common commitment to sophisticated and integrated risk governance in Europe and Central Asia. These strategic mechanisms offer specific and detailed priority areas for risk management, providing the foundation for international coordination in risk governance in support of the recommendations of the Sendai Framework. Currently, there are 37 national platforms for DRR in place across the region. At the local level there has also been significant improvement with regions and municipalities widely recognized as important actors in DRM. Through its network of 141 municipalities, the MCR2030 has built knowledge and capacity for DRR, with a corollary increase in commitment to DRR. A key challenge remains in ensuring that subnational governance entities are adequately resourced to meet their commitments in risk management. The systematic inclusion of marginalized perspectives, including those of youth and persons with disabilities, remains a challenge in Europe and Central Asia.

223 World Bank, *Country Risk Profiles for Floods and Earthquakes, Europe and Central Asia* (Washington, D.C., 2016). Available at https://www.worldbank.org/en/region/eca/publication/europe-and-central-asia-country-risk-profiles-for-floods-and-earthquakes.

224 ESCAP, *The Disaster Riskscape Across North and Central Asia: Key Takeaways for Stakeholders* (ST/ESCAP/2881, Bangkok, 2020).

225 Andrew Thow and others, *INFORM Climate Change Quantifying the Impacts of Climate and Socio-Economic Trends on the Risk of Future Humanitarian Crises and Disasters* (Luxembourg, Publications Office of the European Union, 2022).

Priority 3 has seen the least progress since 2015.[226] Although the region remains a significant funding partner for DRR initiatives, and some national budgets for investment in resilience have increased, resources allocated to risk management are inadequate. Dedicated budgets for risk management are rarely sufficient, and disaster risk is rarely mainstreamed into national planning. There is an opportunity to capitalize on increasing awareness of the centrality of systemic risk to advocate for more systematic investment in risk management. Additionally, there has been limited practical success with partnerships with the private sector, with developments limited to occasional cooperation on insurance and other risk transfer mechanisms.

The **progress made towards Priority 4 has varied**. There are well-resourced preparedness, emergency response, and contingency planning processes, including for natech events, and countries are increasingly using technology to design effective early warning systems. However, there have been instances of failure that highlight the need for continued urgency in implementing these systems, particularly in regard to transboundary systems. Initiatives focused on improving risk communication and education have grown, as has the use of technology in risk management with innovations supporting authorities in coordinating responses and providing citizens with a deeper understanding of their personal risk profile. The European Union's Copernicus programme, which provides free and open Earth observation information, is a notable example. While the BBB principle has been accepted in the region, its implementation has been limited due to resource constraints and the challenge of managing diverse stakeholders. However, capacities for sustainable and inclusive recovery in the region are slowly developing.

8.5. Latin America and the Caribbean

Latin America and the Caribbean is the second most disaster-prone region globally,[227] with 25 per cent of the world's disasters occurring there between 1997 and 2017.[228] The region's diverse topography, geography, biodiversity, economic development, and cultures contribute to the complexity of DRR efforts. During the 2020–2022 period, there were 175 disasters caused by natural hazards recorded in the region, 88 per cent of which were related to meteorological, climatic, and hydrological phenomena.[229] As a result of these considerable disaster vulnerabilities, progress in the region has been inadequate.

There has been **some progress towards Priority 1 of the Sendai Framework**,[230] including an increased understanding of risk, the use of climate risk and GIS tools, more guided risk assessments, decentralization of roles and responsibilities, and the development of risk atlases. However, data availability is limited, including sector-specific data and limited access to sex-, age-, and disability-disaggregated data.[231] There is a need for improvements in data collection, analysis, and data interoperability. The incorporation of ancestral and traditional knowledge in DRR has been limited, and only some engagement of traditionally marginalized or vulnerable groups has been achieved.

Regarding **Priority 2, disaster risk governance has improved** in Latin America and the Caribbean. Many countries now have national disaster laws that regulate the management of disaster risks by the State, and the Regional Action Plan for the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030 in the Americas and the Caribbean was adopted in 2017. Subregional normative instruments have

226 "Resilience is a public good; it is the joint responsibility of governments, the private sector and civil society to ensure that everyone benefits from investments in resilience and that no one is left behind. Increasing the quality of investments, budgetary resources and regulatory powers, especially for critical infrastructure systems, is paramount for mitigating the impacts of future climate change and enhancing disaster resilience in the region." - UNDRR, *European Forum for Disaster Risk Reduction: Roadmap 2021-2030* (Brussels, 2021h). Available at https://www.undrr.org/publication/european-forum-disaster-risk-reduction-roadmap-2021-2030.

227 United Nations Office for the Coordination of Humanitarian Affairs Regional Office for Latin America and the Caribbean, *Natural Disasters in Latin America and the Caribbean, 2000-2019* (Ancón, Panama, 2020). Available at https://reliefweb.int/report/world/natural-disasters-latin-america-and-caribbean-2000-2019.

228 UNDRR, *Regional Assessment Report on Disaster Risk in Latin America and the Caribbean (RAR 2021)* (2021e). Available at https://www.undrr.org/publication/undrr-roamc-regional-assessment-report-disaster-risk-latin-america-and-caribbean-rar.

229 Data from the EM-DAT International Disaster Database, available at https://www.emdat.be/. Accessed on 23 September 2022.

230 "Policies and practices for DRM should be based on an understanding of disaster risk in all its dimensions of vulnerability, capacity, exposure of persons and assets, hazard characteristics and the environment. Such knowledge can be leveraged for the purpose of pre-disaster risk assessment, for prevention and mitigation, and for the development and implementation of appropriate preparedness and effective response to disasters." UNDRR, *Regional Action Plan for the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030 in the Americas and the Caribbean* (2021g). Available at https://www.undrr.org/publication/regional-action-plan-implementation-sendai-framework-disaster-risk-reduction-2015-0.

231 Ibid.

also been developed to provide strategic guidance and legally binding frameworks for managing DRR across national borders.[232] There has been increased engagement with the private sector, such as the establishment of the Network of Caribbean Chambers of Commerce (CARICHAM) in 2019 with a key pillar focused on DRR collaboration, and more inclusion of traditionally marginalized groups in DRR dialogues. However, challenges to the inclusion of local peoples, civil society organizations, and marginalized groups in DRR persist, and institutions and policies tend to be siloed, undermining the coherence among DRR, climate, and development programmes.

There have been **encouraging advances in Priority 3, in budgetary allocation and financing for DRR and resilience in the region**. In various countries, funding is increasingly designated for DRR and regulations are being established with guidelines for incorporating disaster risk assessments into approval processes for public projects. Notable progress has been achieved in enhancing the role of the private and business sector including public-private alliances, providing fiscal incentives and disincentives, diverse risk transfer mechanisms and reinsurance schemes. An example of this is the World Bank's support to risk financing mechanisms for the Caribbean region and the existence of the Caribbean Catastrophe Risk Insurance Facility.[233] However, overall, the private sector continues to be largely absent from investment in DRR. Development partners have increased support for technical cooperation, investments in early warning systems, technology transfer and financial resources for capacity-building in DRR. Cooperation for disaster response is increasingly needs-based with improvements including consolidation of financing and reduced overlap of funds. For example, the SAMOA Pathway supports the efforts of SIDS to access technical assistance and financial support for DRR systems.[234] However, economic decline has led to a decrease in domestic budget allocations to DRR, and for LDCs and SIDS in the region, domestic budget allocations alone are insufficient. There is also a lack of coordination between climate change, sustainable development, and DRR agendas, leading to a lack of funding consolidation.

Progress towards Priority 4 has been limited in the Latin America and Caribbean region as reactive measures continue to be prioritized. Some achievements include tools and standards for disaster response, plans for recovery and rehabilitation, national and local contingency plans, early warning system implementation, and impact forecasting and multi-hazard simulations and drills. For example, the CREWS initiative has strengthened hydrometeorological and early warning services in the Caribbean. In 2018, the CARICOM Heads of Government adopted a focus on recovery, which emphasizes the need to protect the persons who are most at risk, enhance economic opportunities, safeguard infrastructure, protect the environment, and improve operational readiness. The RRM has helped overcome capacity constraints faced by SIDS, facilitated better prepositioning of emergency supplies, increased technical expertise, and increased access to anticipatory finance. In 2021, the Caribbean Facility for Recovery was established to build national capacity for recovery after disasters and foster the BBB principle. However, recovery financing is still heavily donor-determined, limiting the potential for building back better. Improvements are needed to ensure human rights during response efforts, and to consider the differentiated needs of persons with disabilities and gender considerations in access to finance. While early warning systems have improved in the Caribbean, they are still lacking in South America.

8.6. Countries in special situations[235]

SIDS are some of the world's most disaster-prone countries, comprising up to two-thirds of countries with the highest annual losses due to disasters. Their small size, remoteness, spatial isolation, and dependence on trade make them uniquely vulnerable to shocks and stressors. SIDS are at more susceptible to disasters, particularly natural hazards such as tropical cyclones, earthquakes, tsunamis, volcanoes, and marine hazardous material spills. They are also disproportionately impacted by the increasing frequency and intensity of climate-related disasters, which exacerbate already existing social, economic and

232 Ibid.
233 Established in 2007 but it has grown significantly since 2015.
234 UNDRR, *Caribbean Sub-regional Report*. Paper prepared for the Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030.
235 ECOSOC and UNDRR, *SIDS: Gaps, Challenges and Constraints in Means of Implementing the Sendai Framework for Disaster Risk Reduction in Small Island Developing States* (2022). Available at https://www.undrr.org/publication/small-island-developing-states-sids-gaps-challenges-and-constraints-means-implementing.

environmental vulnerabilities. SIDS are often dependent on one or two industries, meaning that any given shock can put their entire economy at risk. The negative impacts of COVID-19 have disproportionately impacted SIDS' economies, highlighting the urgent need to prevent new and reduce existing disaster risks, and manage residual risks.[236] However, SIDS have made insufficient progress towards the outcome and goal of the Sendai Framework. With a lack of domestic resources to invest in DRR, the international community needs to reaffirm its commitment to providing special attention and support to SIDS as called for in the Sendai Framework.[237]

SIDS continue to struggle with achieving Priority 1 of the Sendai Framework due to technical and human capacity constraints. A lack of access to and storage of data necessary for DRR continues to be a frequent problem for SIDS, and there has been slow progress in digitizing processes. Additionally, DRR-related data are still often not standardized and there is a shortage of skilled personnel to manage data technology. This problem is compounded by a "project-based culture" in SIDS, which creates dispersed and fragmented pools of information that hinder the generation and expansion of lessons learned. Furthermore, respondents to the Asia and the Pacific regional review stated that data are frequently generated retrospectively as part of project requirements rather than being used prospectively for DRR decision-making or planning. Many SIDS have expressed a need for support in generating losses and damages data and assistance with hazard and vulnerability assessments, vulnerability and risk mapping, and environmental impact assessments. The limited local human capacity in these countries is often a significant limiting factor in data collection, as staff are stretched across multiple uncoordinated projects and struggle to meet various reporting and data requirements. Using methods that require fewer local human resources could help address data-collection gaps (such as terrestrial Earth observation techniques).

Little improvement in achievement of Priority 2 in SIDS. In 2021, the Alliance of Small Island States (AOSIS) Leaders' Declaration reaffirmed SIDS' commitment to the implementation of the Sendai Framework. However, intersectoral mainstreaming of DRR has remained a challenge with DRR often still regarded as only a salient issue in times of emergency. Climate change continues to carry significantly more weight with DRR frequently disregarded as a weather or disaster management issue. As a result, mandates for DRR activities within SIDS are often unclear and implementation of DRR policies or programmes continues to be limited with authorities provided with little to no enforcement capacity. A lack of clear governance of land tenure also poses a unique challenge in SIDS. Unregulated settlements often mean governments do not know how many people are located in areas, making it difficult to provide messaging to those zones and to implement risk-informed policies and programmes. For example, in Trinidad and Tobago, given weak enforcement of land-tenure laws, many persons occupy and/or build structures in remote zones, some of which are areas zoned as reserves, near ecologically at-risk sites, or on sites prone to floods or fire.[238] Reducing disaster risk in SIDS requires enhancing DRR governance and enforcement of DRR-relevant regulations.

There are **significant challenges for SIDS in achieving Priority 3**. At the national level, there is often limited or no allocation of revenue for DRR-related activities. This is because SIDS tend to have small and erratic domestic revenues and difficulty accessing capital markets.[239] The recent economic impacts of COVID-19, which are expected to reduce annual GDP by 16 per cent or more in some SIDS, have exacerbated this domestic funding challenge.[240] To address this, international partners have supported SIDS to access resources to address liquidity problems. For example, the International Monetary Fund (IMF) has eased access to rapid financing enabling 15 SIDS to access US$ 1.9 billion to address the challenge of the pandemic.[241] However, given the diverse sources of debt, the funds do not appear sufficient to respond to SIDS' needs. As a result, investment in DRR in SIDS has primarily been derived from donors, with corollary challenges presented by donor dependence, as well as issues of accessing and managing multiple projects and finance streams, predominantly project-based rather

236 UNCTAD, *Development and Globalization: Facts and Figures 2021* (Geneva, 2022). Available at https://unctad.org/system/files/official-document/dgff2021_en.pdf.
237 United Nations, *Sendai Framework for Disaster Risk Reduction 2015–2030*, para. 8.
238 See https://www.thegef.org/sites/default/files/web-documents/10188_MFA_Trinidad_PIF.pdf.
239 OECD, *Making Development Co-Operation Work for Small Island Developing States* (Paris, OECD Publishing, 2018). Available at https://www.oecd.org/dac/making-development-co-operation-work-for-small-island-developing-states-9789264287648-en.htm
240 OECD, *COVID-19 Pandemic: Towards a Blue Recovery in Small Island Developing States* (2021a). Available at https://www.oecd.org/coronavirus/policy-responses/covid-19-pandemic-towards-a-blue-recovery-in-small-island-developing-states-241271b7/.
241 OECD, *The Impact of the COVID-19 Crisis on External Debt in Small Island Developing States* (2021b). Available at https://www.oecd.org/dac/financing-sustainable-development/External-debt-in-small-island-developing-states(SIDS).pdf.

than programmatic approaches to DRR, and SIDS DRR policies being overly donor-driven. Eligibility (such as low-income status) and co-financing requirements have also further constrained access to funds.

Additionally, when financing has been received it is largely ad hoc and inadequate in matching the scale of existing and future disasters. Financing remains imbalanced with the majority allocated to recovery and response, rather than risk reduction or prevention. For example, in Antigua and Barbuda, where there was no ODA for DRR recorded in 2016, and most of the financing that was provided in 2017 was only responsive on humanitarian grounds following Hurricane Irma.[242] Much like other regions, there has also been limited mobilization of the private sector for DRR. Although the private sector is increasingly aware of disaster risk, capital market investments still do not account for disaster risk. Insurance has played an increased role in DRR but is still mostly dependent on external support to deliver commitments. However, self-insurance, sovereign wealth funds, disaster funds, and stabilization funds that countries invest in are still not enough to address the cost of severe disasters. Finally, SIDS continue to have very low access to climate financing. "Despite being hit hard by climate change while only contributing to 1 per cent of global carbon dioxide emissions, they [SIDS] only had access to USD 1.5 billion out of USD 100 billion in climate finance pledged to developing countries in 2019".[243] Application processes for concessional financing must be improved and simplified.

SIDS have made little progress towards Priority 4. There have been some anecdotal improvements towards building back better, for example, UNDP has partnered with Antigua and Barbuda and Dominica to improve construction standards and to support more resilient building code amendments. These countries have deployed climate-resilient technologies and interventions in public and community buildings.[244] There have been some improvements in monitoring technologies. For example, in Palau, UNDP has recently installed four automatic weather stations to monitor weather conditions and provide real-time data, including wind speed and direction measurements, air temperature, humidity, solar radiation, rainfall intensity, and more.[245] However, the Green Climate Fund has identified that in general SIDS still require improvement in MHEWS and telecommunication systems, as well as transmission systems. There continues to be an absence of national DRR financing plans, which then results in strategies building long-term resilience that are underfunded. This is particularly concerning as many SIDS economies are dependent on single industries such as tourism where single external shocks can have significant economic impacts. There is a need for increased awareness around the cost-benefits of investing in resilience and prevention.

242 Evert-jan Quak, *How Losing Access to Concessional Finance Affects Small Island Developing States* (K4D Helpdesk Report No. 626, Brighton, United Kingdom, Institute of Development Studies, 2019). Available at https://assets.publishing.service.gov.uk/media/5d41b473ed915d09de9d1af4/626_SIDS_graduation_impacts_losing_concessional_finance.pdf.

243 Paul Akiwumi, "Climate finance for SIDS is shockingly low: why this needs to change". *United Nations Conference on Trade and Development*, 24 May 2022. Available at https://unctad.org/news/climate-finance-sids-shockingly-low-why-needs-change.

244 Green Climate Fund (GCF), *Approved Project Preparation Funding Application: Enhancing Early Warning Systems to Build Greater Resilience to Hydro and Meteorological Hazards in Pacific Small Island Developing States (SIDS)* (2017). Available at https://www.greenclimate.fund/sites/default/files/document/ppf-application-enhancing-early-warning-systems-build-greater-resilience-hydro-and-meteorological.pdf.

245 UNDP, "New automatic weather station to enhance Palau's climate monitoring capacities", 3 June (2022a). Available at https://www.undp.org/pacific/press-releases/new-automatic-weather-station-enhance-palaus-climate-monitoring-capacities.

- Part II -

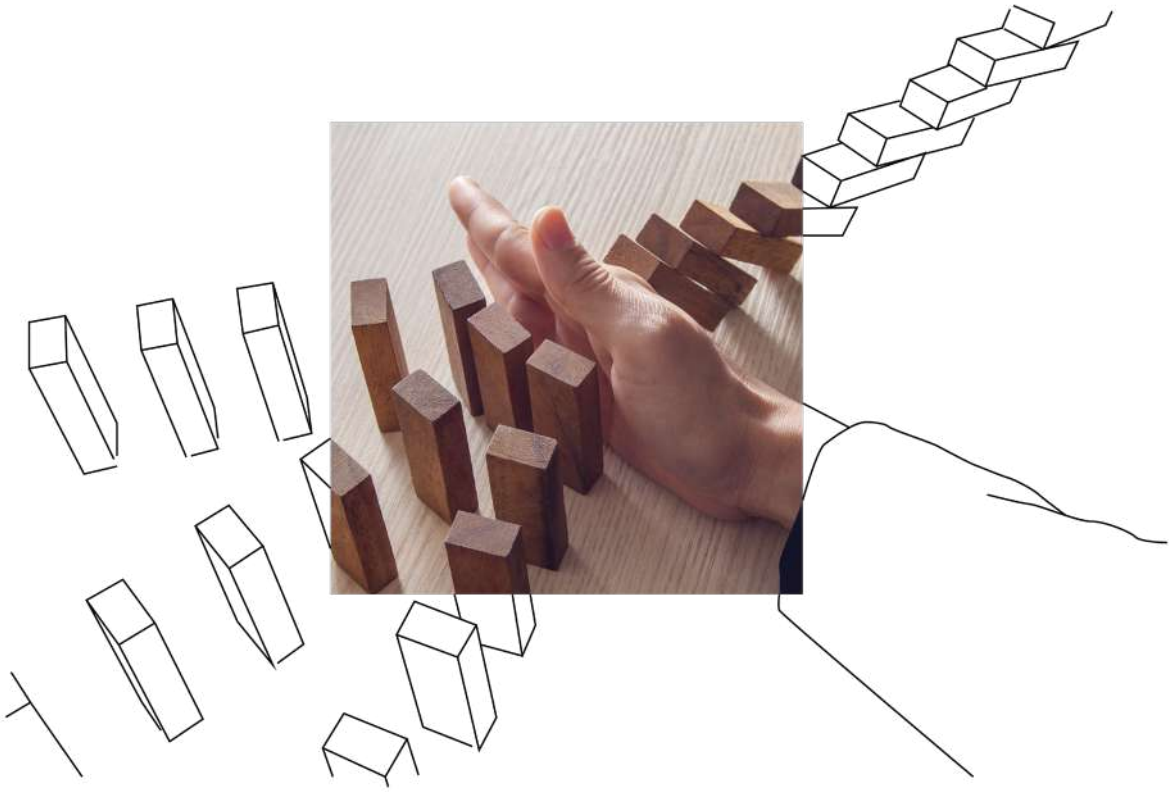
Prospective Review

Context shifts, emerging issues and recommendations for strengthening the delivery of the Sendai Framework

The second part of this report presents the Prospective Review which builds upon the insights of Member States and stakeholders in the Retrospective Review and their analysis of context shifts and emerging issues, to identify key measures and course corrections for amplifying and accelerating implementation of the Sendai Framework in the period to 2030.

It explores and seeks to characterize the novel, evolving, complex and potentially existential nature of the risk landscape that has emerged since adoption of the 2015 agreements, conventions and frameworks. It proposes high-level, transformative recommendations for effective risk reduction and risk management, supporting risk-informed decision-making, investment and behaviour for consideration by Member States and stakeholders as they navigate inter alia the HLM on the MTR SF, the HLPF under the auspices of ECOSOC, the SDG Summit, the Global Stocktake of the Paris Agreement, the Summit of the Future, and their respective outcomes.

A synthesis of this part can be found in the report on the main findings and recommendations of the midterm review of the implementation of the Sendai Framework for Disaster Risk Reduction 2015–2030 that was issued on 25 January 2023 to inform the intergovernmental process in advance of the HLM on the 18–19 May 2023, and which can be accessed via the United Nations Official Document System[246] and the UNDRR repository.[247]



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246 Available at https://documents.un.org/prod/ods.nsf/xpSearchResultsM.xsp?sort=PubDate&dir=descending.
247 Available at https://sendaiframework-mtr.undrr.org/publication/main-findings-and-recommendations-midterm-review-implementation-sendai-framework.

9. Strategic perspectives

9.1. Expected outcome and goal

The inclusion of "natural and man-made hazards, as well as related environmental, technological and biological hazards and risks"[248] in the scope of the Sendai Framework by Member States reflects the complex and multifaceted nature of risks faced by nations and communities. While some progress has been made in improving our understanding and management of risks, including a shift towards a more holistic, systems-based approach to risk management, there is still a significant gap in our ability to fully comprehend and measure trends in multi-hazard, multidimensional risks.

The expected outcome of the Sendai Framework specifically identifies that "a substantial reduction of disaster risk requires perseverance and persistence, with a more explicit focus on people and their health and livelihoods", to which it is necessary to include a focus on "ecosystems". To realize the expected outcome by 2030, it will be necessary to significantly increase "commitment and involvement of political leadership in every country at all levels … and in the creation of the necessary conducive and enabling environment",[249] including within the global financial system.

9.2. Guiding principles

The MTR SF process has revealed a strong commitment to achieving the Guiding Principles of the Sendai Framework from Member States. In particular, all Member States recognize the importance of governing risk in a manner that develops *all-of-society* engagement and partnership,[250] for both the effectiveness and the equity of DRR actions. Similarly, there is a widespread ambition that the Guiding Principle that requires *all State institutions*[251] at national and local levels should be at the core of actions to achieve the Sendai Framework by 2030. Although the language used to express this commitment is diverse, Member States project and recommend activities across all sectors of society and levels of government, connecting areas as diverse as food security, climate change, poverty, conflict, rapid technological change and energy systems.[252] This is supported by a consistent commitment to making use of the implementation of the Sendai Framework as an opportunity to enhance inclusion and create equitable outcomes across societies. At the same time, progress in gender-responsive, disability-inclusive and human rights-based approaches to DRR and the implementation of the Sendai Framework have been limited.

9.3. Context shifts and emerging issues

Reducing risks is one of the central components of safeguarding human existence and security.[253] And yet, despite commitments to build resilience, to tackle climate change, initiate just and equitable energy transitions, redress declining biodiversity, renovate food systems sustainability, address deep-rooted water resources issues, and pursue sustainable and regenerative development, current societal, political and economic choices are doing the reverse. Intensive and extensive risks are growing at an unprecedented rate. Human actions continue to push the planet towards its existential and ecosystem limits, intensifying risk.

The complexity of global catastrophic risk is overwhelming conventional governance systems, which were designed to address incremental environmental and social changes, rather than non-linear processes and complex interactions between drivers of risk and the irreversible impacts of breaching planetary boundaries.

248 Ibid., para. 15.
249 Ibid., para. 16.
250 Ibid., para. 19(d).
251 Ibid., para. 19(e).
252 See, for example, the Voluntary National Reports of Austria, Bosnia and Herzegovina, Cambodia, Morocco, Seychelles and Republic of Korea, available at https://sendaiframework-mtr.undrr.org/mtr-sf-submissions-and-reports.
253 United Nations, *Our Common Agenda – Report of the Secretary-General*.

Current conventional crisis response and risk management can no longer cope with interconnected disruptions – as seen for example in vulnerabilities in health, food or energy systems,[254] or in rapid technological change and dual-use applications, such as AI and synthetic biology – the negative effects of which can be amplified by fast-spread mechanisms of globalization.[255] With growing uncertainties and increasingly complex risks, amplified by increasing disaster impacts and losses, belief in **our collective ability to achieve the 2030 Agenda appears to be waning**.[256] Human insecurity is on the rise with disasters as one of the main drivers.[257] Disaster risks are amplified by uncertainties which hinder our ability to anticipate and prepare for major shocks. In addition, we face unsustainable levels of risk that transcend national and generational boundaries.[258]

Collective actions are needed to address risks that we may not yet entirely foresee.[259] Anticipating, preventing and addressing risks to our planet must be part of every decision, policy, investment, and budget; with "a revitalized, comprehensive and overarching prevention agenda front and centre in all that we do".[260]

The biggest transformations needed for achieving the 2030 Agenda and other internationally agreed frameworks and agreements, require a systemic approach that manages interdependencies and interactions between goals and targets. Governments need to shift priorities to policy convergence, overcoming sectoral silos, and developing new integrated approaches that take into account systemic interactions and focus on causal relationships between goals and policies.[261]

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254 United Nations, *Global Sustainable Development Report 2019: The Future is Now: Science for Achieving Sustainable Development* (New York, 2019).
255 Maxime Stauffer and others, *Existential Risk and Rapid Technological Change: A thematic study for the Midterm Review of the Sendai Framework*.
256 UNDP, *The 2021/2022 Human Development Report* (New York, 2022b, p. 49).
257 UNDP, *New Threats to Human Security in the Anthropocene* (New York, 2022c).
258 UNDP, *The 2021/2022 Human Development Report* (New York, 2022b).
259 Ibid.
260 United Nations, *Our Common Agenda – Report of the Secretary-General*.
261 United Nations, *Global Sustainable Development Report 2019*.

10. Priority 1: Understanding disaster risk

10.1. Develop a shared understanding of risk

Experience in the implementation of the Sendai Framework has demonstrated the value of the broad use of risk data, information and knowledge. Recognizing this, towards 2030, **Member States must ensure that multi-hazard, vulnerability, and exposure analysis are used to inform high-level, multi-year socioeconomic planning, as well as planning, budgeting and financing for DRR**.[262] Furthermore, to inform integrated DRR policies, strategies and plans, it is necessary to strengthen our understanding of historical and future losses and to more clearly define the risk landscape in all its dimensions and in a way that is consistent with the scope defined in Paragraph 15 of the Sendai Framework.[263]

Member States emphasize the **imperative for the integration of data and information from all sectors and perspectives into risk databases/registers and risk assessments**.[264] By adopting intersectoral approaches to data generation, management and analytics, the aim is to develop sophisticated and robust disaster risk information that integrates knowledge from across disciplines, domains and scales, and produces insights relevant to multiple sectors. Scientific and academic partnerships are important to achieving this, as are the standardization and circulation of data among government agencies and in different sectors.

The central ambition for disaster risk data through 2030 is to extract the maximum social benefit, from the creation and widespread availability of high-quality data to the analysis and transformation of that data into risk information that supports decision-making, to the integration of that risk information into policy and strategic planning processes.[265]

To this end, it is a priority to ensure consistent investment in training and education beyond the entities most conventionally engaged in DRR, to include all sectors and domains (*all State institutions* and *all-of-society* approaches). Additionally, the increased application of DRR metrics and data in climate-related processes – for example, loss and damage workstreams, the Global Goal on Adaptation and the Global Stocktake of the Paris Agreement present important opportunities.

Furthermore, **Member States must ensure adequate risk understanding in local and municipal governance and maintain dialogue between national, regional and global risk governance entities**. To this end, improving DRM entities' capacity is a must; requiring financial investment, development of expertise and use of technological innovations.

As data-collection efforts are undertaken within various global frameworks, it is necessary to review indicators across goals and targets and establish metrics for dimensions of disaster impacts that disproportionately affect the most vulnerable. **To mature joint multi-hazard and vulnerability analyses for use in multi-year planning, sustained donor support is necessary**, and Member States must learn from the Secretary-General's Joint Steering Committee to Advance Humanitarian and Development Collaboration. This includes studying existing priority countries and applying replicable lessons to a wider range of risk contexts.

Member States must develop comprehensive risk assessments and make better use of emerging technologies and scenario-planning activities to specify and assess complex risks. This includes developing flexible and adaptive risk governance mechanisms integrating actors from multiple sectors and scales. Such approaches must be people-centred, gender-

262 See, for example, the Voluntary National Reports of Australia, Ethiopia, Thailand and Viet Nam as well as the submission from local authorities and urban practitioners for the MTR SF, available at https://sendaiframework-mtr.undrr.org/publication/local-authority-and-urban-practitioner-perspectives-risk-reduction-2015-recommendations.
263 See, for example, the Voluntary National Reports of the Philippines and the United States of America.
264 See, for example, the Voluntary National Reports of Liberia, Morocco, Slovenia and Switzerland.
265 See, for example, the Voluntary National Reports of Australia, Ethiopia, Thailand and Viet Nam as well as the submission from local authorities and urban practitioners for the MTR SF.

responsive and inclusive. **To further encourage the shift away from managing disasters and towards managing risk**, government and non-government agencies are encouraged to use existing data and analysis, such as the INFORM Risk Index, INFORM Warning Index and INFORM Severity Index. These products, and others, can for example help mature national and subnational early warning and early action mechanisms – as well as preparedness and risk reduction measures – to become responsive to elevated risk and emerging crises.

As noted by submissions from:

Voluntary National Reports on the MTR SF	Other submissions and reports
Australia, Bhutan, Costa Rica, Cuba, Democratic People's Republic of Korea, Ethiopia, Germany, Liberia, Madagascar, Morocco, Philippines, Slovenia, Switzerland, Tajikistan, Thailand, the United States of America, Viet Nam	International Coalition for Sustainable Infrastructure Engineering Community; STC MG

10.2. Enhance knowledge and understanding of the systemic nature of risk

It is critical to find new strategies that enable better understanding of the systemic nature of risk within dynamic societal and environmental contexts. Complex decision-making environments require the ability to explore the many different dimensions of risk, including moving beyond a predominant focus on economic outcomes.[266]

Towards 2030, enhancing and integrating monitoring, evaluation, and learning processes and knowledge-management platforms to assess the effectiveness of multisectoral and multi-scalar responses and capture lessons for scaling up successes is crucial.

In particular, Member States have quoted that there is a need for **strengthening public service capabilities to undertake and translate systems-based evaluations of multi-domain risks and possible interventions into coordinated policy responses**.[267]

Specifically, some countries highlight the need for such interventions and policies at the **water-energy-food nexus**, for example, taking a systemic approach to better understanding and reducing the risks presented by, inter alia, a changing climate, conflict, supply chain vulnerabilities, declining productivity, ecosystems degradation, energy dependency or pollution.[268]

Similarly, the need for enhanced comprehension and integration of **biological hazards and risks** in DRR has become evident since 2015, both in terms of measures preventing (infectious) diseases and outbreaks and optimizing response through integrated health emergency and DRM approaches and frameworks.[269] Additionally, greater focus and understanding of mental health and psychological impacts of disasters is required.[270] **New conceptions of health and risk have gained ground since 2015**, for example, planetary health, and more so post- COVID-19, notably the notion of One Health. One Health takes a systems-based approach to improving the health of humans, animals, plants and the environment, while contributing to sustainable development. In risk-informing policies to 2030 and beyond, Member States should take necessary actions to reflect the interconnections with biological hazards and risks.[271]

Several Member States identify how **scientific and technological advancements are and will be key determinants of socioeconomic development,**

266 Jana Sillmann and others, *ISC-UNDRR-RISKKAN Briefing note on systemic risk. Review and Opportunities for Research, Policy and Practice from the Perspective of Climate, Environmental and Disaster Risk Science and Management* (Paris, ISC, 2022).
267 Costa Rica, *Examen de mitad de período de la aplicación del Marco de Sendai para la reducción del riesgo de desastres 2015-2030*.
268 See, for example, the Voluntary National Reports of Australia, Austria, Ethiopia, Gambia, Georgia, Guatemala, New Zealand, Poland and Slovenia.
269 As outlined in the Retrospective section of this report.
270 See the Voluntary National Report of the Republic of Korea for an example of progress made in this area.
271 Thematic study "Health Emergency and Disaster Risk Management Cross-cutting: Planetary Health" – submission for the MTR SF.

generating both threats and opportunities. Rapid technological change and dual-use applications, including in synthetic biology, already present potentially existential risks, and are a risk management reality for some countries. In addition, technological advances and the accelerated use of AI and automation are expected to eliminate certain types of work and, in the process, redefine factors of production, human behaviour, consumer consumption and economic systems and structures. The **development of novel partnerships and collaborations are recommended to better understand and manage the risks associated with rapid technological change**, cyberattacks or other malicious uses of technology.[272] Aligned with the United Nations Secretary-General's Our Common Agenda Report, this could entail international coordination and capacity-building on existential risks, and updating existing investment instruments for prevention of lower-probability, high-impact risks.[273]

It is therefore necessary to establish more inclusive and interconnected governance networks that facilitate the alignment of frameworks, DRR strategies, and plans across various levels of government.[274] Additionally, there is a need for investing in the necessary information and decision-support mechanisms to enable decision makers to effectively navigate complexity and contention in decision-making.

Member States recognize the importance of shifting the focus of risk assessments from individual hazards to a more comprehensive understanding of the vulnerability and exposure of communities.[275] There are several emerging practices exploring how to better understand and navigate dynamic and complex systems in which risk management decisions are and must be made. These emerging practices facilitate, inter alia, challenging habitual behaviours and building novel approaches to address risks.[276]

Strategic foresight methodologies, for example, applied at global, national or local levels, can assist in exploring possible futures and interconnected risks, encourage long-term and broader system thinking, and guide sustainability transformations in the present.[277]

As noted by submissions from:

Voluntary National Reports on the MTR SF	Other submissions and reports
Argentina, Australia, Austria, Belgium, Burundi, Bhutan, Bosnia and Herzegovina, Cambodia, Canada, Costa Rica, Cuba, Ecuador, Ethiopia, Gambia, Georgia, Guatemala, Kyrgyzstan, Liberia, Mauritius, Morocco, New Zealand, Poland, Republic of Korea, Seychelles, Slovenia, Sweden, Trinidad and Tobago, Togo, Tunisia, Türkiye, United Republic of Tanzania, and Viet Nam	FAO, the Partnership for Environment and Disaster Risk, Parliamentarians, Public Health England, STC MG, the Regional synthesis reports of the UNDRR Regional Offices of the Arab States / the Americas and the Caribbean Thematic study on DRR and sustainable food system

272 See for example, the Voluntary National Reports of Cambodia, Canada, Costa Rica, Kyrgyzstan, Morocco, Republic of Korea, Seychelles, Sweden, Turkïye and the United States of America
273 Maxime Stauffer and others, *Existential Risk and Rapid Technological Change: A thematic study for the Midterm Review of the Sendai Framework*.
274 See, for example, the Voluntary National Reports of Argentina, Bhutan, Costa Rica, Ethiopia, Georgia, Guatemala, Liberia, New Zealand, Sweden and Togo.
275 See the Voluntary National Reports of Bhutan, Burundi, Cambodia, Guatemala and Mauritius.
276 Jana Sillmann and others, *ISC-UNDRR-RISKKAN Briefing note on systemic risk. Review and Opportunities for Research, Policy and Practice from the Perspective of Climate, Environmental and Disaster Risk Science and Management* (Paris, ISC, 2022).
277 ISC, on behalf of STC MG, *Report for the Mid-term Review of the Sendai Framework for Disaster Risk Reduction*.

10.3. Build national and local data capacities

From a country perspective, national disaster loss databases increase the capacity of countries to understand their risks and impacts when those risks manifest as shocks or disasters. They provide a solid evidence base upon which to assess and develop risk-informed decision-making and investment, and guide risk reduction strategies and plans, particularly those associated with climate- and weather-related hazards. To this end, the review has highlighted the importance of enhancing capacity development in developing countries, especially LDCs, SIDS, and African countries, to improve monitoring and reporting of DRR, with regards to its data availability, quality, accessibility and application. **It is imperative for Member States to enhance their implementation and improvement of disaster loss databases and disaster risk mapping at the national level**. The development of national disaster loss accounting systems should be prioritized in this endeavour.[278]

Towards 2030, improving systematic reporting against the Sendai Framework is also crucial for ensuring and enhancing data quality. Currently, 40 out of 193 Member States have not reported on any targets under the Sendai Framework, with most of these countries located in Africa, Central Asia, and the Americas and Caribbean region. In order to achieve universal reporting and access to risk information, capacity development efforts should be directed towards these regions.

As noted by submissions from:

Voluntary National Reports on the MTR SF	Other submissions and reports
Algeria, Armenia, Bangladesh, Bosnia and Herzegovina, Cambodia, Canada, Costa Rica, Egypt, Gambia, Kazakhstan, Kyrgyzstan, Liberia, Mauritius, Montenegro, Poland, Sweden, Sudan, the United Republic of Tanzania, Thailand, Trinidad and Tobago, the United States of America	IOM, UN Women, Local authorities and urban practitioners network, STC MG

278 Costa Rica, *Costa Rica: Examen de mitad de período de la aplicación del Marco de Sendai para la reducción del riesgo de desastres 2015-2030* and United States of America, *The Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030: National Consultations, Review and Reporting*.

10.4. Improve collaboration between disaster risk reduction and statistical communities

National Statistical Offices (NSOs) are crucial partners in DRR. Towards 2030, greater **collaboration between statisticians and DRR practitioners will help improve and maintain the quality of disaster risk-related data collection and analysis**. Engaging NSOs to integrate SFM data into national statistics promotes reporting and use of disaster risk-related data by all sectors, thereby promoting risk-informed decision-making among *all State institutions*. By furthering NSO engagement in DRR there is a greater chance that high-quality data for DRM – essential for both programme design, and monitoring and evaluation – can be developed. This will be vital to better enable assessment of effectiveness and facilitate improvements in DRR activities.

Furthermore, ongoing processes must be strengthened through the Inter-Agency and Expert Working Group on Disaster-related Statistics in order to enhance collaboration between NSOs, sectoral line ministries, and National Disaster Management Offices and further promote risk-informed decision-making among *all State institutions*.

As noted by submissions from:

Voluntary National Reports on the MTR SF	Other submissions and reports
Australia, Bhutan, Bosnia and Herzegovina, Costa Rica, Kyrgyzstan, Liberia, Viet Nam	UNESCO, the SIDS report, the Regional synthesis report of UNDRR Regional Office of the Americas and the Caribbean

10.5. Enhance granularity in risk data and risk information

Member States and stakeholders must shift the focus of risk assessments from single hazards to better understanding the vulnerability and exposure of communities. To achieve this, Member States must enhance commitment and capacity to develop disaggregated data sets that capture the differential experiences of disaster risk and disaster impacts across multiple indicators. This granular data should encompass age, gender, income, disability, geographical subregion, and hazard type for both socioeconomic vulnerabilities and disaster-impacted populations. The lack of granular data has impacted the quality of analysis that informs intersectional approaches addressing multidimensional vulnerabilities through risk-informed social protection, social policies, and DRR and climate action, as well as targeted approaches in disaster preparedness, including early warning and early action. Tracking disaster losses and damages at localized scales could also help to improve disaggregated data collection. Furthermore, the development of mandates, capacity and subsequent fiscal and policy accountabilities at the local level will help to strengthen disaggregated data collection. Comprehensive and integrated monitoring and assessment of vulnerability is essential.

Gender is widely recognized as a key target for disaggregated DRR data sets.[279] Integrating gender considerations into the mandates of agencies responsible for collecting and analysing disaster risk data and developing risk information **should be a priority towards 2030**. This would allow the development of policies and actions that include gender in design, funding, implementation, monitoring and evaluation, and therefore work to promote women and girls' participation and leadership in risk reduction, and mitigate disproportionate impacts. Increased availability of gender data is also integral to implementing the SDGs, including SDG 5 on gender equality and empowerment of women and girls, and is also a key element of States' fulfilment of their obligations under the Convention on the Elimination of All Forms of Discrimination Against Women.

279 See, for example, the Voluntary National Report of New Zealand, and the submission from STC MG for the MTR SF.

Another **important target for disaggregation of data sets is the accurate representation of the experiences of persons with disabilities**.[280] The collection and use of standardized disability data allows opportunities and participation between persons with and without disabilities to be measured. Looking forward, the ambition is that disaggregated disability data should, at a minimum, allow the measurement of differences across disability, sex, age or income group.[281]

Lastly, despite the fact that disaster displacement is well documented in the Sendai Framework, it remains largely absent from global monitoring efforts on DRR. IOM reports that there are currently no standardized measurements and indicators to capture the relevance of displacement implications for DRR planning and implementation. **A nuanced and shared understanding of displacement can provide the DRR community with a "strong people-centered marker of disaster risk and its impacts**, allowing for the improved identification of where, and what, efforts are required to reduce vulnerability that is associated with (or revealed by) displacement."[282]

As noted by submissions from:

Voluntary National Reports on the MTR SF	Other submissions and reports
Bhutan, Cambodia, Ecuador, Guatemala, New Zealand, Tajikistan, Trinidad and Tobago, Viet Nam, Yemen	IOM, UNDP, UN Women, WHO, STC MG, Internal Displacement Monitoring Centre

10.6. Improve data standards, enhance data governance, and invest in data technology

The production of high-quality data on disaster risk is a priority for DRR practitioners in the years to 2030, outlined in 93 per cent of Voluntary National Reports to the MTR SF. Going forward, **Member States can benefit from improving the standard of official risk data and broadening the application of risk assessments**. So far, the development of terminologies, indicators and hazard classification are some of the key steps that have improved data standards in DRR since the adoption of the Sendai Framework.

With advances in computing power, data availability and use of AI, a **priority for Member States should be the circulation and interoperability of data and risk information across domains and data systems, within and among government agencies, and to and from non-State actors**,[283] including through developing data-sharing platforms and related data-sharing agreements, and in respect of transboundary risks and cross-border comparability. The ultimate goal of such measures is to ensure that risk data can be located, is accessible, interoperable, reusable and integrated into decision-making at all levels. While multiple countries and organizations have adopted data, knowledge management and/or digital strategies, **data sharing and oversight continues to be the most widespread challenge across governments**.[284]

280 See, for example, the Voluntary National Reports of Cambodia and Viet Nam, as well as submissions from IOM, WHO, UN Women, and UNDP for the MTR SF.
281 See also "Sex, Age, Disability Disaggregated Data – SADDD", available at https://www.undrr.org/publication/sendai-framework-monitor-sfm-sex-age-and-disability-disaggregated-data-saddd.
282 IOM and Internal Displacement Monitoring Centre, *Displacement indicators for DRR* (Grand-Saconnex, Geneva, 2022). Available at https://environmentalmigration.iom.int/sites/g/files/tmzbdl1411/files/documents/Displacement%20indicators%20for%20DRR%20State%20of%20the%20art%20report.pdf.
283 See, for example, the Voluntary National Reports of Norway, the United States of America and Viet Nam.
284 See, for example, the Voluntary National Reports of Bhutan, Cambodia, Mauritius, and Trinidad and Tobago.

Further focus is required on the distribution and analysis of data on disaster risk, with **specific government entities to be identified and supported to act as clear focal points for disaster risk data collection and analysis** at national and subnational levels, and coordinating regionally and globally.[285] Key mechanisms identified to achieve this goal include:

i. **Creating governance arrangements that break down data silos and facilitate the creation of detailed and open data sets**. This includes developing data-sharing platforms and agreements between agencies, and between government and civil society, which when accompanied by open-source licensing of data assets, can promote the application of data as a strategic resource for sustainable and resilient development. Finally, this should be supported by appropriate legislative measures (for example, on business-to-government data sharing in the public interest), policies (for example, One Data Indonesia[286]) and standard operating procedures which should be promoted at all levels to enhance data governance, and promote further access and reuse.

ii. **Designing interoperable data systems**.[287] In the modern data ecosystem, enhanced interoperability, crowdsourcing, and complex analytics are key features. To support this goal, it is important to invest in data infrastructure, especially in the IT sector, to ensure better digital field data collection, online reporting, loss accounting and development of risk information at all administrative levels. This is **particularly urgent in the context of advances in computing power, data availability and use of AI**.

These recommendations should also be supported by building capacity in cartography, remote sensing, and geospatial data to better capture losses through a combination of in situ and satellite-based monitoring. Furthermore, **investment is required in training and education of entities beyond those "conventionally" engaged in DRR**, to include all sectors and domains, including in capacity development for data collection and analysis at the local level.

Investments in disaster loss databases must be accompanied by integrating exposure and vulnerability data into existing platforms and decision-support mechanisms (as is the case with the Risk Information Exchange portal).[288]

That being said, the rapid pace of technological advancement can result in the adoption of new technologies without appropriate oversight or the full assessment of associated risks. While technologies such as Earth observation data, GIS, GPS, granular vulnerability data, and drones can provide valuable information for DRR actions, Member States must ensure that new technologies are accompanied by appropriate regulations or policies to address privacy and security concerns.

With science, technology, digitalization and other innovations, new tools are becoming increasingly available to reduce disaster risks; increased support for such innovation and technology is encouraged.[289] The pace, scope and impact of change varies among technologies. There remains a need to bridge the digital divide for risk management actors in many countries, particularly for communities far from business hubs where access to stable electricity, cellular phone and Internet coverage and knowledge in the use of digital tools is not yet assured. It is therefore crucially **important to align digital innovations with (local) needs and have robust engagement mechanisms with national and local actors in planning and delivery**.[290]

285 See, for example, the Voluntary National Reports of Norway, the United States of America, and Viet Nam.
286 In June 2019, the President issued Presidential Regulation No. 39 of 2019 concerning One Data Indonesia requiring the harmonization of data obtained by each ministry and agency, so that it is more accurate, up-to-date, integrated, accountable, accessible and shareable.
287 Cambodia, *The Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030. National Voluntary Report*.
288 See "United Nations Office for Disaster Risk Reduction Risk Information Databases", available at https://rix.undrr.org/.
289 Maxime Stauffer and others, *Existential Risk and Rapid Technological Change: A thematic study for the Midterm Review of the Sendai Framework*.
290 UNDRR, *Report of the High-level event on New Technologies in Disaster Risk Reduction*, 12 September 2022 (2022j). Available at https://www.undrr.org/event/high-level-event-new-technologies-disaster-risk-reduction.

To ensure continued functionality of databases on risk information and impacts, and to tackle the risk of data loss in the event of their destruction, Member States together with their respective scientific constituencies are encouraged to form collaborations with information and technology specialists to digitize climate and disaster data with pre-agreed protocols for access. This includes digitizing historical records.

As noted by submissions from:

Voluntary National Reports on the MTR SF	Other submissions and reports
Argentina, Australia, Bhutan, Bosnia and Herzegovina, Burundi, Cambodia, Côte d'Ivoire, Ethiopia, Germany, Japan, Kazakhstan, Kyrgyzstan, Liberia, Madagascar, Malawi, Mauritius, Morocco, Norway, New Zealand, Philippines, Republic of Korea, Seychelles, Sudan, Switzerland, Thailand, Trinidad and Tobago, Togo, United Arab Emirates, the United States of America, Viet Nam	Local authorities and urban practitioners network, Parliamentarians, ARISE, International Coalition for Sustainable Infrastructure, the Regional synthesis reports of the UNDRR Regional Offices of the Americas and the Caribbean / the Arab States / Europe and Central Asia, Thematic studies on de-risking investment, and on disability inclusion in DRR in the Pacific

10.7. Enable *all-of-society* engagement and participation

Member States recognize the importance of **ensuring a broad-based enhancement of the capacities of government agencies and non-State actors in developing, collecting, analysing and interpreting disaster risk data**.[291] This may include the private sector, academia, diverse knowledge-holders, civil society organizations – including organizations of women and persons with disabilities – as well as other stakeholders.

To raise awareness and facilitate shared understanding of DRR across sectors and jurisdictions, there is a continued need to harmonize concepts, frameworks, language and processes. Numerous options for increasing representation were presented through the MTR SF, including, for example: **creating central-level bodies with sufficient budget and capacity to conduct consultations with various stakeholders in a participatory manner**; using advanced technology to collect disaggregated data; translating information on DRR measures, as well as preparedness actions and protocols into local and Indigenous languages; and using local knowledge adapted to national standards.[292]

As the notion of shared responsibility grows, data are increasingly considered a major global public good. **Data availability will benefit from greater use of local knowledge from civil society and citizen science**. This could be translated into practice by integrating more participatory approaches, including crowdsourcing and empowerment of local leaders. Data should be based on a "new social contract" that could enable the use and reuse of data to create economic, social and environmental value and promote equitable opportunities to benefit from data and the insights it provides.

Recognition of and sustained support for a **critical cadre of dedicated professionals who understand and expand the interface between science, policy and practice and drive application-oriented research** is considered crucial.[293] Building such science-policy-practice interfaces at all levels, including local and parliamentary, is part of the essential capacity and institutional developments needed to improve communication and coordination for risk-informed development.

291 See, for example, the Voluntary National Reports of Bosnia and Herzegovina, Japan, Kyrgyzstan, Seychelles, Sudan, Tunisia, and the United Republic of Tanzania.
292 See, for example, the Voluntary National Reports of Canada, Georgia, New Zealand, Poland and Tunisia.
293 See, for example, the Voluntary National Reports of Burundi, Canada, Guatemala, New Zealand, Thailand and United States of America; submissions from the International Coalition for Sustainable Infrastructure Engineering Community, the local authorities and urban practitioners for the MTR SF.

Another priority in the years to 2030 is to enhance the participation of communities and grass-roots organizations in the creation of disaster risk data and information, and integrate LTIK.[294] Offering often overlooked contextual and relational information, LTIK has substantial value in understanding, preventing and mitigating risks, minimizing disaster impacts and building resilience, and often situates DRR within the broader contexts of harm prevention and holistic care for the environment. Engagement must commence at the earliest stages of developing research and technology, including through improved dialogues with citizen groups, involvement of local and national universities and institutions, and young scientists, in combination with holders of LTIK.

As noted by submissions from:

Voluntary National Reports on the MTR SF	Other submissions and reports
Bangladesh, Belgium, Bosnia and Herzegovina, Burundi, Canada, Côte d'Ivoire, Cuba, Democratic People's Republic of Korea, Ethiopia, Georgia, Guatemala, Kyrgyzstan, New Zealand, Tajikistan, Türkiye, United Arab Emirates, Viet Nam	WHO, International Coalition for Sustainable Infrastructure Engineering Community, Local authorities and urban practitioners network

10.8. Strengthen risk awareness and communication

Member States are aware that DRR capacity-building within governments must be complemented by a broader-based culture of risk awareness and prevention.[295] The focus here is on supporting the general public and the private sector to become active agents in risk reduction and management. To achieve this, **mass media communication campaigns focused on specific hazards are an important tool, as is the development of educational materials to inform curricula at all levels of the education system**. Some Member States take this emphasis further, recognizing the importance of creating dedicated university-level qualifications in DRR and related fields. The role of digital and communications technology is reflected across this topic. In particular, the visualization of disaster risk using GIS and other tools, and the capacity for targeted communications via SMS messaging and smartphone applications are noted as important practices to support a culture of risk prevention. In addition, where risk databases can be made available to the public, private sector and civil society, there is a greater opportunity to achieve the *all-of-society* ambition of the Sendai Framework.

294 See, for example, the Voluntary National Reports of Burundi, Ethiopia, Guatemala and Viet Nam.
295 See, for example, the Voluntary National Reports of Costa Rica, Guatemala, Liberia, Mauritius, Philippines, Sweden, Togo, Trinidad and Tobago, Tunisia, and Viet Nam; and submissions from Parliamentarians and UNCTAD for the MTR-SF.

The need for **high-level political commitment at the national level** is a key recommendation of both Member States and non-State actors involved in the MTR SF. Given the significant challenges to implementation in the lifetime of the Sendai Framework thus far, such commitment is a necessary step to achieving the outcome and goal of Sendai Framework by 2030. International leadership and guidance have an important role to play in catalysing and maintaining such commitment at the national level by developing technical understanding and global networks of committed practitioners.

As noted by submissions from:	
Voluntary National Reports on the MTR SF	**Other submissions and reports**
Algeria, Bangladesh, Costa Rica, Germany, Guatemala, Lao People's Democratic Republic, Liberia, Madagascar, Mauritius, Philippines, Sweden, Togo, Trinidad and Tobago, Tunisia, Viet Nam	UNCTAD, Parliamentarians

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11. Priority 2: Strengthening disaster risk governance to manage disaster risk

11.1. There is a need for more coherent and integrated management of risks

To accelerate the implementation of the Sendai Framework towards 2030, **Member States must further commit to the creation of adaptive governance arrangements that support vertically and horizontally integrated understanding and management of risks across all sectors, domains, scales, and are reflective of the broadened scope of hazards and risks**.

Such governance arrangements should be designed to enable prospective risk reduction able to deal with uncertainties and surprises inherent in transforming social, technological and ecological systems and address vulnerabilities, exposures and contextual factors.

Adaptive governance relies on iterative learning, planning, policymaking, implementation and evaluation over time,[296] and requires a process of systematic coordination at global to national scales, and national to subnational scales, and back up the chain.

This requires a **shift in the locus of responsibility and accountability for preventing risk creation and reducing existing risk, away from a single centralized agency, to coordinated, risk-informed decision-making and investments that involve all stakeholders**. It should also reflect forms of management which act on root causes, risk drivers and other underlying dynamics and ensure these are reflected in both planning and implementation.[297] Essentially, DRR must no longer be treated as a sector, but rather as an outcome.

To this end, Member States must ensure that such mechanisms and approaches are recognizant of the systemic nature of risk – from its creation and propagation through to its impacts when realized – and **are supported by legislative and regulatory frameworks that reflect shared responsibility** for risk-informed decision-making and investment, that enshrine a clear legal obligation to prevent and reduce disaster risk. In order for such normative measures to be gender-responsive, disability-inclusive and reflect a human rights-based approach, they must be aligned with obligations arising from international human rights law.

Such legislative and regulatory frameworks must involve clear, defined governance arrangements, in which multiple authorities take well-defined responsibility for preventing and reducing disaster risk. In pursuing sustainable development, governance frameworks should explicitly integrate actors and entities which focus on complementary or closely related sectors and domains, for example climate change adaptation and mitigation, food systems, water systems and land-use planning, moving towards a system of encompassing "territorial risk governance".

Further, the **MTR SF recognizes that DRR must be taken out of the exclusive realm of technical and accrued expertise into multidimensional, even territorial governance**.[298] In renovating risk governance frameworks, Member States should explicitly target and integrate those responsible for sectors or domains

296 European Environment Agency (UEA), *Perspectives on Transitions to Sustainability* (Luxembourg, Publications Office of the European Union, 2018). Available at https://www.eea.europa.eu/publications/perspectives-on-transitions-to-sustainability/file.

297 ISC, on behalf of STC MG, *Report for the Mid-term Review of the Sendai Framework for Disaster Risk Reduction*.

298 "A territorial approach sustains processes such as land-use planning, natural resource management, social and economic development of territories, and the planning and implementation of resilient infrastructure. It is governance that incorporates the drivers of risk as a whole, including not just hazards but vulnerabilities, exposures and contextual sensitivities, and realizes the corollary benefits of prospective risk reduction […] embracing a strategic vision for development focused on human well-being and environmental sustainability." - ISC, on behalf of STC MG, *Report for the Mid-term Review of the Sendai Framework for Disaster Risk Reduction*

primarily responsible for driving risk creation, and its prevention and reduction.[299]

The overall ambition for Member States should be polycentrism: a comprehensive form of governance in which multiple sources of decision-making power cooperate and interact towards positive development outcomes. In polycentric arrangements, clearly defined responsibilities for managing risk are distributed throughout a broader governance structure, ensuring adaptability and effectiveness at a range of scales.

To ensure clear risk governance arrangements are in place in contexts where risks co-locate, **governments should map and assess the institutional and policy architecture for risk governance in relation to the risk landscape**, assigning roles and responsibilities for addressing systemic risks, with pre-agreed standard operating procedures or guidelines for collaboration (including data-sharing and resource allocation, among others). Although the challenges of joint ownership of the agenda of risk-informed development are recognized by Member States, the distribution of responsibility and capacity for DRR across the institutions of government is a crucial step towards the attainment of the outcome and goal of the Sendai Framework.

As noted by submissions from:

Voluntary National Reports on the MTR SF	Other submissions and reports
Argentina, Cambodia, Canada, Côte d'Ivoire, Cuba, Ecuador, Ethiopia, Germany, Guatemala, Madagascar, Morocco, Switzerland, Togo, Trinidad and Tobago, Tunisia, Türkiye, Viet Nam	IOM, ISC, UN-Water survey, Caribbean Safe School Initiative, STC MG, Women's Network, Regional synthesis report of the UNDRR Regional Office of the Americas and the Caribbean

11.2. An *all-of-society* approach to risk management

A core aspect of the Sendai Framework's commitment to an *all-of-society* engagement with risk is a broad-based participation in the risk management process. To further this towards 2030, **governments must develop institutional structures to engage and mobilize the expertise of scientific, academic, private sector, civil society, local and Indigenous stakeholders**, creating platforms and spaces for such stakeholders to be listened to and exert a meaningful influence over risk-informed decision-making processes.

Such structures and processes must also be centred around the engagement and needs of groups at higher risk, including women, youth, older persons and persons with disabilities, ensuring more systematic engagement with existing organizations and emerging networks. National DRR platforms are considered key to facilitating broad-based participation, requiring positive actions to ensure the participation and leadership of **women, youth, older persons, persons with disabilities** and other groups at higher risk if they are not currently included. To implement the Sendai Framework, in the years to 2030, Member States must be committed to collaborating with key civil society actors representing a broad cross section of stakeholders.

There is significant potential for accelerated action on gender-responsive DRR. Such action has been boosted in part by the successes realized through specific action plans on gender of the Rio Conventions, and the recent call made in the sixty-sixth session of the Commission on the Status of Women to develop and implement a Gender Action Plan for the Sendai Framework (GAP),[300] coupled with corresponding commitments to and accountability mechanisms for national and local implementation and integration in climate change policy and planning. **The development and adoption of a GAP is essential**.

299 ISC, on behalf of STC MG, *Report for the Mid-term Review of the Sendai Framework for Disaster Risk Reduction*.
300 See CSW66 Agreed Conclusions (E/CN.6/2022/L.7), available at https://documents-dds-ny.un.org/doc/UNDOC/LTD/N22/303/59/PDF/N2230359.pdf?OpenElement.

Involving persons with disabilities in assessment, design, planning, and leadership ensures that DRR measures can protect them and reduce their vulnerabilities. Biases should be recognized, and enablers, opportunities and barriers should be assessed to frame appropriate policies and programmes.

As noted by submissions from:	
Voluntary National Reports on the MTR SF	**Other submissions and reports**
Argentina, Armenia, Australia, Austria, Belgium, Bhutan, Bosnia and Herzegovina, Burundi, Costa Rica, Cuba, Ecuador, Ethiopia, Gambia, Georgia, Guatemala, Liberia, Mauritius, Morocco, New Zealand, Slovenia, Sweden, Togo, Trinidad and Tobago, Tunisia, Türkiye, United Republic of Tanzania, Viet Nam	UN Women, ISC, ARISE, Local authorities and urban practitioners network, Thematic study on local, indigenous and traditional knowledge for disaster risk reduction in Asia and the Pacific

11.3. Multi-scale risk management

Member States and non-State stakeholders are consistently placing increased emphasis on the significance of local-scale risk governance to accelerate the implementation of the Sendai Framework by 2030.[301] The local level has come to be understood as a front-line space where the impacts of disasters are felt first, and at which the development of coherent approaches and the coherent implementation of global and national policy frameworks becomes easier.

Member States must ensure that local-level risk governance structures are supported with the authority and resources required to meet these expectations. National-level authorities must support the building of human resources, clear strategies and action plans, and financial capacity at the local level where these do not already exist, ensuring coherence of DRR planning with broader municipal and local planning processes. Well-functioning local-scale governance mechanisms should pursue DRR activities including the collection and mapping of granular disaster risk data, the drafting of municipal land-use regulations informed by DRR principles and the training and education of local populations in such a way that engages with the realities of the specific risk profile of a territory. The MTR SF makes it clear that capacity-building of local risk-management authorities will be key for the achievement of the outcome and goal of the Sendai Framework by 2030.

Furthermore, **Member States and regional, including intergovernmental, bodies must further develop structures of risk governance at regional and global levels able to connect with, be informed by, and guide and support national and local-level risk reduction.**[302] This might include mapping existing strategies and action plans, to the range of hazards and risks of the Sendai Framework. To better align local-to-regional DRR strategies, plans and policies to the range of hazards under the remit of the Sendai Framework, regional entities should lead the way in encouraging Member States to clarify the interaction between hazards and vulnerability conditions – including technological, biological and societal hazards. The African Union Programme of Action is a useful example, with the explicit ambition to address linked disaster, fragility and conflict risks.

Member States and stakeholders are encouraged to braid the findings and recommendations of the MTR SF into the follow-up processes of all global agendas, including but not restricted to the Paris Agreement, the 2030 Agenda for Sustainable Development, the GBF, the New Urban Agenda, using the Sendai Framework and a risk-based discourse as the connecting tissue to drive convergence and build coherence. Furthermore, the work of the High-level Advisory Board on Effective Multilateralism that was formed by the Secretary-General in support of Our Common Agenda, could examine global risk governance arrangements that are required to be able to contend with twenty-first century

301 See, for example, the Voluntary National Reports of Austria, Democratic People's Republic of Korea, Ethiopia, Malawi, Mauritius, Togo, Trinidad and Tobago, and Viet Nam; and the submission from Local Authority and Urban Practitioners Network for the MTR-SF.

302 See, for example, the Voluntary National Reports of Australia, Canada, Cambodia, Gambia, Kyrgyzstan, Liberia, Mauritius, Morocco, New Zealand, Sweden, Trinidad and Tobago, and Viet Nam.

risks before they manifest as potentially existential shocks. The implementation of the Sendai Framework can therefore both benefit from, and propel enhanced connection and convergence among international, national and local governance structures in the years to 2030.

As noted by submissions from:

Voluntary National Reports on the MTR SF	Other submissions and reports
Australia, Canada, Cambodia, Gambia, Guinea, Kyrgyzstan, Liberia, Madagascar, Mauritius, Morocco, New Zealand, Sweden, Trinidad and Tobago, Viet Nam	FAO, IOM, UNDP, WHO, International Coalition for Sustainable Infrastructure Engineering Community, Local authorities and urban practitioners network, United Cities and Local Governments

11.4. Building capacity for integrated risk-informed decision-making

A consistent area of emphasis for action in the years to 2030 is a basic one: the development of risk awareness and technical capacity at all levels of society and across all State institutions. A basic set of recommendations emerges around the need **to build capacity and technical capacity across all phases of the risk management process, from the generation of risk data to its use in risk-informed decision-making**. This capacity-building emphasis from Member States has multiple dimensions.[303]

Horizontally across government and non-State actors, Member States identify the sensitization of agencies with responsibility for economic, health and environmental issues to the principles of DRR as an important priority, to enable the integrated management of risks.[304] Member States also place a focus on continuing to deepen the capacity of DRM entities through financial investment, development of expertise and the iterative use of technological innovations.

From a **vertical perspective**, there is a move to ensure both **adequate risk understanding at the level of local and municipal governance**,[305] as well as the imperative for continued and evolved dialogue and collaboration between national and international risk governance entities; recognizing the transboundary, systemic, and even planetary nature of risks to be reduced or managed.

303 See, for example, the Voluntary National Reports of Egypt, Gambia, Kyrgyzstan, Liberia, Montenegro, Poland, and United Republic of Tanzania.
304 See, for example, the Voluntary National Reports of Australia, Canada, Democratic People's Republic of Korea, Guatemala, the Philippines, Togo, and the United Republic of Tanzania; and submissions from STC MG, IOM, and WHO for the MTR SF.
305 See, for example, the Voluntary National Reports of Armenia, Belgium, Kazakhstan, and Sweden; and the submissions from local authorities and urban practitioners for the MTR SF, the International Coalition for Sustainable Infrastructure (ICSI) Engineering Community, IOM, UNDP, UNESCO, and WHO for the MTR SF.

Lastly, **strategic foresight activities** are gaining ground in multiple strategic planning and policymaking contexts at national, regional and global levels. Such activities are now regularly employed by the European Commission,[306] and are identified by the Secretary-General in his Our Common Agenda report, as an important part of his prevention agenda in addressing catastrophic and potentially existential risks, and a supporting anticipatory decision-making. Strategic foresight activities **explore different plausible futures to identify trends and emerging issues, visions and associated pathways to make better decisions** and act in the present to shape a desirable future. Strengthened strategic foresight enables long-term thinking, anticipatory action and more forward-looking policies and programmes.

As noted by submissions from:

Voluntary National Reports on the MTR SF	Other submissions and reports
Australia, Armenia, Belgium, Canada, Democratic People's Republic of Korea, Egypt, Gambia, Germany, Guatemala, Guinea, Kazakhstan, Kyrgyzstan, Liberia, Montenegro, Poland, Sweden, United Republic of Tanzania	FAO, IOM, UNDP, UNESCO, WHO, STC MG, International Coalition for Sustainable Infrastructure Engineering Community, International Resource Panel, Local authorities and urban practitioners network

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306 See, for example, https://commission.europa.eu/strategy-and-policy/strategic-planning/strategic-foresight_en.

12. Priority 3: Investing in disaster risk reduction for resilience

12.1. Increased public investment in disaster risk reduction

All stakeholders in the Sendai Framework recognize that investment in risk reduction has been substantially outstripped by processes of risk creation and accumulation since 2015. Both Member States and non-State stakeholders outline the need for greater public investment in DRR in the second half of the implementation period of the Sendai Framework. Member States should consider a statutory requirement to ensure that risk reduction is integrated in **all public investment and procurement such that disaster risk considerations and DRM practices are systematized in decision-making processes. Furthermore, such considerations should be adequately budgeted – and accounted for – across ministries, departments and organizations**. Member States identify that the lack of public investment has been driven by a continued under-prioritization of DRR by national governments. Consequently, many Member States still do not have any formal DRR financing frameworks at the national and local level.

While risk reduction must be integrated within all investment and expenditure, stand-alone DRR budgets commonly managed by national DRR authorities do exist. Therefore, to address the above challenges in parallel to integrating risk reduction in all decisions and investments, **Member States must commit to creating specific sectoral DRR budget allocations through government institutions at all appropriate scales and create legal structures supporting risk-informed investment**. Allocations must emphasize a shift away from investment in disaster response towards preventing and reducing risks and building resilience.

Even in the context of these recommendations and adjustments, for many lower-income countries, public financing will likely continue to be insufficient to meet DRR needs by 2030. This is particularly true in countries and regions with disproportionately high impacts of climate change and limited financial resources such as the LDCS, SIDS, and LLDCs. The rise of international financing processes oriented towards sustainable development and climate change adaptation is widely recognized as an opportunity to accelerate the implementation of the Sendai Framework and address this financing gap. Currently, Member States note that financing streams for sustainable development, CCA, and DRR are uncoordinated, despite obvious conceptual and operational overlap.

In response to this, governments must **integrate DRR financing within sectoral investments, including development and climate finance**, potentially aligned with integrated national financing frameworks. To achieve this, enhanced coordination between donors is required, with greater support to States lacking the capacity to access finance, manage funding applications and monitor DRR projects. This process includes work to foster greater coordination between donors. Furthermore, looking forward, donors should work with Member States to examine increasing the uptake of alternative risk transfer mechanisms such as catastrophe bonds and debt memorandums in lieu of increased financial commitments.

Finally, Member States have recognized throughout the MTR SF that there often is a lack of consolidated accounting for and records of DRR-related expenditure. This limits governments' abilities to identify financing gaps or to communicate returns from DRR expenditure. To amend this towards 2030, **Member States should tag and track DRR-related expenditures** based on a taxonomy of qualifying end uses, and improve understanding and communication of the cost-benefit of investing in risk prevention and reduction, including accurately pricing risk in investment decisions.

As noted by submissions from:

Voluntary National Reports on the MTR SF	Other submissions and reports
Australia, Belgium, Bhutan, Bosnia and Herzegovina, Costa Rica, Germany, Guatemala, Kyrgyzstan, Malawi, Mexico, New Zealand, Republic of Korea, Slovenia, Tajikistan, Thailand, Trinidad and Tobago, Türkiye	UNESCO, WHO, STC MG, International Coalition for Sustainable Infrastructure Engineering Community, Thematic study on de-risking investment

12.2. Better internalize negative externalities of the private sector

There is growing recognition that the financial system plays a crucial role in addressing the challenges posed by disasters. Several areas related to financing for DRR and de-risking investments could allow a reimagining of the fundamental relationship between the economy, the environment and society. There has already been significant momentum towards the systemic reform of the financial system in recent years – notably in relation to climate change, as demonstrated by initiatives such as the Sharm el-Sheikh Implementation Plan and the Glasgow Financial Alliance for Net Zero Call to Action. These efforts have focused on the development of new governing rules, structures, and processes within the financial system.

Going forward, **there is an opportunity to make supporting DRR a core duty of the financial system**. To take advantage of this opportunity, **Member States must address market short-termism and failures that impact efficient pricing and proper consideration of disaster risks**, using fiscal and market-based measures and other incentives.

Furthermore, Member States recognize throughout the MTR SF that government regulation should play a larger role in furthering DRR practices within the private sector and several practical recommendations have been proposed. **The financial sector needs to better account for and accurately price disaster risks, while also being more transparent on its exposure to and management of disaster-related risks**.

To this end, Member States could **integrate DRR into the mandates and decisions of central banks and other financial and regulatory authorities to incentivize investments in risk reduction and resilience**. This includes requesting commercial banks to disclose risks and embed DRR assessments in credit decisions, lowering risk capital requirements for insurers investing in risk prevention and reduction, or reviewing reporting obligations of financial institutions to avoid threats to long-term financial stability and financial market integrity.

Consistent with this, **Members States should reassess the approach taken by Credit Rating Agencies (CRAs)**, which play an important role in capital markets, the ratings of which are used in many jurisdictions for regulatory purposes. For instance, they could request lengthening the CRA time-horizon beyond the traditional three years and creating long-term ratings to better account for risks. Countries should also not be reflexively penalized by CRAs for seeking debt assistance after disasters strike but rather the country's readiness and action on DRR should be given proper weight, including participation in some of the financial instruments referenced above which have DRR conditionality attached to them. CRAs could assist Member States in better understanding how DRR investment may improve their rating.

Moreover, there is recognition by Member States that towards 2030, **to mobilize private investment there is a need to improve companies' disaster risk disclosures and revise accounting practices. International collaboration can identify good practices and devise common approaches to amend financial regulations for**

resilience by leveraging existing platforms, for example, the Network for Greening the Financial System, the Coalition of Finance Ministers for Climate Action, the Financial Stability Board, and accounting bodies. This entails **updating their mandates and work programmes to explicitly consider a broader range of risks beyond climate and the environment**.

This also applies to reporting frameworks focused on specific issues, such as the Task-Force on Climate-related Financial Disclosures, and the International Sustainability Standards Board. Understanding whether companies are managing their exposure to disaster risks – and whether they are positively contributing to prevention, mitigation and resilience through business practices, products and services – is important. **Member States must ensure that DRR considerations are captured in emerging disclosure standards**, thereby creating a level playing field for the disclosure of DRR efforts made by private sector actors via updated mandates, regulations and disclosure frameworks.

Regarding accounting standards and financial reporting protocols, the formation of the **International Sustainability Standards Board in 2021 and its forthcoming issuance of a reporting standard for private sector companies on climate change**, with other topics to follow, is an example of where there is an opportunity to insert and integrate DRR into the business of ensuring quality data and reporting. The same applies for iterations of other high-profile voluntary protocols and regulations, such as the Taskforce on Nature-related Financial Disclosures and the US Securities and Exchange Commission's proposed reporting rules on climate change.

As noted by submissions from:

Voluntary National Reports on the MTR SF	Other submissions and reports
Armenia, Australia, Bosnia and Herzegovina, Burundi, Guatemala, New Zealand, Türkiye	United Nations Environment Programme, UN Water, STC MG, Parliamentarians, Thematic study on de-risking investment

12.3. Incentivizing private sector investment in disaster risk reduction

There is widespread recognition by Member States that the involvement of the private sector in DRM has been insufficient since 2015. Although there has been increased coordination with the private sector, DRR is still largely identified as the sole responsibility of the State. To address this, **Member States should do more to engage with the private sector to enhance incentives and mechanisms to scale up private sector investment in DRR**. This could involve Member States collaborating with financial institutions to better integrate multi-hazard, long-term risk analysis in private investment decisions, or committing to develop financial structures dedicated to DRR, such as blended finance, resilience bonds or impact investing funds. For example, the international community could consider mechanisms, such as guarantees, to reduce the cost of borrowing for countries issuing debt for investment in disaster resilience. Furthermore, g**overnments and stakeholders must create knowledge and regulatory environments that incentivize mobilization of public and private investment in resilient infrastructure**. This requires quantification of the multisectoral benefits of such investment, drawing on the expertise and insights of diverse stakeholders, including private institutions.

In respect of development financing institutions, some have increased investment both in terms of direct funding and through compliance mechanisms; for example, the key performance indicators related to climate and disaster resilience of the Asian Development Bank, or the Resilience and Sustainability Trust of the IMF.[307] However, such improvements fall well short of what is required, and so, **aligned with the Bridgetown Initiative,[308] Member States should pursue reform of institutions such as the IMF, the World Bank and other development finance institutions to further integrate DRR into their work and better use their balance**

307 The RST is designed to assist low-income and vulnerable middle-income countries build resilience to external shocks and longer-term environmental and biological risks, promoting sustainable growth.
308 The 2022 Bridgetown Initiative: https://www.foreign.gov.bb/the-2022-barbados-agenda.

sheets for this purpose, including through lending, debt support, sustainable development and adaptation financing streams and grants.

With an increased supply of investable instruments for DRR, large institutional investors can use their capital to create more resilient societies. In particular, **insurance companies could be incentivized to allocate capital to purpose-built DRR investment vehicles** aiming at market-rate returns. These have the **co-benefits of preventing and mitigating the risks that their underwriting businesses insure.**

Finally, there remains a substantial need to expand uptake and access to risk financing and risk transfer mechanisms. Although Member States have become increasingly aware of the importance of risk insurance as a tool in risk management, insurance penetration rates remain inadequate in many regions of the world, and there are often stark gender differences in access to insurance and other risk financing.[309] There are also growing concerns that some regions and disaster-prone areas are becoming uninsurable. To close protection gaps, governments must first take risk preventive measures that diminish the exposure and vulnerability of people and assets to hazards, and continue to invest in insurance premium subsidies to expand access to insurance for vulnerable groups. The rise of parametric risk insurance mechanisms such as the Caribbean Catastrophe Risk Insurance Facility offer one solution here, linking insurance payouts to trigger events rather than a detailed assessment of damages.[310] Recognizing that residual risk will remain, there is a need **to expand uptake of and access to insurance mechanisms. Member States should continue investment in insurance premium subsidies expanding access for the groups that are most at risk** and exploring options for regulatory changes to enforce risk-pooling through mandatory disaster insurance.

As noted by submissions from:

Voluntary National Reports on the MTR SF	Other submissions and reports
Argentina, Armenia, Australia, Belgium, Bosnia and Herzegovina, Cambodia, Canada, Ethiopia, Guinea, Mexico, Montenegro, Morocco, the Philippines, Republic of Korea, Sudan, Thailand, Tunisia, Türkiye, Viet Nam	International Recovery Platform, the Partnership for Environment and Disaster Risk, International Coalition for Sustainable Infrastructure Engineering Community, Parliamentarians, Local authorities and urban practitioners network, Thematic study on de-risking investment

309 R. Clements and others, Gender Inclusive Disaster Risk Financing. Practical Action Consulting for the START Network (2021). Available at https://startnetwork.org/resource/gender-inclusive-disaster-risk-financing; and UN Women, *Gender Analysis in Non-Traditional Sectors: Climate and Disaster Risk Finance and Insurance* (New York, 2022b). Available at https://www.unwomen.org/en/digital-library/publications/2022/06/gender-analysis-in-non-traditional-sectors.

310 Furthermore, organizations such as InsuResilience Global Partnership, launched at COP 23, aim to help close these insurance gaps by expanding financial protection instruments for governments, communities, businesses and households to lower the impact of disasters.

13. Priority 4: Enhancing disaster preparedness for effective response and to "build back better" in recovery, rehabilitation and reconstruction

13.1. Increase the coverage of early warning systems

Enhanced implementation of people-centred MHEWS on a more comprehensive scale is a key recommendation that has been consistently emphasized by Member States and is in line with the Secretary-General's goal of achieving "Early Warning for All" by 2027.[311] In particular, Member States identify a need to further **mobilize resources, technology and capacity to implement and extend the reach of inclusive MHEWS**, developing guiding strategies and governance arrangements across all four phases of MHEWS implementation: risk knowledge, monitoring and forecasting, dissemination of warning and communication, and preparedness and response capability on the ground. Investments in technological prerequisites such as weather stations, river gauges and seal level monitoring stations will be the basis of this strengthened capacity in the years to 2030. The leveraging of partnerships with media organizations, financial entities, educational institutions and enhancing robust risk information are another key priority in expanding the scale of MHEWS.

Furthermore, Member States are clear that MHEWS should be impact-oriented and community-based.[312] Towards 2030, **closer work with communities and across national boundaries is required to develop MHEWS that are integrated with both LTIK and regional data on disaster risks**, integrating and investing in perspectives of women-led organizations, persons with disabilities and LTIK holders. This recommendation encompasses a focus on both the "last mile" and the "first mile" of MHEWS communication. Firstly, there is a clear emphasis on ensuring technological innovations, accessible communication strategies and increased financial investment are harnessed to ensure that early warning messages reach all communities quickly in a manner that allows them to be acted upon. Secondly, it has been acknowledged that integrating and investing in the perspectives of women-led organizations, persons with disabilities and LTIK-holders is crucial to designing effective community-based MHEWS. Such integration is recognized as vital across all phases of MHEWS implementation, both significantly expanding the risk knowledge base of the service and increasing the number of beneficiaries.

Finally, **Member States should develop governance arrangements and methodologies that enable the integration of vulnerability data and the needs of specific higher-risk groups into MHEWS**, including information on human health, ecosystem health, gender and disability; data-sharing; and the coherent use of existing data at the national level. Such governance arrangements also need to include women, persons with disabilities and other groups at higher risk as key stakeholders and in decision-making roles. Linking MHEWS to social protection can support countries in addressing vulnerability to natural hazard and climate change impacts. This should be accompanied by the creation of a consistent and effective methodological approach to the integration of such diverse data sets. International DRR stakeholders can play a leadership role here, sharing data directly and encouraging coherent use of existing data at the national level. Some Member States note that engaging with the differential vulnerabilities revealed by the integration of

311 See, for example, the Voluntary National Reports of Algeria, Austria, Bhutan, Bosnia and Herzegovina, Burundi, Ethiopia, Kyrgyzstan, Mauritius, Morocco, Philippines, Slovenia, Sudan, Sweden, Republic of Tanzania, Thailand, Togo, Türkiye, and Viet Nam.
312 See, for example, the Voluntary National Reports of Canada, Philippines, Trinidad and Tobago, and Viet Nam.

such data sets into MHEWS could inform the iterative design of more effective systems going forward.[313] This emphasis is particularly notable in the context of the systemic nature of risk, which underscores how multiple, non-linear processes of vulnerability generation and amplification are central to risk creation and propagation, and thus subsequent shocks when those risks are realized. Furthermore, linking MHEWS to social protection will support the country's capacity to address vulnerability to impacts of natural hazards and climate change more broadly. The integration of vulnerability data into early warning systems will complement the implementation and integration of MHEWS as Member States seek to implement the Sendai Framework.

As noted by submissions from:

Voluntary National Reports on the MTR SF	Other submissions and reports
Algeria, Austria, Bangladesh, Bhutan, Bosnia and Herzegovina, Burundi, Canada, Côte d'Ivoire, Cuba, Democratic People's Republic of Korea, Ecuador, Ethiopia, Germany, Kyrgyzstan, Lao People's Democratic Republic, Madagascar, Mauritius, Mexico, Morocco, Philippines, Republic of Korea, Slovenia, Sudan, Sweden, the United Republic of Tanzania, Thailand, Togo, Trinidad and Tobago, Türkiye, Viet Nam, Yemen	FAO, IOM, UNECE, UNESCO, WHO, WMO, ARISE, Thematic study on de-risking investment

13.2. Invest in resilient infrastructure and systems

The resilience of infrastructure systems has been recognized as a key area of action to support the implementation of the Sendai Framework. As such, **Member States and stakeholders must place the Principles for Resilient Infrastructure[314] at the heart of developing infrastructure systems, both in upgrading existing systems and integrating risk assessments and data into future projects**. This requires assessing the resilience, exposure and performance of existing critical infrastructure (for example, through stress-testing), accompanied by governments integrating resilience as a core value in infrastructure planning and implementation (for example, building on the Principles for Resilient Infrastructure). The implementation of these measures would contribute to the enhancement of the resilience of critical infrastructure systems in Member States by 2030.

Given this focus, the **development of public investment mechanisms and incentive structures that facilitate investment in resilient infrastructure will be important** in the coming years. The need for investment in public infrastructure is substantial: the Asian Development Bank estimates that US$ 3.1 billion annually is needed to address infrastructure needs in the Pacific region alone. An important step to stimulate investment from both the public and private sector is to develop a methodology to quantify the multisectoral benefits of investment in resilient infrastructure, drawing from the expertise and insights of diverse stakeholders.

313 Republic of Korea, Ministry of the Interior and Safety, *Mid-term Review for the Implementation of the Sendai Framework: 2022 Voluntary National Report of the Republic of Korea*.

314 Available at https://www.undrr.org/publication/principles-resilient-infrastructure#:~:text=The%20Principles%20for%20Resilient%20Infrastructure,health%2C%20education%2C%20etc.%20to.

Alongside this work on specifying benefits is de-risking: working with private institutions to acquire insurance for public infrastructure, introducing risk assessments that include financial flow assessment in project design and prioritizing infrastructure investment in low-risk locations. The implications of such de-risking include more affordable insurance premiums for vulnerable populations and increased financial resilience during and after disasters. A culmination of specifying benefits and reducing risks in the provision of infrastructure is the creation of public-private partnerships for infrastructure resilience. These considerations clearly highlight the importance of mobilizing investment in infrastructure to develop resilient systems in the coming years.

As noted by submissions from:

Voluntary National Reports on the MTR SF	Other submissions and reports
Australia, Bangladesh, Bhutan, Bosnia and Herzegovina, Canada, Cuba, Democratic People's Republic of Korea, Lao People's Democratic Republic, Madagascar, Mexico, Morocco, New Zealand, Norway, Philippines, Slovenia, Tunisia, Viet Nam	IOM, United Nations Conference on Trade and Development, UNDP, WHO, STC MG, ARISE, Partnership for Environment and Disaster Risk Reduction, the Thematic studies on planetary boundaries, and on food system risks

13.3. Enable more inclusive recovery

There is widespread recognition that BBB principles have not been applied systematically since 2015. Member States have repeatedly outlined in the MTR SF that financing and investment in DRR remain primarily responsive rather than anticipatory to disasters. The response to the COVID-19 pandemic is emblematic of this problem: despite the significant opportunity to embed resilience principles into recovery, most of the activity was aimed at recovering the ex ante status quo. Looking forward, it is necessary to reinvigorate discussions around the topic and understand the reasons for this lack of uptake. Important considerations for this analysis include the continued focus of disaster recovery plans on response and recovery that is not risk-informed, the lack of inclusion of BBB principles in donor funding and limitations in inclusive, *all-of-society* recovery processes.

To address these shortcomings and BBB in the years to 2030, **disaster recovery plans at national and local levels must systematically include BBB principles and be accompanied by legal frameworks that require and guide the application of the principles** of equity and inclusion of women, persons with disabilities and most-at-risk populations. These frameworks should be operationalized by practical guidelines on resilient recovery, developed by diverse stakeholders at the national level that are informed by **analysis of limitations in operationalizing BBB principles to date**.

Moreover, coordinated and capacitated recovery policies will be an important area of risk management in the years to 2030, characterized by predictable financial resources and the integration of DRR principles into post-disaster housing support. The following path forward has been proposed by Member States and other contributors to the MTR SF. Firstly, coordinated and well-resourced recovery institutions must play a larger role in the area of risk management, characterized by financial resources that remain consistent beyond any specific disaster event. Secondly, BBB principles must be systematically included in disaster recovery plans at both the national and the local level. An important step towards this goal is that recovery investments and post-disaster housing and shelter support must be guided by multidimensional, multi-hazard resilience assessments and include, where appropriate, information from post-disaster needs assessments. Finally, there is a need for legal frameworks that require and guide the application of the principles of equity and the inclusion of women, persons with disabilities and most-at-risk populations. These frameworks should be operationalized by practical guidelines on resilient recovery that are developed by diverse stakeholders at the national level.

Towards 2030, Member States must ensure that **DRM and recovery is deployed to bridge the divide between humanitarian, development andpeace (HDP) activities**.

By embedding DRR within humanitarian activities, interventions push beyond the time frame of immediate emergency response to build long-term resilience. Funding mechanisms for DRR in humanitarian settings should be reviewed and resource mobilization guidance developed for different contexts. The MTR SF reveals that Member States frequently position considerations of conflict, violence and instability as indistinguishable from other types of risk as they consider how to achieve resilience, both as catalysts of vulnerability and as hazards in themselves.[315] This work must include the task of demonstrating the value of DRR expertise for comprehensive risk management to stakeholders in the HDP nexus, using vulnerability as a concept to support understanding. As such awareness grows, there will be opportunities to start aligning the governance systems in the HDP nexus, pursuing complementarity and avoiding replication. There is also a recognition that placing DRR activities at the intersection of multiple domains of development practice could lead to mobilization of further resources in the medium term. From an operational perspective, this implies a need to conduct a review of the available funding mechanisms for DRR in humanitarian settings and create guidance for fund mobilization in different regional contexts.

As noted by submissions from:

Voluntary National Reports on the MTR SF	Other submissions and reports
Armenia, Australia, Cuba, Ethiopia, Guatemala, Guinea, Lao People's Democratic Republic, Türkiye, the United States of America, Viet Nam, Yemen	International Coalition for Sustainable Infrastructure Engineering Community, the Regional report for Africa: West Africa and Sahel, Thematic study on DRR and sustainable food system

315 See, for example, the Voluntary National Reports of Armenia, Australia, Ethiopia, and Türkiye.

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14. Conclusion

The Sendai Framework drives the shift from managing disasters to managing disaster risks in all decisions, investments and behaviours, and while considerable progress has been made in implementation since 2015, there is increasing recognition that as the Earth system moves from a relatively stable to a relatively unstable state – with impacts spreading at a pace, magnitude and intensity that can lead to "potentially existential consequences and system collapse"[316] – the MTR SF and other stocktaking exercises in 2022 and 2023 present the opportunity to ask some difficult questions of ourselves and examine challenging corrections to the current course.

COVID-19 has shown the world what climate change has yet to, that prevailing risk governance and risk management architecture, mechanisms and approaches are inadequate when dealing with systemic, interconnected drivers of risks and cascading impacts that can spread within and across human and natural systems. With threats multiplying, and human security and planetary boundaries at risk, this demands renewed drive for collective action, and a multilateral system equipped for the new risk landscape.

Governments and stakeholders are better able to understand the risks to which they are accustomed and with which they are confronted; and with this understanding, they are better placed to bring the transformations required to prevent, reduce or manage those risks. However, the socioeconomic and ecological impact of unattended risks that have manifested as disasters, have often compromised efforts, and significantly offset progress. While evident, progress remains unequal across geographical scales and income levels.

As populations continue to grow, and the consequences of climate breakdown manifest in socioecological and technological systems, societies are tasked with ever-increasing challenges. The interconnections and interdependencies that exist between water, energy, food, health, trade and financial systems are both displaying vulnerabilities and generating risks that when left unaddressed can manifest as shocks characterized by multi-scalar contagion, with impacts that can cascade and compound through time and space, with ramifications for current and future generations.

Natural resources such as water, soil and energy are becoming scarcer, lands and marine ecosystems are being rapidly degraded, biodiversity is declining, and income and gender inequities are intensifying, with gaps more acute in the world's most vulnerable countries and regions. Eight years after the adoption of the "2015 agreements", we are not where we need to be, not least as we slowly come to terms with the existential threat of climate change.

And yet, where there is knowledge, courage and solidarity in the face of shared threats, there is opportunity. As disaster risk is a social construct – a function of incomplete and unsustainable development processes – transdisciplinary, prospective and corrective risk reduction provides the means to reduce vulnerabilities, exposure and inequality. In seeking to define risk-informed, sustainable and regenerative pathways forward, the MTR SF – together with other stocktaking and review exercises – is broaching some of the most challenging issues of our time. The year 2023 presents a critical inflection point, a unique opportunity for States and non-State stakeholders to course-correct, to achieve the expected outcome and goal of the Sendai Framework, and encourage risk-informed decision-making, investment and behaviour to 2030 and beyond.

Such course corrections are deeply challenging – whether in respect of the transformations to **global to local risk governance**, accountability and responsibility; or **how risk is treated in the global financial system**; or the **reconfiguring of metrics of growth to be compatible with planetary boundaries and human well-being**, as opposed to wealth concentration and risk accumulation; or shifting the temporal frame – **from short-term to long-term thinking in decision-making**. They *are* however, fundamental to achieving the outcomes and goals of any of the agendas, frameworks, agreements and conventions struck in 2015, or prior.

316 Jana Sillmann and others, *ISC-UNDRR-RISKKAN Briefing note on systemic risk. Review and Opportunities for Research, Policy and Practice from the Perspective of Climate, Environmental and Disaster Risk Science and Management* (Paris, ISC, 2022).

15. Bibliography

African Union Commission (2016). *Programme of Action for the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030 in Africa*. Addis Ababa. Available at https://www.unisdr.org/files/49455_poaforsendaiimplementationinafrica.pdf.

Akiwumi, Paul (2022). Climate finance for SIDS is shockingly low: why this needs to change. *United Nations Conference on Trade and Development*, 24 May. Available at https://unctad.org/news/climate-finance-sids-shockingly-low-why-needs-change.

Argentina (2022). *Revisión de mitad de período de la implementación del Marco de Sendai para la Reducción del Riesgo de Desastres 2015-2030 de la República Argentina: Período 2015-2022*. Available at https://sendaiframework-mtr.undrr.org/publication/argentina-voluntary-national-report-mtr-sf.

Armenia (2022). *Mid-term Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030*. Available at https://sendaiframework-mtr.undrr.org/publication/armenia-voluntary-national-report-mtr-sf.

Australia, National Emergency Management Agency (2022). *Australia's National Midterm Review of the Sendai Framework for Disaster Risk Reduction 2015-2030 Report – Are we Succeeding at Making Australian Communities Safer in the Face of Growing Disaster Risk?* Available at https://sendaiframework-mtr.undrr.org/media/84384/download.

Austria (2022). *Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030* . Vienna. p. 31. Available at https://sendaiframework-mtr.undrr.org/publication/austria-voluntary-national-report-mtr-sf.

Bell, Jessica A. and Jennifer B. Nuzzo (2021). *Global Health Security Index: Advancing Collective Action and Accountability Amid Global Crisis*. Available at https://www.ghsindex.org/wp-content/uploads/2021/12/2021_GHSindexFullReport_Final.pdf.

Bhutan (2022). *Midterm Global Review: The implementation of Sendai Framework for disaster risk reduction in Bhutan 2015-2030*. Available at https://sendaiframework-mtr.undrr.org/publication/bhutan-voluntary-national-report-mtr-sf.

Bosnia and Herzegovina (2022). *The Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030*. Available at https://sendaiframework-mtr.undrr.org/publication/bosnia-and-herzegovina-voluntary-national-report-mtr-sf.

Burundi (2022). *Rapport de l'examen a mi-parcours de la mise en œuvre du cadre de Sendai 20152030 pour la reduction des risques de catastrophe au Burundi. Bujumbura*. Available at https://sendaiframework-mtr.undrr.org/publication/burundi-voluntary-national-report-mtr-sf.

Cambodia (2022). *The Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030. National Voluntary Report – Cambodia*. Available at https://sendaiframework-mtr.undrr.org/publication/cambodia-voluntary-national-report-mtr-sf.

Canada, Public Safety Canada (2022). *Canada's Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030*. Ottawa. Available at https://sendaiframework-mtr.undrr.org/publication/canada-voluntary-national-report-mtr-sf.

Clapp, Alexander (2021). The fires in Greece are a terrifying warning. *Asharq Al-Awsat*, 30 August. Available at https ://english.aawsat.com/home/article/3160216/alexander-clapp/fires-greece-are-terrifying-warning.

Clements, R. and others (2021). *Gender Inclusive Disaster Risk Financing*. Practical Action Consulting for the START Network. Available at https://startnetwork.org/resource/gender-inclusive-disaster-risk-financing.

Climate Risk & Early Warning Systems (2022). *Annual Report 2021: Rising to the Challenge in Complex Crises*. Available at https://reliefweb.int/report/world/crews-annual-report-2021-rising-challenge-complex-crises.

Costa Rica (2022). *Costa Rica: Examen de mitad de período de la aplicación del Marco de Sendai para la reducción del riesgo de desastres 2015-2030*. Available at https://sendaiframework-mtr.undrr.org/publication/costa-rica-voluntary-national-report-mtr-sf.

Donback, Natalie (2020). What we can learn from disaster risk reduction efforts in small islands, *Devex*, 12 February. Available at https://www.devex.com/news/what-we-can-learn-from-disaster-risk-reduction-efforts-in-small-islands-96072.

Ecuador, Servicio Nacional de Gestión de Riesgos y Emergencias (2022). *Informe nacional de revisión de mitad de período de la implementación del marco de Sendai para la reducción del riesgo de desastres 2015 – 2030*. Available at https://sendaiframework-mtr.undrr.org/publication/ecuador-voluntary-national-report-mtr-sf.

Ethiopia (2022). *The Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030: Ethiopian Voluntary National Report*. Available at https://sendaiframework-mtr.undrr.org/publication/ethiopia-voluntary-national-report-mtr-sf.

European Environment Agency (2018). *Perspectives on Transitions to Sustainability*. Luxembourg: Publications Office of the European Union. Available at https://www.eea.europa.eu/publications/perspectives-on-transitions-to-sustainability/file.

Federal Emergency Management Agency (2016). *Damage Assessment Operations Manual: A Guide to Assessing Damage and Impact*. Available at https://www.fema.gov/sites/default/files/2020-07/Damage_Assessment_Manual_April62016.pdf.

Gambia (2022). *Republic of The Gambia: Report on the Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030*. Available at https://sendaiframework-mtr.undrr.org/publication/gambia-voluntary-national-report-mtr-sf.

Green Climate Fund (2017). *Approved Project Preparation Funding Application: Enhancing Early Warning Systems to Build Greater Resilience to Hydro and Meteorological Hazards in Pacific Small Island Developing States (SIDS)*. Available at https://www.greenclimate.fund/sites/default/files/document/ppf-application-enhancing-early-warning-systems-build-greater-resilience-hydro-and-meteorological.pdf.

Guatemala (2022). *Coordinadora Nacional para la Reducción de Desastres, Revisión de medio término sobre la implementación del marco de Sendai en Guatemala (2015-2022): Informe nacional voluntario*. Available at https://sendaiframework-mtr.undrr.org/publication/guatemala-voluntary-national-report-mtr-sf.

International Cooperative and Mutual Insurance Federation (2020). Swiss Re Institute estimates USD 83 billion global insured catastrophe losses in 2020, the fifth-costliest on record, 17 December. Available at https://www.icmif.org/news_story/swiss-re-institute-estimates-usd-83-billion-global-insured-catastrophe-losses-in-2020-the-fifth-costliest-on-record/.

International Cooperative and Mutual Insurance Federation and United Nations Office for Disaster Risk Reduction (2021). *From Protection to Prevention: The Role of Cooperative and Mutual Insurance in Disaster Risk Reduction*. Geneva.

International Organization for Migration and Internal Displacement Monitoring Centre (2022). *Displacement indicators for* DRR. Grand-Saconnex and Geneva. Available at https://environmentalmigration.iom.int/sites/g/files/tmzbdl1411/files/documents/Displacement%20indicators%20for%20DRR%20State%20of%20the%20art%20report.pdf.

International Recovery Platform (2022). *Review of the Build Back Better Component of Priority Four in support of IRPs contribution to the Sendai Framework Midterm Review*. Geneva. Available at https://sendaiframework-mtr.undrr.org/publication/review-build-back-better-component-priority-4-support-irps-contribution-sendai.

International Science Council, on behalf of the United Nations Scientific and Technological Community Major Group (2023). *Report for the Mid-term Review of the Sendai Framework for Disaster Risk Reduction*. Paris. Available at: https://council.science/current/press/mtrsendai/.

Inter-Parliamentary Union and United Nations Office for Disaster Risk Reduction (2021). *Disaster Risk Reduction to Achieve the Sustainable Development Goals: A Toolkit for Parliamentarians*. Geneva.

Japan (2022). *The Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030*. Available at https://sendaiframework-mtr.undrr.org/publication/japan-voluntary-national-report-mtr-sf.

Jeggle, Terry and Marco Boggero (2018). *Post-Disaster Needs Assessment: Lessons from a Decade of Experience*. Washington, D.C.: European Commission, Global Facility for Disaster Reduction and Recovery, United Nations Development Programme, and the World Bank. Available at https://openknowledge.worldbank.org/handle/10986/30945.

Kazakhstan (2022). *Kazakhstan's Voluntary National Report for the Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030 (MTR SF)*. Available at https://sendaiframework-mtr.undrr.org/publication/kazakhstan-voluntary-national-report-mtr-sf.

Kuznets, Simon (1962). How to judge quality. *The New Republic*, 20 October. Available at https://static1.squarespace.com/static/5536fbc7e4b0d3e8a9803aad/t/554d19f6e4b0005c69696961/1431116278720/Kuznets_How+to+judge+Quality_1962.pdf. Accessed on 31 January 2023.

Lavell, Allan and others (2020). *The Social Construction of the COVID-19 Pandemic: Disaster, Risk Accumulation and Public Policy*. LA RED & Risk Nexus Initiative. Available at https://www.desenredando.org/.

Levin, S. and others (2013). Social-ecological systems as complex adaptive systems: modelling and policy implications. *Environment and Development Economics*, vol. 18, No. 2, pp. 111–132.

Liberia (2022). *The Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030: Liberia MTR SF Report* Available at https://sendaiframework-mtr.undrr.org/publication/liberia-voluntary-national-report-mtr-sf.

Mahler, Daniel Gerszon and others (2021). Updated estimates of the impact of COVID-19 on global poverty: Turning the corner on the pandemic in 2021?, *World Bank Blogs*, 24 June. Available at https://blogs.worldbank.org/opendata/updated-estimates-impact-covid-19-global-poverty-turning-corner-pandemic-2021.

Malawi (2022). *The Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030*. Available at https://sendaiframework-mtr.undrr.org/publication/malawi-voluntary-national-report-mtr-sf.

Maskrey, Andrew, Garima Jain and Allan Lavell (2022). *The Social Construction of Systemic Risk: Towards an Actionable Framework for Risk Governance*. Geneva: United Nations Office for Disaster Risk Reduction.

Merrin-Davies, Maddison (2018). Implementation of the Sendai Framework for Disaster Risk Reduction in Australia. *Australian Journal of Emergency Management*, vol. 33, No. 3. Available at https://search.informit.org/doi/pdf/10.3316/ielapa.792303961410982.

Mexico (2022). *Marco de Sendai para la Reducción del Riesgo de Desastres 2015-2030: Informe Voluntario de Medio Término*. Available at https://sendaiframework-mtr.undrr.org/publication/mexico-voluntary-national-report-mtr-sf.

Montenegro, Ministry of Interior Rescue and Protection Directorate (2022), *The Midterm Review on the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030: Voluntary Review and Report of Montenegro*. Available at https://sendaiframework-mtr.undrr.org/publication/montenegro-voluntary-national-report-mtr-sf.

Morocco, Ministère de l'Intérieur and Direction de la Gestion des Risques Naturels (2022). *Rapport National pour l'évaluation à mi-parcours du Cadre d'Action de Sendai sur la Réduction des Risques de Catastrophes 2023*. Available at https://sendaiframework-mtr.undrr.org/publication/morocco-voluntary-national-report-mtr-sf.

New Zealand (2022). *Aotearoa New Zealand's National Midterm Review of the Sendai Framework for Disaster Risk Reduction 2015-2030 Report*. Available at https://sendaiframework-mtr.undrr.org/publication/new-zealand-voluntary-national-report-mtr-sf.

Norway (2022). *Sendai Midterm Review 2022 - Norway*. Oslo. Available at https://sendaiframework-mtr.undrr.org/publication/norway-voluntary-national-report-mtr-sf.

Organisation for Economic Co-operation and Development (2018). *Making Development Co-Operation Work for Small Island Developing States*. OECD Publishing: Paris. Available at https://www.oecd.org/dac/making-development-co-operation-work-for-small-island-developing-states-9789264287648-en.htm.

_____ (2020). Aid activities. OECD DAC Creditor Reporting System Aid Activity Database (CRS). Available at https://www.oecd-ilibrary.org/development/data/creditor-reporting-system_dev-cred-data-en. Accessed on 25 September 2022.

_____ (2021a). *COVID-19 Pandemic: Towards a Blue Recovery in Small Island Developing States*. Available at https://www.oecd.org/coronavirus/policy-responses/covid-19-pandemic-towards-a-blue-recovery-in-small-island-developing-states-241271b7/.

_____ (2021b). *The Impact of the COVID-19 Crisis on External Debt in Small Island Developing States*. Available at https://www.oecd.org/dac/financing-sustainable-development/External-debt-in-small-island-developing-states(SIDS).pdf.

Peters, K. (2022). *Evidence of positive progress on Disaster Risk Reduction in the Humanitarian-Development-Peace nexus*. Geneva: United Nations Office for Disaster Risk Reduction.

Philippines, Office of Civil Defense, National Disaster Risk Reduction and Management Council (2022). *The Philippines' Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015–2030 with a Short-term Review of the National Disaster Risk Reduction and Management Plan (2020–2030).* Available at https://sendaiframework-mtr.undrr.org/publication/philippines-voluntary-national-report-mtr-sf.

Picard, Mary (2021). *Beyond Vulnerability to Gender Equality and Women's Empowerment and Leadership in Disaster Risk Reduction: Critical Actions for the United Nations System. A United Nations Joint Study on the Status of Gender Equality and Women's Leadership in DRR*. Geneva: UN Women, UNFPA, and UNDRR.

Poland (2022). *National Voluntary Review of the Republic of Poland: Produced as part of the Midterm Review of the Sendai Framework*. Warsaw: Government Centre for Security. Available at https://sendaiframework-mtr.undrr.org/publication/poland-voluntary-national-report-mtr-sf.

Quak, Evert-jan (2019). *How Losing Access to Concessional Finance Affects Small Island Developing States*. K4D Helpdesk Report No. 626. Brighton, United Kingdom: Institute of Development Studies. Available at https://assets.publishing.service.gov.uk/media/5d41b473ed915d09de9d1af4/626_SIDS_graduation_impacts_losing_concessional_finance.pdf.

Republic of Korea, Ministry of the Interior and Safety (2022), *Mid-term Review for the Implementation of the Sendai Framework: 2022 Voluntary National Report of the Republic of Korea*. Available at https://sendaiframework-mtr.undrr.org/publication/republic-korea-voluntary-national-report-mtr-sf.

Russian Federation, Ministry of Emergency Situations and others (2022). *Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030*. Available at https://sendaiframework-mtr.undrr.org/publication/russian-federation-voluntary-national-report-mtr-sf.

Scott, Zoë (2022). *Finance for Early Action: Tracking Commitments, Trends, Challenges & Opportunities*. Risk-Informed Early Action Partnership. Available at https://www.early-action-reap.org/finance-early-action-tracking-commitments-trends-challenges-and-opportunities.

Seychelles, Disaster Risk Management Division (2022). *Sendai Framework for Disaster Risk Reduction, Mid Term Review – Seychelles: Sendai Framework for Disaster Risk Reduction. Mid Term Review Report*. Available at https://sendaiframework-mtr.undrr.org/publication/seychelles-voluntary-national-report-mtr-sf.

Sillmann, Jana and others (2022). *ISC-UNDRR-RISKKAN Briefing note on systemic risk. Review and Opportunities for Research, Policy and Practice from the Perspective of Climate, Environmental and Disaster Risk Science and Management*. Paris: International Science Council.

Simpson, Noelle, Ramona Pérez, and Mary Goldberg (2021). Semi-structured interviews on disaster and emergency preparedness for people with disabilities in two states in Mexico. *Natural Hazards* vol. 106, No. 1, pp. 1037–1064.

Slovenia (2022). N*ational Voluntary Report of the Republic of Slovenia: Produced as part of the Midterm Review of the Sendai Framework* 2022. Available at https://sendaiframework-mtr.undrr.org/publication/slovenia-voluntary-national-report-mtr-sf.

Stauffer, M. and others (2022). *Existential Risk and Rapid Technological Change: A thematic study for the Midterm Review of the Sendai Framework*. Geneva: United Nations Office for Disaster Risk Reduction. Available at https://sendaiframework-mtr.undrr.org/publication/thematic-study-existential-risk-and-rapid-technological-change-advancing-risk-informed.

Sustainable Insurance Facility (2021). The V20-led Sustainable Insurance Facility. Available at https://v20sif.org/. Accessed on 9 February 2023.

Sweden, Swedish Civil Contingencies Agency (2022). *Sendai Framework Midterm Review: Country Report, Sweden*. Stockholm. Available at https://sendaiframework-mtr.undrr.org/publication/sweden-voluntary-national-report-mtr-sf.

Switzerland (2022). *Switzerland's Voluntary National Report to the Mid-Term Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015 – 2030*. Bern: Federal Department of Foreign Affairs. Available at https ://sendaiframework-mtr.undrr.org/publication/switzerland-voluntary-national-report-mtr-sf.

Tajikistan (2022). *Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction in the Republic of Tajikistan*. Available at https://sendaiframework-mtr.undrr.org/publication/tajikistan-voluntary-national-report-mtr-sf.

Thailand, Department of Disaster Prevention and Mitigation and Ministry of Interior (2022). *National Voluntary Report of Thailand*. Bangkok. Available at https://sendaiframework-mtr.undrr.org/publication/thailand-voluntary-national-report-mtr-sf.

Thow, Andrew and others (2022). *INFORM Climate Change Quantifying the Impacts of Climate and Socio-Economic Trends on the Risk of Future Humanitarian Crises and Disasters*. Luxembourg: Publications Office of the European Union.

Trinidad and Tobago (2022). *The Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030: Voluntary National Report – Trinidad and Tobago*. Available at https://sendaiframework-mtr.undrr.org/publication/trinidad-and-tobago-voluntary-national-report-mtr-sf.

Tunisia, Ministry of Environment (2022). *Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030: National Voluntary Report of Tunisia*. Available at https://sendaiframework-mtr.undrr.org/publication/tunisia-voluntary-national-report-mtr-sf.

Türkiye, Disaster and Emergency Management Presidency (2022). *Midterm Review of the Sendai Framework: National Report of Türkiye*. Available at https://sendaiframework-mtr.undrr.org/publication/turkiye-voluntary-national-report-mtr-sf.

United Nations (2015). *Sendai Framework for Disaster Risk Reduction 2015-2030*. Geneva. para. 19(c).

_____ (2019). *Global Sustainable Development Report 2019: The Future is Now: Science for Achieving Sustainable Development*. New York.

_____ (2020). *Executive Summary: United Nations Common Guidance on Helping Build Resilient Societies*. New York.

_____ (2021a). *United Nations Secretary-General's Report: Our Common Agenda*. New York.

_____ (2021b). 193 countries adopt first-ever global agreement on the Ethics of Artificial Intelligence. *UN News*, 25 November. Available at https://news.un.org/en/story/2021/11/1106612.

_____ (2022). Secretary-General's remarks to the Security Council Open Debate on Multilateralism, New York, 14 December. Available at https://www.un.org/sg/en/content/sg/statement/2022-12-14/secretary-generals-remarks-the-security-council-open-debate-multilateralism-bilingual-delivered-scroll-down-for-all-english-and-all-french. Accessed on 31 January 2023.

United Nations Conference on Trade and Development (2022). *Development and Globalization: Facts and Figures 2021*. Geneva. Available at https://unctad.org/system/files/official-document/dgff2021_en.pdf.

United Nations Department of Economic and Social Affairs (2021). *Revised Draft Development of a Monitoring Framework for the Samoa Pathway*. Available at https://sdgs.un.org/sites/default/files/2021-08/Draft_%20Statistics_Report.pdf.

United Nations Development Programme (2022a). New automatic weather station to enhance Palau's climate monitoring capacities, 3 June. Available at https://www.undp.org/pacific/press-releases/new-automatic-weather-station-enhance-palaus-climate-monitoring-capacities.

_____ (2022b). *The 2021/2022 Human Development Report*. New York.

_____ (2022c). *New Threats to Human Security in the Anthropocene*. New York.

United Nations Economic and Social Commission for Asia and the Pacific (2017). *Innovations in Disaster Rapid Assessment: A Framework for Early Recovery in ASEAN Countries*. Bangkok. Available at https://www.unescap.org/publications/innovations-disaster-rapid-assessment-framework-early-recovery-asean-countries.

_____ (2020). *The Disaster Riskscape Across North and Central Asia: Key Takeaways for Stakeholders*. ST/ESCAP/2881. Bangkok.

_____ (2021). *Resilience in a Riskier World: Managing Systemic Risks from Biological and other Natural Hazards*. Bangkok.

United Nations Economic and Social Council and United Nations Office for Disaster Risk Reduction (2022). *SIDS: Gaps, Challenges and Constraints in Means of Implementing the Sendai Framework for Disaster Risk Reduction in Small Island Developing States*. Available at https://www.undrr.org/publication/small-island-developing-states-sids-gaps-challenges-and-constraints-means-implementing.

United Nations Educational, Scientific and Cultural Organization (2019). School Safety Assessment: VISUS Methodology. Available at https://en.unesco.org/disaster-risk-reduction/education-school-safety/visus. Accessed on 15 November 2022.

United Nations Office for the Coordination of Humanitarian Affairs Regional Office for Latin America and the Caribbean (2020). *Natural Disasters in Latin America and the Caribbean, 2000-2019*. Ancón, Panama. Available at https://reliefweb.int/report/world/natural-disasters-latin-america-and-caribbean-2000-2019.

United Nations Office for Disaster Risk Reduction (2018a). *Words into Action Guidelines: Implementation Guide for Addressing Water-related Disasters and Transboundary Cooperation*. Geneva. Available at https://www.undrr.org/publication/words-action-guidelines-implementation-guide-addressing-water-related-disasters-and.

_____ (2018b). *Words into Action Guidelines: Implementation Guide for Man-made and Technological Hazards*. Available at https://www.undrr.org/publication/words-action-guideline-man-made/technological-hazards.

_____ (2019). Systemic risks, the Sendai Framework and the 2030 Agenda. In *Global Assessment Report on Disaster Risk Reduction 2019*, pp. 35–73. Available at https://gar.undrr.org/.

_____ (2020a). *Status Report on Target E Implementation*. Geneva. Available at https://www.undrr.org/publication/status-report-target-e-implementation-2020.

_____ (2020b). *Disaster Risk Reduction Investment in Africa – Evidence from 16 Risk-sensitive Budget Reviews*. Available at https://www.undrr.org/publication/disaster-risk-reduction-investment-africa-evidence-16-risk-sensitive-budget-reviews.

_____ (2020c). *Disaster Risk Reduction and Climate Change Adaptation: Pathways for Policy Coherence in Sub-Saharan Africa*. Geneva. Available at https://www.undrr.org/media/47688/download.

_____ (2021a). *International Cooperation in Disaster Risk Reduction: Target F*. Geneva. Available at https://www.undrr.org/publication/international-cooperation-disaster-risk-reduction-target-f.

_____ (2021b). *Policy Brief: Financing Prevention and De-risking Investment*. Available at https://www.undrr.org/publication/policy-brief-accelerating-financing-and-de-risking-investment.

_____ (2021c). *2020 Progress Report on the Implementation of the UN Plan of Action on DRR for Resilience*. Geneva.

_____ (2021d). *Scaling up Disaster Risk Reduction in Humanitarian Action 2.0: Recommendations for the Humanitarian Programme Cycle*. Geneva. Available at https://www.undrr.org/publication/scaling-disaster-risk-reduction-humanitarian-action.

_____ (2021e). R*egional Assessment Report on Disaster Risk in Latin America and the Caribbean (RAR 2021): Challenges in Disaster Risk Reduction and Progress towards the Sendai Framework Targets*. Ciudad del Saber, Panama. Available at https://www.undrr.org/publication/undrr-roamc-regional-assessment-report-disaster-risk-latin-america-and-caribbean-rar.

_____ (2021f). *Asia Pacific Action Plan 2021-2024 for Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030*. Available at https://www.undrr.org/publication/asia-pacific-action-plan-2021-2024-implementation-sendai-framework-disaster-risk.

_____ (2021g). *Regional Action Plan for the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030 in the Americas and the Caribbean*. Available at https://www.undrr.org/publication/regional-action-plan-implementation-sendai-framework-disaster-risk-reduction-2015-0.

_____ (2021h). *European Forum for Disaster Risk Reduction: Roadmap 2021-2030*. Brussels. Available at https://www.undrr.org/publication/european-forum-disaster-risk-reduction-roadmap-2021-2030.

_____ (2021i). Declaration of the seventh high-level meeting on disaster risk reduction. Kenya, 19 November. Available at *https://www.undrr.org/publication/declaration-seventh-high-level-meeting-disaster-risk-reduction*.

_____ (2022a). *Global Assessment Report on Disaster Risk Reduction 2022: Our World at Risk – Transforming Governance for a Resilient Future*. Geneva. Available at https://www.undrr.org/gar2022-our-world-risk.

_____ (2022b). *Multi-Hazard Early Warning System Custom Indicators & Methodologies for Computation*. Available at https://www.undrr.org/publication/multi-hazard-early-warning-system-custom-indicators-methodologies-computation.

_____ (2022c). *UNDRR Inputs to the Paris Agreement's First Global Stocktake*. Geneva. Available at https://unfccc.int/documents/462141.

_____ (2022d). *From Risk to Resilience: Towards Sustainable Development for all in a COVID-19 Transformed World. Proceedings of the 7th Session of the Global Platform for Disaster Risk Reduction, Bali, Indonesia, 23-28 May 2022*, p. 12. Available at https://globalplatform.undrr.org/sites/default/files/inline-files/Global%20Platform%202022%20Proceedings_DIGITAL_1.pdf.

_____ (2022e). *Co-Chairs' Summary: Bali Agenda for Resilience: From Risk to Resilience: Towards Sustainable Development for all in a COVID-19 Transformed World*. Available at https://globalplatform.undrr.org/publication/co-chairs-summary-bali-agenda-resilience-risk-resilience-towards-sustainable.

_____ (2022f). *Caribbean Sub-regional Report*. Paper prepared for the Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030. Available at https://sendaiframework-mtr.undrr.org/publication/subregional-report-midterm-review-implementation-sendai-framework-disaster-risk.

_____ (2022g). *Regional Synthesis Report – Europe and Central Asia*. Paper prepared for the Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030. Available at https://sendaiframework-mtr.undrr.org/publication/regional-report-midterm-review-implementation-sendai-framework-disaster-risk-4.

_____ (2022h). *Africa Regional Summary*. Paper prepared for the Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015–2030. Available at https://sendaiframework-mtr.undrr.org/2023/mtr-sf-submissions-and-reports.

_____ (2022i). *The Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030 in the Arab States*. Available at https://www.preventionweb.net/media/85834/download.

_____ (2022j). *Report of the High-level event on New Technologies in Disaster Risk Reduction*, 12 September 2022. Available at https://www.undrr.org/event/high-level-event-new-technologies-disaster-risk-reduction.

_____ (2022k). Report for Consultations: Stakeholder Perspectives – Midterm Review of the Sendai Framework. Geneva.

_____ (2023). *Report on Target E 2023*. Available at https://www.undrr.org/target-e-report.

United Nations Office for Disaster Risk Reduction, United Nations Population Fund, and UN Women (2022). *Midterm Review of the Sendai Framework for Disaster Risk Reduction 2015-2030: Gender Guidance*. Available at https://sendaiframework-mtr.undrr.org/media/78735/download.

United Nations Office for Disaster Risk Reduction and World Meteorological Organization. (2022). *Global Status of Multi-Hazard Early Warning Systems: Target G.* Geneva. Available at https://www.undrr.org/publication/global-status-multi-hazard-early-warning-systems-target-g.

United Republic of Tanzania (2022). *The United Republic of Tanzania – Sendai Framework 2015-2030: Mid Term Review. Tanzania Country Report*. Available at https://sendaiframework-mtr.undrr.org/publication/united-republic-tanzania-voluntary-national-report-mtr-sf.

United States of America (2022). *The Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030: National Consultations, Review and Reporting*. Available at https://sendaiframework-mtr.undrr.org/publication/united-states-america-voluntary-national-report-mtr-sf.

UN Women (2022a). *Report for the Midterm Review of the Sendai Framework for Disaster Risk Reduction (2015-2030)*. Geneva.

_____ (2022b). *Gender Analysis in Non-Traditional Sectors: Climate and Disaster Risk Finance and Insurance*. New York, NY. Available at https://www.unwomen.org/en/digital-library/publications/2022/06/gender-analysis-in-non-traditional-sectors.

Viet Nam (2022). *Mid-Term Review of the Sendai Framework for Disaster Risk Reduction*. Ha Noi. Available at https://sendaiframework-mtr.undrr.org/publication/viet-nam-voluntary-national-report-mtr-sf.

Wassénius, Emmy, and Crona, Beatrice I. (2022). Adapting risk assessments for a complex future. *One Earth*, vol. 5, No. 1, pp. 35–43.

World Bank (2016). *Country Risk Profiles for Floods and Earthquakes, Europe and Central Asia*. Washington, D.C. Available at https://www.worldbank.org/en/region/eca/publication/europe-and-central-asia-country-risk-profiles-for-floods-and-earthquakes.

_____ (2022). World Bank Group launches global shield financing facility to help developing countries adapt to climate change, 14 November. Available at https://www.worldbank.org/en/news/press-release/2022/11/14/world-bank-group-launches-global-shield-financing-facility-to-help-developing-countries-adapt-to-climate-change.

World Bank and others (2022). Joint Communique on Reconstructing for a Sustainable Future- World Reconstruction Conference 5. Bali, 23-24 May. Available at https://recovery.preventionweb.net/sites/default/files/inline-files/JOINT%20COMMUNIQUE%20ON%20RECONSTRUCTING%20FOR%20A%20SUSTAINABLE%20FUTURE_2.pdf.

World Health Organization (2020). *Glossary of Health Emergency and Disaster Risk Management Terminology*. Geneva. Available at https://www.who.int/publications/i/item/9789240003699.

Zimbabwe (2022). *Progress Report on Sendai Framework Mid Term Review*. Available at https://sendaiframework-mtr.undrr.org/publication/zimbabwe-voluntary-national-report-mtr-sf.

i. Annex I

Forty-nine Voluntary National Reports on the MTR SF had been received by 30 November 2022 from: Algeria, Argentina, Australia, Austria, Belgium, Bosnia and Herzegovina, Burundi, Cambodia, Canada, Costa Rica, Cuba, Democratic People's Republic of Korea, Ecuador, Egypt, Ethiopia, Gambia, Georgia, Guatemala, Guinea, Japan, Kazakhstan, Kyrgyzstan, Liberia, Malawi, Mauritius, Mexico, Montenegro, Morocco, New Zealand, Norway, Philippines, Poland, Republic of Korea, Russian Federation, Seychelles, Slovenia, Sudan, Sweden, Switzerland, Tajikistan, Togo, Trinidad and Tobago, Tunisia, Türkiye, United Arab Emirates, United States of America, United Republic of Tanzania, Yemen and Zimbabwe.

ii. Annex II

Twenty-three Member States submitted Voluntary National Reports on the MTR SF after 30 November 2022, or indicated their intent to submit prior to the HLM: Armenia, Bangladesh, Barbados, Brunei Darussalam, Bhutan, Comoros, Côte d'Ivoire, Fiji, Gabon, Germany, Kiribati, Kuwait, Lao People's Democratic Republic, Madagascar, Mongolia, Mozambique, Palestine, Qatar, Samoa, Somalia, Thailand, Tuvalu, Vanuatu and Viet Nam.

iii. Annex III

The MTR SF engaged and benefited from contributions of non-State stakeholders in addition to Member States. Twenty-eight United Nations entities and 25 major groups, organizations associated with stakeholder engagement mechanisms or observers to the United Nations General Assembly, conducted constituent-specific, or multi-stakeholder and multi-scalar consultations and review.

Six organizational contributions submitted from United Nations entities: IOM, UNCTAD, UNDP, UNESCO, UN Women, the United Nations Entity for Gender Equality and the Empowerment of Women, and WHO.

Inputs from United Nations entities through the United Nations Plan of Action reporting survey, SLG meeting, contribution to thematic studies or one-on-one interviews: DESA, ESCAP, FAO, International Fund for Agricultural Development, ILO, IOM, International Telecommunication Union, Joint United Nations Programme on HIV and AIDS, United Nations Convention on Biological Diversity, UNCTAD, UNDP, United Nations Economic Commission for Africa, UNECE, United Nations Economic Commission for Latin America and the Caribbean, United Nations Environment Programme, UNESCO, UNFCCC, UNFPA, Office of the United Nations High Commissioner for Refugees, United Nations Children's Fund, UNIDO, United Nations Office of the High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing States, United Nations Office for Outer Space Affairs-Platform for Space-based Information for Disaster Management and Emergency Response, United Nations University, UN Women, WFP, WHO and WMO.

Entities and constituencies associated with SEM.

Additional UNDRR mechanisms, including: Making Cities Resilient 2030 (MCR2030), the UNDRR Science and Technology Advisory Group (STAG), and the Private Sector Alliance for Disaster Resilient Societies (ARISE) as a representative of the Business and Industry Major Group.

Other formal submissions:

Major groups: Children and Youth, Farmers, Science and Technology

Other constituencies: Local and Grassroots Communities, Migrant and Displaced Persons, Persons with Disabilities

Other international United Nations General Assembly observer and non-governmental organizations: International Federation of the Red Cross and Red Crescent and the Inter Parliamentary Union.

Inputs also provided by the stakeholder engagement mechanisms associated with other United Nations frameworks: the General Assembly of Partners (associated with the Habitat 3 process), the Civil Society Action Committee (associated with the GCM process), the UNFCCC stakeholders (associated with the UNFCCC COP), the Civil Society Financing for Development (FfD) Group (associated with the FfD process), and the Major Groups and other Stakeholders High-Level Political Forum Coordination Mechanism.

iv. Annex IV

Global thematic studies:

1. Thematic study on risk-informed financing and investing (Author: Niall O'Shea)
2. Evidence of positive progress on Disaster Risk Reduction in the Humanitarian-Development-Peace nexus (Author: Katie Peters)
3. Thematic study: Diverse knowledge systems (Author: Gusti Ayu Fransiska Dewi)
4. Thematic Study: Planetary Boundaries (Author: Johannah Bernstein; David Feuerbach; Steven Haig; Jordan Barker; Šarūnė Steikūnaitė)
5. Holistic health approaches to addressing health and biorisk (Authors: The WHO Centre for Health Development and Jonathan Abrahams)
6. Global food system - Understanding risk, transforming towards resilience (Author: Franziska Gaupp)
7. Existential risk and rapid technological change - Advancing risk informed development (Author: Maxime Stauffer, Simon Institute for Longterm Governance, Switzerland (lead author); Kevin Kohler, ETH Zurich, Switzerland; Shrestha Rath, Effective Ventures, United Kingdom; Angela Aristizabal, Riesgos Catastróficos Globales, Colombia; Claudette Salinas Leyva, Instituto Tecnológico Autónomo de México, Mexico; Sumaya Nur Hussein, Strathmore University, Kenya; Hamza Tariq Chaudhry, Harvard University, United States; Yung-Hsuan Wu, Geneva Graduate Institute, Switzerland; Arne Gebert, Simon Institute for Longterm Governance, Switzerland; Jacob Arbeid, Simon Institute for Longterm Governance, Switzerland; Konrad Seifert, Simon Institute for Longterm Governance, Switzerland)
8. Health Emergency and Disaster Risk Management Cross-cutting: Planetary Health (Virginia Murray, Jonathan Abrahams)
9. A Literature Review on DRR Governance (Author: Leah Kimber)

Regional thematic studies:

1. Regional Consultations Sub-Saharan Africa-Thematic study on Multi-Hazard Early Warning Systems (Author: UNDRR Regional Office for Africa)
2. LAC Women's Network: Contributions and Recommendations for the Midterm Review of the Implementation of the Sendai Framework for DRR 2015-2030 (Author: UNDRR Regional Office for the Americas and the Caribbean)
3. Caribbean safe school initiative (CSSI) thematic case view (Author: UNDRR Regional Office for the Americas and the Caribbean)
4. Caribbean multi-hazard early warning systems (MHEWS) thematic case view (Author: UNDRR Regional Office for the Americas and the Caribbean)
5. Reporte de mediano plazo del estado de avance en la implementación de la Estrategia Andina para la Gestión del Riesgo de Desastres y su Plan de Implementación 2015-2030 (Author: UNDRR Regional Office for the Americas and the Caribbean)
6. Regional Survey Sendai Framework Midterm Review Children and Youth Consultation in Asia Pacific (Author: UNDRR Regional Office for Asia and the Pacific)
7. Persons with disabilities in situations of risk: A scoping study on Article 11 of the Convention on the Rights of Persons with Disabilities (Author: UNDRR Regional Office for Asia and the Pacific)
8. Gender Equality and Social Inclusion: Sendai Framework Midterm Review in the Pacific – Draft Synthesis Report (Authors: Anna Gero, Dr Tazrina Chowdhury, Dr Keren Winterford)
9. Thematic Review of Climate and Disaster-Resilient Infrastructure in the Pacific (Author: Jack Whelan)
10. Local, indigenous and traditional knowledge for disaster risk reduction in the Pacific (Authors: Prerna Chand and Sarah Hemstock)

11. Regional Thematic Report on Innovative Governance in Europe and Central Asia- Sendai Framework Midterm Review Process (Author: Stanley Allan)

12. Regional Thematic Report on Sub-Regional Networks- Sendai Framework Midterm Review Process (Authors: Vlatko Jovanovski, Vineta Polatside, Abdurahim Muhidov)

i. Annex V

Twenty-seven interviewees: Mr. Ahmed Amdihun (Regional Programme Coordinator, Disaster Risk Management (Intergovernmental Authority on Development, Climate Prediction and Applications Centre), Dr. Allan Lavell (Researcher and practitioner in DRR. Social Studies Network on Disaster Prevention in Latin America and Latin American Faculty of Social Sciences), Dr. Andrew Haines (Epidemiologist and academic. Former Director of the London School of Hygiene & Tropical Medicine from 2001 to 2010), Mr. Cédric Bourillet (Director General of the Directorate General for Risk Prevention, Ministry for the Ecological and Inclusive Transition, France), Mr. Daniel Cetoupe (Principal Disaster Management Officer and Senior Disaster Management Office, Seychelles), Mr. Dzhergalbek Ukashev (Director at Center for Emergency Situations and Disaster Risk Reduction), Ms. Emilia Saiz (Secretary-General, United Cities and Local Governments), Ms. Franziska Hirsch (Secretary to the Convention on the Transboundary Effects of Industrial Accidents of the United Nations Economic Commission for Europe), Ms. Fruzsina Straus (Senior Programme Management Officer, Africa Regional Focal Point, UN-Habitat), Ms. Gertrude Rose Gamwera Aijuka (Secretary General, East African Local Governments Association), Mr. Gordon Rattray (International cooperation Officer, European Disability Forum), Mr. Jeremy Collymore (DRM and Resilience Advisor, Honorary Research Fellow, Institute for Sustainable Development, University of the West Indies; DRM thought leader (former Executive Director, Caribbean Disaster Emergency Management Agency), Mr. Joshua Polacheck (Crisis management and communications consultant at SpyEX. Former US State Department diplomat), Dr. Konstantinos Pappas (Assistant Director for Research of the Texas A&M Energy Institute, overseeing the administration of the Institute's projects and initiatives), Dr. Kozo Nagami (Group Director for Disaster Risk Reduction Group and Deputy Director General, Global Environment Department, Japan International Cooperation Agency), Mr. Lengangi Sikaona (Assistant Director Disaster Management and Mitigation Unit, Vice President Office, Zambia), Ms. Lisa Robinson (Head of Advisory and Senior Advisor on Resilience and Humanitarian Response, British Broadcasting Corporation Media Action), Prof. Maureen Fordham (Professor of Gender and Resilience, Northumbria University. Professorial Research Associate, Institute for Risk & Disaster Reduction, University College London), Mr. Nicholas Bishop and Mr. Soumyadeep Banerjee (Disaster Risk Reduction Leads) at IOM), Mr. Paul Saunders (Operations Officer, Environmental Sustainability, Caribbean Development Bank), Ms. Sandra Delali Kemeh (Chairperson of the Africa Youth Advisory Board on Disaster Risk Reduction), Ms. Sandy Schilen (Executive Director, Huairou Commission:Women, Homes and Communities), Mr. Sergio Lacambra (Inter-American Development Bank, Lead - disaster risk management cluster of the Environment, Rural Development and Disaster Risk Management Division), Ms. Sezin Sinanoglu (United Nations Resident Coordinator in Tajikistan), Mr. Takeo Murakami (Director, the Cabinet Office, the Government of Japan), Mr. Vincente Anzellini (Manager, Monitoring and Reporting Hub, Internal Displacement Monitoring Centre) and Dr. Yuichi Ono (Professor, International Research Institute of Disaster Science, Tohoku University; Founder, World Bosai Forum Foundation).