UNDRR
UN Office for Disaster Risk Reduction

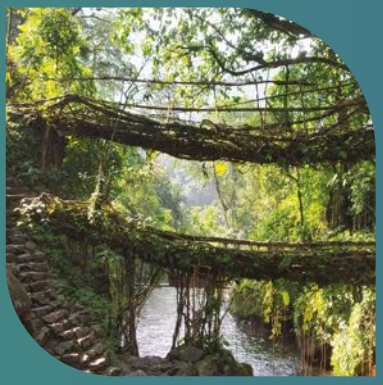
REAP Risk-informed Early Action Partnership

Charting a Path towards Resilient Futures

Global Synthesis Report on Comprehensive Risk Management





The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country or territory or of its authorities or concerning the delimitations of its frontiers or boundaries. The designations of country groups in the text and the tables are intended solely for statistical or analytical convenience and do not necessarily express a judgment about the stage reached by a particular country or area in the development process. Mention of the names of firms and commercial products does not imply the endorsement of the United Nations.

Note: The designations employed and the presentation of maps in this report do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area or of its authorities or concerning the delimitation of its frontiers or boundaries.

Some rights reserved. This work is made available under the Creative Commons Attribution-Non-Commercial 3.0 IGO licence (CC BY-NC IGO); https://creativecommons.org/licenses/by-nc/3.0/igo/legalcode

Under the terms of this licence, this work may be copied, redistributed and adapted for non-commercial purposes, provided that the work is appropriately cited. In any use of this work, there should be no suggestion that UNDRR nor REAP endorses any specific organization, products or services.

The use of the UNDRR and REAP logo is not permitted. If a translation of this work is created, it must include the following disclaimer along with the required citation below: "This translation was not created by the United Nations Office for Disaster Risk Reduction (UNDRR). UNDRR is not responsible for the content or accuracy of this translation. The original English edition shall be the authoritative edition."

Users wishing to reuse material from this work that is attributed to a third party, such as tables, figures or images, are responsible for determining whether permission is needed for that reuse and for obtaining permission from the copyright holder. The risk of claims resulting from infringement of any third-party-owned component in the work rests solely with the user—sales, rights and licensing.

UNDRR information products are available for non-commercial use. Requests for commercial use, rights and licensing should be submitted via: https://www.undrr.org/contact-us

This publication may be freely quoted, but acknowledgement of the source is requested.

Citation: UNDRR and REAP (2025). Charting a Path towards Resilient Futures. Global Synthesis Report on Comprehensive Risk Management

The report is available electronically at: https://www.undrr.org/publication/documents-and-publications/charting-path-towards-resilient-futures-global-synthesis

UNDRR would like to acknowledge its major core donors for their support: Sweden, Norway, Japan, Switzerland and Finland, as well as other core contributors, including the Republic of Korea, Luxembourg, China, the Philippines, Israel and France. This report was further supported by the Federal Ministry for Economic Cooperation and Development (BMZ) of Germany. The views expressed in this publication do not necessarily reflect the views of the donors.

© 2025 UNITED NATIONS OFFICE FOR DISASTER RISK REDUCTION and RISK-INFORMED EARLY ACTION PARTNERSHIP, hosted by the International Federation of Red Cross and Red Crescent Societies (IFRC)

For additional information, please contact: United Nations Office for Disaster Risk Reduction (UNDRR), Bis Avenue de la Paix, CH1211 Geneva 2, Switzerland, Tel: +41 22 917 89 07

Table of Contents

Executive Summary I

Acknowledgements V

Acronyms VI

1. Introduction and rationale for coherent approaches 1

2. Overview of coherence in policy and practice – from global to local levels 7

2.1 Coherence across global frameworks 7

Connecting threads 10

2.2 Regional governance frameworks and levels of integration and coherence 11

2.3 Policy coherence at the national and sub-national levels 16

3. Charting paths for implementation: Analysis of coherence at the national level 27

3.1 Aspects of coherence 28

3.2 Level of gaps in activities in DRR strategies and NAPs 33

3.3 Key areas of joint implementation 34

3.4 Enabling financing for disaster risk reduction and climate action through comprehensive risk management 73

4. Conclusion and recommendations 79

References 84

Annex I: List of analysed country documents 94

Annex II: AI analysis methodology 98

Annex III: AI analysis – synonyms dictionary and prompt architecture 102

Executive Summary

Climate and disaster risks are diverse, interrelated, and increasingly cascading and compounding. Record-breaking land and sea surface temperatures and breaches in critical climate thresholds are observed almost annually, as indicated in the State of the Climate report, 2024.[1] With these upward trends, the risk landscape and impact on societies are rapidly evolving. Official estimates of the cost of disasters are between $180 billion and $200 billion, more than double the estimates in the previous decades. However, as per the 2025 Global Assessment Report, if the cascading and ecosystem impacts are included, this estimate increases exponentially to $2.3 trillion (or 2 per cent of global gross domestic product).

Building resilience holistically is essential to addressing or avoiding an increase in risk and the adverse impact of hazardous events, and a core aspect of a comprehensive risk management (CRM) [2] approach. The CRM approach promotes and facilitates effective coordination and coherence to reduce, and simultaneously avoid, institutional silos and risk-blind planning for effective climate action and disaster risk reduction (DRR). It also ensures the integration of biodiversity and ecosystem services as necessary for achieving sustainable development.

The CRM approach underscores risk as the common denominator to plan and act across timescales. It is rooted in global multilateral agreements, chief among which are the Sendai Framework for Disaster Risk Reduction, the Paris Agreement, the Global Biodiversity Framework (GBF) and the 2030 Agenda for Sustainable Development. When effective and successful, this approach transforms institutional, policy and financial systems to enhance resilience across all levels of governance and address disaster and climate risks in a holistic manner.

This report Charting a Path towards Resilient Futures serves as a snapshot of the status of and progress in CRM approaches from global to local levels as a key means to promote and strengthen risk-informed sustainable development, transitioning from reactive crisis management to proactive risk management. Good practices and lessons are outlined, highlighting selected joint implementation areas (JIAs), thus offering a basis for future efforts in this area.

Universally adopted and agreed **global multilateral agreements**, including those referenced above, were designed to achieve resilience-centric specific outcomes and highlight the need for holistic action.

1 Produced by the World Meteorological Organization (WMO)

2 Comprehensive disaster and climate risk management (CRM) approach. Further info: https://undrr.org/crm

The impetus for resilience; the need to translate global policy agendas into nationally and locally relevant actions that reflect the specific needs, priorities, cultures and capacities of local people and institutions; and the importance of collecting and sharing information, good practices and lessons learned have been identified as key elements in global agendas that serve as a basis for developing comprehensive and coherent policies and actions at the national and local levels.

Regional institutions and frameworks have historically played, and continue to play, a pivotal role in climate action and DRR, and are thus key partners in and mechanisms for translating a CRM approach into national and subnational policies and processes. These collective efforts have the leverage to influence national actions and promote more sustainable and coordinated responses to climate, biodiversity and disaster challenges.

At the **national and subnational levels**, synergies and coherence are expressed in varying degrees through national adaptation plans (NAPs) and DRR strategies, among others. The report assesses their level of integration through a coherence framework, which examines convergence points across various dimensions, including conceptual, operational, institutional, monitoring and evaluation (M&E), and financial.

Conceptually and strategically, many countries acknowledge the impacts of climate and disaster risks on socioeconomic development, recognizing the importance of reducing risks and vulnerabilities through DRR and climate action. However, in many contexts, the synergies between DRR and climate action are not fully explored or exploited. They are often treated as separate actions, rather than interconnected, interdependent processes. Consequently, DRR and climate action-related institutions often operate in silos, and with limited or ad hoc cross-sectoral collaboration, resulting in inconsistent engagement and coordination between stakeholders.

Nonetheless, a growing number of countries are dismantling silos and intentionally fostering coherence across plans, policies and institutional coordination mechanisms. This is demonstrated through specific implementation areas, such as multi-hazard early warning systems and nature-based solutions (NbS).

Financial coherence is not often explicit in most of the national policies and strategies examined. The instances where coherence was strongest were characterized by dedicated funding mechanisms for both climate action and DRR. Additionally, monitoring and evaluation frameworks are varied, with insufficient emphasis on comprehensive systems to track progress and measure impact.

At the local level, key barriers include limited human and technical capacity, as well as finite financial resources, to manage the substantial responsibilities assigned to local actors. There are, however, an increasing number of successes that offer examples of good practices.

A key feature of this report is an in-depth analysis of NAPs and DRR strategies, aimed at exploring gaps and opportunities for improved coherence. This included artificial intelligence (AI)-informed analysis to identify the level of coherence as well as selected JIAs, which represent actions for resilience building across both planning instruments: risk assessment, early warning systems, preparedness, health and resilient healthcare, water resources management, resilient agriculture, resilient infrastructure, NbS, urban resilience, addressing displacement and building community resilience. The analyses highlight the high levels of complementarity between the two sets of planning instruments across countries, however, often with limited levels of synergies in financing and implementation. Examples of tools and mechanisms, as well as case studies, are used to present practical implementation options for the consideration of national and local stakeholders.

The report proposes some key recommendations for translating conceptual understanding and appreciation of coherence into practical action:

1 **Strengthen governance for increased coherence and long-term resilience** – Among other things, this will involve engagement at the highest level of governance that champions synergistic climate action and DRR, and intentional alignment of plans and strategies.

2 **Improve coordination at different levels and among all relevant stakeholders** – Inclusive engagement will require established and enhanced coordination mechanisms, particularly clarifying roles and responsibilities; and identifying/mapping convergence points for targeted and systematic action. Coordination must also build capacity and resilience at the local level and promote leadership of and among vulnerable groups.

3 **Develop a shared understanding of disaster and climate risk to inform policymaking** – A crucial element of a shared understanding of past and ongoing losses and future risk profiles is data and the systems used to collect and analyse it, including comprehensive risk assessments. Together, these support holistic, risk-informed action against climatic and non-climatic hazardous events.

4 **Increase** financing for DRR and climate action, and track expenditure and progress –Finance is a critical resource for implementation, yet remains limited. Aligning financing and tracking it across climate action and DRR is therefore even more valuable and required for resilience, as is unlocking finance for local-level action built on this approach.

5 **Establish robust monitoring and evaluation mechanisms to track progress** – When such mechanisms are designed holistically, it enables countries to more comprehensively identify areas and scale of need, and progress made, as well as report under global agreements, for which transparency and accountability are required.

6 **Translate global and regional coherence for national and subnational implementation** – Global agreements are born from countries collectively agreeing on a course for the future, but must be translated into implementation at the national and subnational levels to be effective. This involves reflecting context-specific action in NAPs and DRR strategies, and associated financing, among others.

As the 2030 Agenda, the Paris Agreement and the Sendai Framework mark a decade of implementation, the growing maturity of the resilience imperative and dividend is evident in an evolving landscape. Mechanisms such as the Santiago Network and the Fund for responding to Loss and Damage mark this progress.



©unsplash / utkarsh_bhiogade

Acknowledgements

UNDRR Team
Animesh Kumar, Lukas Edbauer, Le-Anne Roper, Jair Torres, Stanley Allan, Nazmul Huq, Susan Mlenga, Felix Tsigos and Ali Hassani Selemani

REAP Team
Ben Webster, Aleksandrina Mavrodieva, Gavin White, Simon Loveday and Pauline Trepczyk

UNDRR and REAP recognise the contributions of the following groups and individuals who provided valuable inputs to this report:

Steering group: REAP Target 1 Working Group on Comprehensive Risk Management

Case study contributions from REAP T1 Working Group members:

- Deltares and Institute for Environmental Studies, VU University Amsterdam
- Deutscher Wetterdienst (DWD) and Federal Ministry of Transport (BMV)
- Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH and InsuResilience Solutions Fund on behalf of Federal Ministry for Economic Cooperation and Development (BMZ)
- Platform on Disaster Displacement (PDD)
- United Nations Development Programme (UNDP)

Global case study research and database: Zara Brown, Inaara Jivraj, Dorothy Neher, Gemma Patey, and Prof. Stuart Gordon (Department of International Development, The London School of Economics and Political Science)

Donor acknowledgement
UNDRR would like to acknowledge its major core donors for their support, namely Sweden, Japan, Norway, Switzerland and Finland, as well as other core contributors, including the Republic of Korea, Luxembourg, China, the Philippines and France. This report was further supported by the Federal Ministry for Economic Cooperation and Development (BMZ). The views expressed in this publication do not necessarily reflect the views of the donors.

Acronyms

ARC	African Risk Capacity
BMZ	Federal Ministry for Economic Cooperation and Development of Germany
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
CBF	Caribbean Biodiversity Fund
CCA	Climate Change Adaptation
CCCCC	Caribbean Community Climate Change Centre
CCRIF	Caribbean Catastrophe Risk Insurance Facility
CDRF	Climate and Disaster Risk Financing
CRM	Comprehensive Risk Management
DRF	Disaster Risk Financing
DELTA	Resilience – Disaster and Hazardous Events Loss and Damage Tracking and Analysis System for Resilience
EbA	Ecosystem-based Adaptation
ECLAC	Economic Commission for Latin America and the Caribbean
Eco-DRR	Ecosystem-based Disaster Risk Reduction
EM-DAT	The Emergency Events Database
EW4All	Early Warnings for All
FAO	Food and Agriculture Organization of the United Nations
FEMA	Federal Emergency Management Agency of the USA
FRDP	Framework for Resilient Development in the Pacific
GBF	Global Biodiversity Framework
GCF	Green Climate Fund
GEF	Global Environment Fund
HIPs	Hazard Information Profiles
INFFs	Integrated National Financing Frameworks
IPCC	Intergovernmental Panel on Climate Change
IWRM	Integrated Water Resources Management
JIA	Joint Implementation Area
MHEWS	Multi-hazard Early Warning Systems
NAP	National Adaptation Plan
NbS	Nature-based Solutions
NDC	Nationally Determined Contribution
M&E	Monitoring and evaluation
PICTs	Pacific Island Countries and Territories
PIFS	Pacific Islands Forum Secretariat
PREP	Pacific Resilience Program
SDG	Sustainable Development Goal
UNDP	United Nations Development Programme
UNDRR	United Nations Office for Disaster Risk Reduction
WMO	World Meteorological Organization

1. Introduction and rationale for coherent approaches

©shutterstock

1. Introduction and rationale for coherent approaches

The impacts of disasters, exacerbated by climate change and biodiversity loss, in countries and communities are continuously increasing, with developing countries losing a significant proportion of their development gains to disasters. This is driven by a multiplicity of factors, including an increase in the frequency and/or intensity of hazardous events alongside capacity constraints and insufficient resources to address the growing risks, losses and damages. These trends reflect the findings of recent global reviews, including the Midterm Review of the Sendai Framework for Disaster Risk Reduction, the Global Stocktake (GST) of the Paris Agreement completed in 2023, as well as monitoring of the Sustainable Development Goals (SDGs).[3]

The climate crisis is worsening, driven by greenhouse gas (GHGs) emissions that continue to trend upward and consequent increases in global warming. The States of the Global Climate reports produced by the World Meteorological Organization (WMO), including the report of 2024,[4] highlights a trend of record-breaking land and sea surface temperatures year after year, along with breaches of other key climate parameters.

The adverse impacts of these changes are evident in societies, nature and economies. As per official reports, between 2001 and 2020, direct disaster losses more than doubled, reaching over US$200 billion annually compared with the previous decades. The 2025 Global Assessment Report (GAR25) notes that this exceeds US$2.3 trillion in a year if cascading and ecosystem impact are considered. Climate-related hazardous events accounted for the majority of this. This underscores the evolving landscape and the complex challenges associated with climate and disaster risk and their potential impacts.[5]

Disasters—whether driven by natural, social or socio-natural hazards or compounded by climate change—have devastating impacts on people's lives, livelihoods, and national and local resources. Climate change is expected to escalate disaster risks by intensifying stresses on natural resources such as water and land. As vulnerability increases, the capacity of stakeholders and communities to absorb, adapt to, anticipate, prevent, and transform risks diminishes, further undermining access to protection, participation and resources.[6]

Therefore, it is critical to view climate action and DRR as mutually reinforcing agendas that require joint action and scaling-up efforts to manage and reduce multiple risks, impacts and cascading effects across interconnected systems (social, governance, economic, ecological and physical), reinforcing and upholding human rights.

In many contexts, risk governance is fragmented, weakened by institutions and sectors operating in silos. Disaster risk is systemic[7] and requires a holistic approach that guarantees the active participation of relevant actors —public, private, civil society, academia and the at-risk communities. This encompasses disaster risk management across short-to long-term horizons across climatic and non-climatic risks, with a sharper focus on reducing vulnerability and exposure —the components that can be intervened by corrective or preventive actions.

3 Sendai Framework Midterm Review (2023) Available at: https://sendaiframework-mtr.undrr.org/; Global Stocktake of the Paris Agreement (2023) Available at: https://unfccc.int/topics/global-stocktake; United Nations (2023) Sustainable Development Goals Report. Available at: https://unstats.un.org/sdgs/report/2023/

4 WMO (2025) State of the Global Climate 2024. Available at: https://wmo.int/publication-series/state-of-global-climate-2024

5 UNDRR (2025) Global Assessment Report GAR25. Available at: https://www.undrr.org/gar/gar2025

6 Resilience capacities in line with the UN Common Guidance on Resilience, which identifies five capacities—prevent, anticipate, absorb, adapt, and transform—applicable across systems. See: UN SDG Sustainable Development Group, UN Common Guidance on Resilience (2021). Available at: https://unsdg.un.org/sites/default/files/2021-09/UN-Resilience-Guidance-Final-Sept.pdf

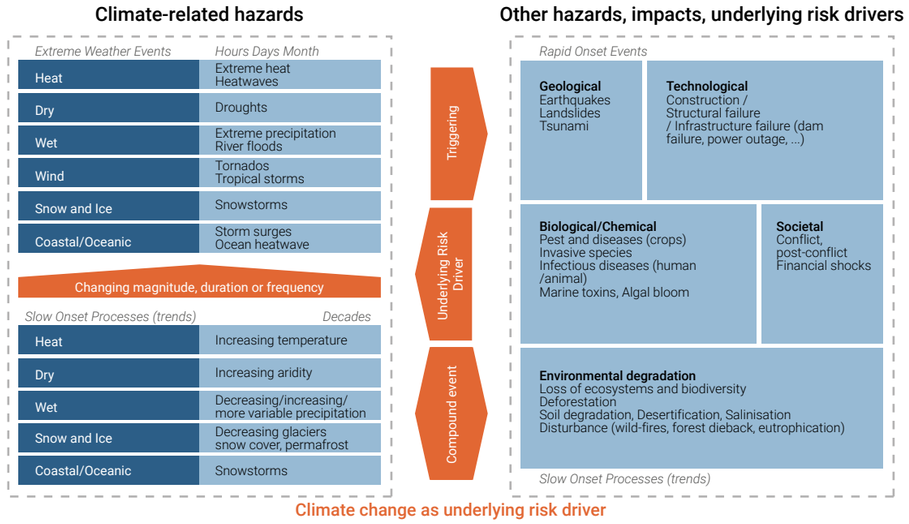
7 UNDRR (2019) Global Assessment Report GAR 2019. Available at: https://gar.undrr.org/report-2019.html

Enabling countries to build resilience holistically will require a transformation in institutional arrangements, policy and planning frameworks, disaster risk management approaches, capacities and financing mechanisms. If successful, countries can achieve their unique development goals despite increasing threats. This is the overall objective of a comprehensive risk management (CRM) approach, which provides a strategic framework that is founded on the understanding that risk is a common denominator for holistic, long-term resilience. Furthermore, it necessitates effective coordination between actions to address the multiple risks and negative impacts of climate change, biodiversity loss, and other hazards for advancing sustainable development.

To accelerate resilience-building efforts, governance mechanisms must be restructured to systematically integrate and implement disaster risk reduction (DRR) and climate action, while simultaneously shifting from a reactive crisis management to proactive risk management, with a redirected focus on prevention. It is also critical that global to local mechanisms recognise and dismantle silos across DRR, climate action (i.e., climate change adaptation, averting, minimizing and addressing loss and damage), biodiversity conservation, land regeneration and overall sustainable development. Harnessing global momentum for integrated approaches at the national and local levels is therefore crucial to tackle the polycrisis.

To effectively address interconnected and systemic risks, risk-informed planning and governance must be strengthened to accelerate the implementation of efficient, coherent and scalable resilience-building measures. This requires a radical scale-up of climate change adaptation and actions to avert, minimize and address losses and damages, together with a comprehensive approach to risk assessment and management that encompasses the full spectrum of hazards [8] (See Figure 1). Such an approach involves addressing both extreme and slow-onset events through near-, medium-, and long-term blended risk reduction and adaptation actions, all within a shared portfolio of solutions. This should be achieved by fostering active collaboration among government institutions, non-state actors, and other stakeholders—the global climate action agenda.

Figure 1: Hazards and drivers in a CRM approach (UNDRR 2022. Technical Guidance on Comprehensive Risk Assessment and Planning in the Context of Climate Change)



8 Further information on the internationally agreed definition and classification of hazards can be found at: https://www.undrr.org/publication/documents-and-publications/hazard-information-profiles-hips-2025-version

Without proper integration of disaster risk reduction, climate action and sustainable development, and holistic approaches —as promoted by comprehensive risk management—, risk-blind planning in one area can create new risks in another, leading to maladaptation. The trajectory of climate change and associated risks strongly depends on climate mitigation and adaptation, as well as other risk-reducing actions. Therefore, DRR cannot be effective without considering climate change, conversely, climate action and environmental protection cannot succeed without seamless integration with DRR efforts and solutions.

A comprehensive approach considers multiple factors to purposively strengthen synergies by identifying mutually beneficial opportunities across policies and programmes, while also enhancing the capacities of governments for cross-sectoral planning and implementation across and within key systems and related sectors. The CRM approach, therefore, provides a transformative pathway to address the increasing complexity of risks and their colliding and cascading impacts.

CRM is anchored to different degrees in global multilateral frameworks and agreements, particularly the **Sendai Framework for Disaster Risk Reduction, Paris Agreement, and the 2030 Agenda for Sustainable Development** (and the Sustainable Development Goals, SDGs). It is also inherent in the Rio Conventions, the **United Nations Framework Convention on Climate Change (UNFCCC)**, the **Convention on Biological Diversity (UNCBD)**, and the Convention to Combat Desertification (UNCCD). Further details on their implementation at regional, national and sub-national levels are provided in Chapter 2.

CRM is a holistic approach to managing the risks associated with both climatic and non-climatic hazards across varied time scales and levels. It aims to build long-term resilience among countries and communities in vulnerable conditions, considering the full spectrum of extreme and slow-onset events, as well as their resulting impacts. CRM is embedded within various global multilateral treaties related to climate change, biodiversity loss, DRR and sustainable development, among others. It involves fostering active collaboration among government institutions, non-state actors and other stakeholders to enhance and foster coherence and synergies between climate action, efforts to halt and reverse biodiversity loss, and DRR measures. The effectiveness of the CRM approach relies on these elements being adequately integrated into planning, implementation and financing frameworks across and within sectors and systems.

This report provides a broad overview of the current level of coherence at global, regional, national and local levels, presents practices and identifies gaps (Chapter 2). It further identifies key policy enablers for coherent implementation at the national and local levels, structured around Joint Implementation Areas (JIAs), drawing on global case studies to illustrate implementation opportunities and examining how CRM approaches can enhance financing for resilience (Chapter 3). The report concludes with recommendations for actions to support countries and stakeholders in developing and advancing integrated strategies and strengthening overall resilience across key systems (Chapter 4).

The report intends to support governments in following a CRM approach to developing and/or implementing coherent plans and strategies, particularly for synergizing climate action and DRR across and within many sectors and related systems. It supports the objectives of the donor community and financing institutions on maximizing resources by minimizing duplication. Equally, it supports the objectives of practitioners and project implementers in both embedding implementation in coherent policies and practices and paving the way and scaling up resilience-building actions. It can also be used by researchers; climate, DRR, humanitarian, development and finance entities, at the regional, national and subnational levels; and international organisations for optimising implementation through more coherence and integration.



©Unsplash / filippos_sdr

2. Overview of coherence in policy and practice – from global to local levels

2.1 Coherence across global frameworks ____ 15

2.2 Regional governance frameworks and levels of integration and coherence ____ 19

2.3 Policy coherence at the national and sub-national levels ____ 24

©Unsplash / mtenbruggencate

2. Overview of coherence in policy and practice – from global to local levels

2.1 Coherence across global frameworks

While multilateral agreements were designed to achieve specific outcomes, several important common areas and interdependencies have been recognized and embedded from the outset. Over time, these interdependencies, especially on the crucial role of managing multiple risks and impacts, have gained increasing recognition, leading to more coherent and integrated planning at the global and local levels.

The **2030 Agenda for Sustainable Development**, adopted in 2015, provides a comprehensive framework for resilience and vulnerability reduction across nations. It highlights the interlinkages between climate change adaptation (CCA), biodiversity protection, and disaster risk reduction (DRR). These cross-cutting issues permeate multiple goals, demonstrating its commitment to integrated risk management approaches.[9] Several Sustainable Development Goals (SDGs) reflect this approach: Goal 1 focuses on reducing disaster vulnerability, Goal 11 promotes resilient cities, and Goal 13 strengthens adaptive capacity to climate-related hazards. These goals align with global agreements such as the Sendai Framework, Paris Agreement, Convention on Biological Diversity (CBD), and United Nations Convention to Combat Desertification (UNCCD).

The **Sendai Framework for Disaster Risk Reduction** (2015–2030) aims to prevent new and reduce existing disaster risks, recognizing climate change as a major driver. It promotes the use of climate scenarios, multi-level coordination, and stakeholder participation. Climate change is seen as both an intensifier of extreme events (storms, floods, droughts) and a slow-onset process that worsens risks like pests and diseases.

The **Paris Agreement** (2015) seeks to limit warming to 1.5°C above pre-industrial levels while strengthening resilience, adaptive capacity, and aligning financial systems with low-carbon, climate-resilient pathways. Both the Paris Agreement and the Sendai Framework call for coherent, cross-sectoral policies and broad stakeholder engagement, including civil society, academia, and the private sector. More specifically, interlinkages and areas of coherence are outlined in the figure.

The **Kunming-Montreal Global Biodiversity Framework (GBF)**, under the CBD, also links biodiversity with resilience and DRR. Its **Target 8** addresses climate impacts on biodiversity through mitigation, adaptation, and nature-based solutions, while **Target 11** emphasizes restoring nature's contributions to reduce disaster risks.

Similarly, the **UNCCD** focuses on desertification and drought, highlighting synergies with the Paris Agreement, Sendai Framework, and SDGs. Its 2018–2030 Strategic Framework promotes ecosystem restoration, drought mitigation, and global environmental benefits. Healthy soils, for instance, support CCA, DRR, and biodiversity by retaining water, sequestering carbon, and sustaining ecosystems.

Overall, these frameworks reinforce one another, promoting integrated, multi-stakeholder, and cross-sectoral strategies to achieve resilience, sustainability, and risk reduction by 2030.

9 UNDP (2021) Risk-Informed Development. Available at: https://www.undp.org/publications/risk-informed-development-strategy-tool-integrating-disaster-risk-reduction-and-climate-change-adaptation-development

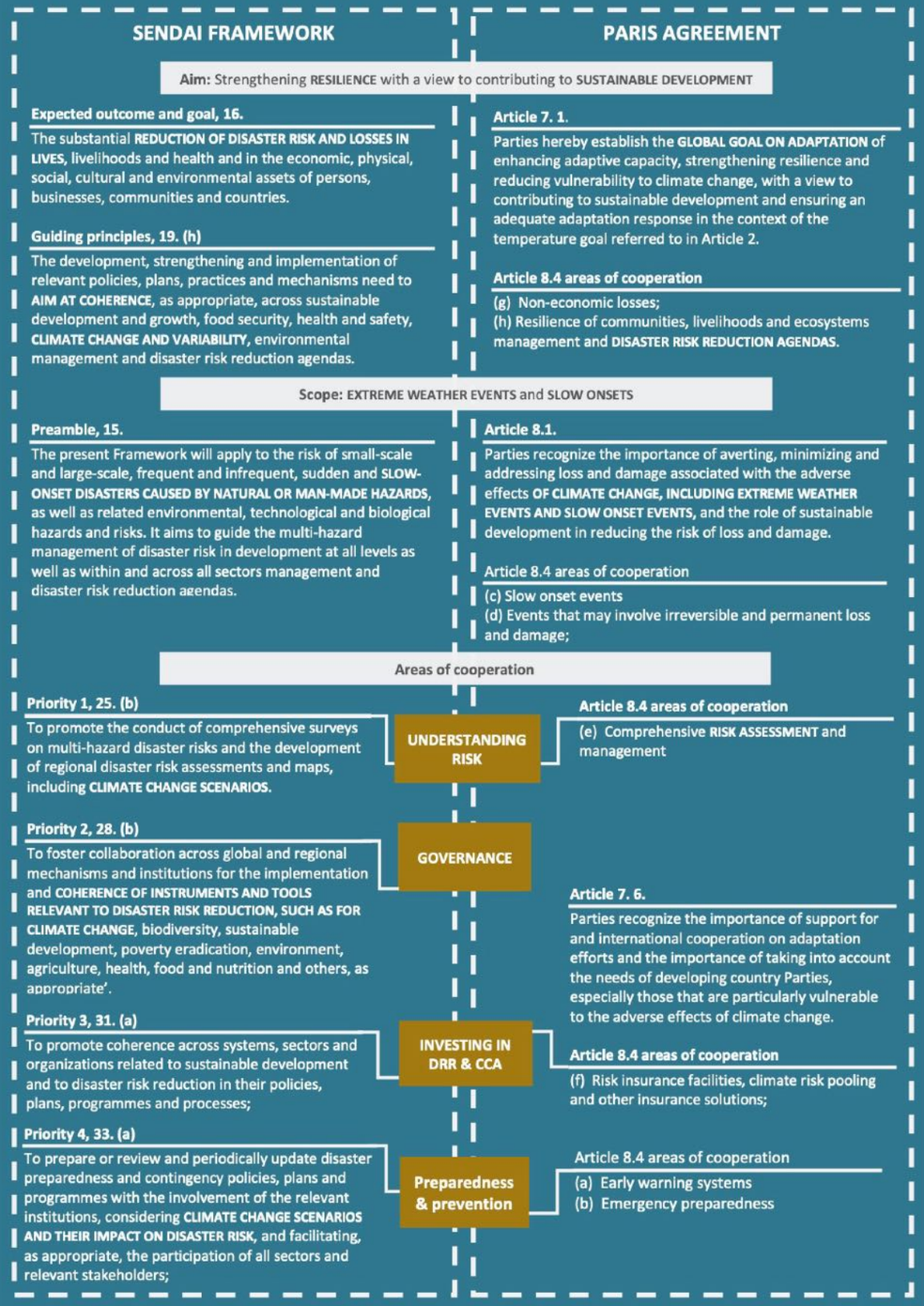


Figure 2: Linkages between the Paris Agreement and the Sendai Framework (UNDRR 2020. DRR and CCA. Path-ways for policy coherence in Sub-Saharan Africa)

The Risk-informed Early Action Partnership (REAP)

Given its focus on integrating DRR and CCA policies, plans and legal frameworks (as a prerequisite for scaling-up early action at national level), the Risk-informed Early Action Partnership (REAP) convened a specific CRM Working Group in 2021, in pursuit of its first target - to have 50 countries integrate crisis and disaster risk management into their climate adaptation laws, policies, and plans by 2025. The working group brought together key actors involved in supporting governments to strengthen their DRR and CCA policies, plans and legal frameworks. Since 2021, the Working Group has facilitated peer-to-peer learning and the sharing of good practices with and between various governments with a view to bridging the silos of DRR and CCA. Those presentations and case studies have informed this report. The group also compiled the various guidance materials available to relevant stakeholders within this compilation of resources: https://www.early-action-reap.org/resources-comprehensive-risk-management

G20 Disaster Risk Reduction - Ministerial Declaration

The G20 Disaster Risk Reduction (DRR) Ministerial Declaration was adopted on October 13, 2025, during a meeting held in South Africa, coinciding with the International Day for Disaster Risk Reduction. The declaration emphasizes the urgent need for comprehensive risk management, acknowledging that disasters are increasingly frequent and severe, which undermines sustainable development. It advocates for coherent approaches that integrate disaster risk reduction (DRR) with climate change adaptation (CCA), recognizing the interconnectedness of these issues. The declaration reiterates the importance of the 2015-2030 Sendai Framework for Disaster Risk Reduction and its synergies with the 2030 Agenda for Sustainable Development and the Paris Agreement. It highlights the necessity of inclusive, people-centred strategies that address inequalities and empower vulnerable communities in risk management efforts. The G20 Ministers committed to fostering multi-sector collaboration, encouraging investments in DRR, and promoting innovative financing mechanisms. Furthermore, the declaration emphasizes the need for effective, accessible Multi-Hazard Early Warning Systems and the adoption of nature-based solutions to bolster resilience. By prioritizing these elements, the declaration aims to strengthen global efforts in reducing disaster risk and enhancing societal resilience against climate-induced challenges.
https://g20.org/g20-media/g20-disaster-risk-reduction-ministerial-declaration/

Connecting threads

Resilience

Resilience[10] has emerged as a key concept in bringing diverse stakeholders together and has contributed to a heightened awareness of the inter-linkages between international, regional and national agendas. The Paris Agreement calls for enhancing adaptive capacity, strengthening resilience, and reducing vulnerability to climate change, with a clear focus on long-term sustainability. It also encourages international cooperation to support resilience-building efforts, particularly in developing countries[7]. The 2030 Agenda, through SDG 13, similarly emphasizes the importance of climate resilience. The Sendai Framework emphasizes investing in disaster risk reduction (Priority 3), building resilient infrastructure (Target D), and integrating resilience into *"policies, plans, programmes and budgets at all levels*[11] (I. Preamble,2.), understood as measures that contribute to comprehensive disaster and climate resilience efforts across short, medium- and long-term horizons, and across and within key systems.

Localization

Translating global agendas into locally relevant actions, policies, and practices that reflect the specific needs, priorities, cultures, and capacities of local people and institutions is critical to enable their implementation. These frameworks —the Sendai Framework, the Paris Agreement, the UNCBD-GBF, UNCCD and the 2030 Agenda—demonstrate substantial alignment in promoting **multi-level governance**, including on multiple risks, which is foundational for achieving CRM[7]. The Sendai Framework emphasizes the importance of local-level action and community engagement, calling for the empowerment of local authorities and communities to reduce disaster risk. Similarly, the Paris Agreement encourages national adaptation plans and local-level action.[12] The SDGs also focus on action at the local level, including in SDG 11 (Sustainable Cities and Communities), which calls for the implementation of DRR measures at all levels, and SDG 13 (Climate Action) targets the implementation of local DRR strategies aligned with national DRR strategies.

Data and Information

The importance of **collecting and sharing information**, good practices, and lessons learned has been highlighted in Article 7 of the Paris Agreement, as well as in the Sendai Framework, under Priority 1 on Understanding Risk. SDG 13's call for strengthening resilience and adaptive capacity to climate-related hazards can be understood as including the need for quality data to better understand risks.

As political agendas and practices evolve towards resilience-oriented approaches, both DRR and CCA actions have increasingly focused on managing both current as well as future risks. This alignment offers opportunities to develop and integrate more coherent language and approaches, which can enhance knowledge sharing, stakeholder cooperation and inclusiveness. It also supports more efficient use of financial and human resources, helps avoid overlaps, and improves planning tools and processes for more effective impact mitigation, preparedness, response and recovery in the face of climate change, biodiversity loss, land degradation and overall disaster risk.[13]

10 The Sendai Framework defines resilience as "the ability of a system, community or society exposed to hazards to resist, absorb, accommodate, adapt to, transform and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions through risk management."

11 UNDRR (2015) Sendai Framework for Disaster Risk Reduction 2015-2030. Available at: https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030

12 UNDRR (2022) Addressing the interplay of the Sendai Framework with Sustainable Development Goals in Latin America and the Caribbean: Moving forward or going backwards? Available at: https://www.undrr.org/publication/addressing-interplay-sendai-framework-sustainable-development-goals-latin-america-and

13 UNDRR (2020) Disaster Risk Reduction and Climate Change Adaptation: Pathways for policy coherence in Sub-Saharan Africa. Available at: https://www.undrr.org/publication/disaster-risk-reduction-and-climate-change-adaptation-pathways-policy-coherence-sub

However, challenges remain. The different origins of these international agreements and their subsequent integration into regional, national and local policies, combined with divergent understandings of conceptual frameworks, language and taxonomies for DRR, CCA and sustainable development, creates mismatches in governance, data and information, interventions, proposed solutions and funding streams.

2.2 Regional governance frameworks and levels of integration and coherence

Regional institutions and frameworks have historically played, and continue to play, a pivotal role in streamlining CRM approaches into national and subnational policies and processes. Several regional intergovernmental mechanisms, institutions, research and academic bodies, and financing mechanisms provide support, coordination, technical guidance and financing opportunities.

2.2.1 Regional institutions

Regional entities have provided crucial momentum to foster regional cooperation and strengthen commitments toward building climate, environmental and disaster resilience. These collective efforts influence national actions and promote more sustainable and coordinated responses to climate, biodiversity and disaster challenges. The Pacific Community (SPC), the Pacific Islands Forum Secretariat (PIFS), and the Secretariat of the Pacific Regional Environment Programme (SPREP) play crucial roles in fostering collaboration, providing technical expertise, and guiding policy implementation.

The African Union (AU), and several constituent regional economic communities have established and support important frameworks and strategies to enable strong DRR-CCA coherence within countries, often explicitly referencing the need for integrated approaches.

The Caribbean Community (CARICOM), comprising 15 member states and 5 associate members, was established to promote economic integration, coordination of foreign policy, advance human and social development, and foster security cooperation among its members. CARICOM plays a pivotal role in supporting integrated CCA and DRR across the Caribbean through policy guidance, institutional coordination, and regional advocacy, including through its institutional arrangements that include the Caribbean Community Climate Change Centre (CCCCC) and Caribbean Disaster Emergency Management Agency (CDEMA). CCCCC provides strategic support on climate change to CARICOM' members, and the CDEMA advances regional disaster risk governance.

The EU has been pursuing integrated approaches, with the Directorate-General for European Civil Protection and Humanitarian Aid Operations (DG-ECHO) and the Directorate-General for Climate Action (DG-CLIMA) increasingly coordinating their activities and policies. In its 2020 Strategic Foresight Report, the European Commission identified resilience as the key guiding principle for EU policies. Furthermore, DG-CLIMA and the European Environment Agency (EEA) led the 2024 European Climate Risk Assessment, which demonstrated how framing issues through resilience can bring stakeholders together and provide a comprehensive assessment of cascading impacts across sectors, including food, health and infrastructure.

These institutions play a vital role in bridging the gap between science and policy, ensuring that climate risks are addressed through informed strategies in an integrated and coherent manner.



©UN / Kiara Worth

Regional policies, strategies, plans and laws serve as unifying instruments for governments to coordinate and collaborate on common concerns. Consider, for example, the ASEAN Agreement on Disaster Management and Emergency Response (AADMER) (2009). It laid the foundation for regional cooperation in disaster risk management, emphasizing policy coherence across sectors and levels of governance. The agreement highlights that CCA and DRR are "inextricably linked". It's updated strategy and work plan from 2025 to 2030 lays out a concrete path with one of its five priority programmes dedicated to strengthening risk governance for DRR and CCA with the outcome of a "cohesive policy framework and institutional structure" and "CCA is effectively integrated into ASEAN's regional and national DRR strategies, with strong institutional support" as concrete output aligned with the CRM approach.[14]

The African Regional Strategy on Disaster Risk Reduction recognizes climate change as a risk driver and identifies the increased collaboration with climate action-related stakeholders as a step forward towards improved participatory risk assessment in Africa.[15] The Programme of Action for the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030 in Africa, which is in line with the Africa Regional Strategy on Disaster Risk Reduction, delineates the need for strengthening coherence and integration between DRR, climate change adaptation and mitigation, and ecosystem management to achieve the goals of the Sendai Framework, the Paris Agreement, Agenda 2030 and other international and regional frameworks and instruments.[16] The Draft African Climate Change Strategy 2020-2030 explicitly makes links with the Sendai Framework and explores the linkages between disasters and vulnerability.[17] Other regional commitments, such as Agenda 2063: The Africa We Want, further emphasize a resilient vision for Africa—advocating for synergistic actions to mitigate and adapt to climate change, including disaster impacts.[18]

The Boe Declaration on Regional Security (2018) and the Framework for Resilient Development in the Pacific 2017-2030 (FRDP) have significantly contributed to the integration of DRR, CCA and sustainable development relating to planning in Pacific Island countries and territories (PICTs). The Boe Declaration identifies climate change as the region's greatest security threat, calling for stronger cooperation and regional support to build resilience against disasters and climate change risks.[19] The FRDP, recognized as the world's first integrated regional framework for climate and disaster resilience, provides strategic guidance for stakeholders to adopt integrated approaches, optimize resource use, and mainstream climate and disaster risks into development planning.[20] The Pacific Resilience Partnership (PRP) serves as the primary platform for advancing FRDP, which aims to integrate DRR, climate action, biodiversity protection, and sustainable development.[21]

14 ASEAN Secretariat (2025). ASEAN Agreement on Disaster Management and Emergency Response (AADMER) Work Programme 2021-2025. Available at: https://asean.org/book/aadmer-work-programme-2026-2030-2/

15 African Union, NEPAD, African Development Bank, African Development Fund, UN, UNISDR (2004) Africa Regional Strategy for Disaster Risk Reduction. Available at: https://www.preventionweb.net/files/4038_africaregionalstrategy1.pdf?startDownload=true

16 African Union (2017) Programme of Action for the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030 in Africa. Available at: https://www.undrr.org/media/45264/download?startDownload=20250918

17 African Union Development Agency (2020) Draft Africa Climate Change Strategy: 2020 – 2030. Available at: https://www.nepad.org/publication/draft-africa-climate-change-strategy-2020-2030

18 African Union (2025) Agenda 2063: The Africa We Want. African Union webpage. Available at: https://au.int/en/agenda2063/overview;

19 Pacific Island Forum (PIF) (2018) Boe Declaration on Regional Security, Nauru, September 2018. Available at: https://pacificsecurity.net/wp-content/uploads/2021/02/Boe-Declaration-on-Regional-Security.pdf

20 Pacific Community (SPC), Secretariat of the Pacific Regional Environment Programme (SPREP), Pacific Islands Forum Secretariat (PIFS), UNDP, UNISDR & University of the South Pacific (USP) (2016) Framework for Resilient Development in the Pacific an Integrated Approach to Address Climate Change and Disaster Risk Management (FRDP) 2017 – 2030. Available at: https://pacificdisability.org/wp-content/uploads/2024/04/FRDP_2016_Resilient_Dev_pacific.pdf

21 UNDRR (2022) Disaster risk reduction (DRR) and climate change adaptation (CCA): Coherence pathways in Asia and the Pacific (not published); The Inter-American Institute for Cooperation on Agriculture (IICA) (2023) NDC Scoping Report for 9 Caribbean Countries: Policy Analysis. Available at: https://repositorio.iica.int/items/fc8617aa-7c90-485c-aac4-2f646dd2f51e

The Comprehensive Disaster Management Strategy 2014–2024 of the Caribbean Disaster Emergency Management Agency (CDEMA) guided countries in the region on DRR and will be a basis for the next Comprehensive Disaster Management (CDM) Strategy beyond 2024, and to extend it until 2030. Explicitly aligned with the Sendai Framework, the Paris Agreement, and the SDGs, this strategy adopts a holistic approach to resilience by addressing multiple hazards relevant to all sectors and phases of the disaster cycle.[22, 23, 24]

In April 2025, the Revised Regional Framework for Achieving Development Resilient to Climate Change (2025–2035) was launched by the Caribbean Community Climate Change Centre (CCCCC) to provide an actionable roadmap aimed at enhancing resilience across all sectors, including but not limited to agriculture, water, infrastructure, energy, and ecosystems. The CARICOM Environment and Natural Resources Policy Framework (CENRPF) 2022-2032 also aligns with the CRM approach, with DRR, as well as resilience to climate change being central to the achievement of its objectives.[25]

Similarly, in the St. George's Declaration of Principles for Environmental Sustainability in the Organisation of Eastern Caribbean States (OECS), member countries emphasize the critical need for a unified, regional approach to sustainable development and resilience. The declaration highlights the importance of integrating risk management into development planning to build resilient communities capable of adapting to climate change and other hazards. The declaration also underscores that climate change and disasters may occur on different timescales and involve different stakeholders and hence, integrating climate adaptation and DRR into development requires a holistic approach to building resilience—through preparedness for extreme events, as well as adapting to the 'new normal' of a changing climate."[26]

The European Forum for Disaster Risk Reduction (EFDRR) Roadmap 2021–2030 provides a strong foundation for regional cooperation and learning, fostering coherence at the strategic level. The roadmap emphasizes that achieving coherent implementation of DRR and CCA is an enabling approach for effective DRR across the region.[27]

The Strategy for Development of Cooperation of Countries of Central Asia in Disaster Risk Reduction 2022–2030, adopted in 2021, ensures the strategic alignment between the countries of the region to include coordinated risk reduction efforts. Climate change is a central element of the strategy, which also emphasizes the implementation of CCA and DRR initiatives (projects) with diverse stakeholders.

2.2.3 Financing mechanisms and institutions

Finance is a central enabler of coherent and synergized action for disaster risk management (DRM) and climate change adaptation (CCA), making it vital for effective implementation. Several regional financial instruments illustrate this. In Africa, the African Risk Capacity (ARC), the Africa Disaster Risk Financing Programme (ADRiFi), and the Africa Climate Risk Insurance Facility for Adaptation (ACRIFA) support DRM and CCA at scale. ADRiFi builds national capacity to manage climaterelated risks, while ACRIFA promotes insurance solutions for vulnerable sectors, notably agriculture.[28] The African Financial Alliance on Climate Change (AFAC) further mobilizes financial institutions to direct capital into climate-resilient

22 UNDRR (2023) Disaster Risk Reduction and Climate Change Adaptation: Pathways for Sustainable Development and Policy Coherence in the Caribbean Region through Comprehensive Risk Management. Available at: https://www.undrr.org/publication/disaster-risk-reduction-and-climate-change-adaptation-pathways-sustainable-development

23 Lewis, C. T. & Su, M.-C. (2021) Climate Change Adaptation and Sectoral Policy Coherence in the Caribbean. Sustainability 13; DOI: 10.3390/su13158518.

24 CDEMA (2014) Regional Comprehensive Disaster Management - Strategy and Results Framework. Caribbean Disaster Emergency Management Agency. Available at: https://www.cdema.org/CDM_Strategy_2014-2024.pdf

25 CARICOM (2022) CARICOM Environment and Natural Resources Policy Framework (CENRPF) 2022-2032. Available at : https://caricom.org/wp-content/uploads/Caricom-Carib-Community-Booklet-natural-resource-policy.pdf

26 Organisation of Eastern Caribbean States (OECS) (2020) St. Georges Declaration. Available at: https://theshift.oecs.org/files/OECS_SGD_2040_St_Georges_Declaration_August_2020.pdf

27 UNDRR (2025) Disaster risk reduction and climate change adaptation: Coherence pathways in Europe and Central Asia. Available at: https://www.undrr.org/publication/disaster-risk-reduction-and-climate-change-adaptation-coherence-pathways-europe-and

28 Chevalier, R. (2017) Africa's common climate response and action plan. South African Institute of International Affairs (SAIIA). Available at: https://saiia.org.za/wp-content/uploads/2022/06/Policy-Briefing-261-chevallier.pdf

investments.[29]The African Development Bank (AfDB) is a key actor advancing coherence by mobilizing resources and supporting resilience programs. Its Africa Adaptation Acceleration Program (AAAP), in partnership with the Global Centre on Adaptation, seeks to mobilize $25 billion by 2025 to scale up adaptation in food security, infrastructure, youth innovation, and finance.

In the Caribbean, the Caribbean Catastrophe Risk Insurance Facility (CCRIF) exemplifies innovative risk pooling and parametric insurance. It provides rapid liquidity to governments after disasters, bridging DRR, CCA, and loss and damage efforts. Coverage extends to hurricanes, earthquakes, excess rainfall, and sector-specific risks like fisheries.[30] The Caribbean Development Bank (CDB) also plays an enabling role by financing climate-smart, risk-informed development across infrastructure, agriculture, and social sectors, while supporting poverty reduction and good governance.[31]

Sustainable financing models are represented by the Caribbean Biodiversity Fund (CBF), a regional trust fund channeling resources into conservation and resilience initiatives. By promoting ecosystem-based adaptation, coastal protection, and biodiversity preservation, the CBF integrates environmental sustainability with climate and disaster resilience, while enhancing national implementation capacities.[32]

Despite these advances, challenges persist: Technical and financial capacities remain uneven, and many regional frameworks are non-binding and lack enforcement. To strengthen coherence, effective regional dialogues, policy coordination, collaboration, capacity building, and resource mobilization are required, with Member States playing a central role.[33, 34]

Good practice: The International Panel on Deltas and Coastal Areas (IPDC) - Trans-boundary cooperation in CRM

The IPDC is a flagship initiative supported by the Dutch Government, with a mission to place water at the core of CCA action and serve as an effective international platform for improving lives, livelihoods and ecosystems in deltas, coastal areas, and islands. One of the key priorities identified by many IPDC members is the integration of DRR and CCA. To address this, in November 2024, IPDC organized an online session to share practical experiences on implementing this integration and adopting a CRM approach. Speakers from Indonesia and Sint Maarten shared their insights and firsthand experiences of applying a CRM approach at home, outlining both the challenges and opportunities that they have faced. Sint Maarten highlighted the importance of involving island communities in CCA, blending technical, traditional, and contemporary knowledge to foster inclusive solutions. Indonesia's experiences underscore the significance of stakeholder participation, especially in adopting an adaptive approach to urban resilience.[35]

29 African Financial Alliance on Climate Change (AFAC) (2023) Strategy 2023-2027: Mobilizing Africa's financial sector for low-carbon and climate-resilient development. Available at: https://www.afdb.org/sites/default/files/documents/publications/afdb_afac_strategic_plan_2023-2027_01.09.2023_draft_5.pdf

30 https://www.ccrif.org/

31 https://www.caribank.org/

32 https://caribbeanbiodiversityfund.org/

33 Matikinca, P., Nyamakura, B. & Shackleton, S. (2024) Climate change adaptation and disaster risk reduction in South Africa's local municipal plans. S. Afr. J. Sci 120; DOI: 10.17159/sajs.2024/15797.

34 Chevalier, R. (2017) Africa's common climate response and action plan. South African Institute of International Affairs (SAIIA). Available at: https://saiia.org.za/wp-content/uploads/2022/06/Policy-Briefing-261-chevallier.pdf

35 Good practice submitted by Deltares and the Institute for Environmental Studies, VU University Amsterdam to the REAP T1 Working Group on CRM

2.3 Policy coherence at the national and sub-national levels

A comprehensive review of DRR and CCA-related plans and related documents from selected countries was conducted to identify levels of coherence at the national level. Additionally, information was gathered from UNDRR's regional reports on the status of development of coherent approaches, namely from the regional reports covering Sub-Saharan Africa, the Caribbean and Europe and Central Asia[36] and from other available sources. The level of coherence and integration is assessed using a framework capturing different aspects of coherence, including conceptual, operational, institutional, monitoring and evaluation (M&E), and financial features of national policies.

Aspects of Coherence

Conceptual & Strategic	Exploring how countries conceptually and strategically link DRR and climate action – in particular, through the concepts of risk, impact and resilience and assessing the extent to which the two fields are jointly addressed.
Institutional	Analysing whether coordination between DRR and climate action is explicitly envisioned and examining how institutional arrangements support coherence.
Operational	Considering measures, actions, solutions and activities that integrate DRR and climate action practices, as well as the extent to which planning is cross-sectoral.
Monitoring & Evaluation	Assessing whether regular monitoring and evaluation processes—including specific metrics and timelines—are embedded in frameworks and policies to address multiple risks and impacts for resilient outcomes.
Financial	Exploring whether and how funding strategies, financing mechanisms, and investment frameworks are risk-sensitive and effectively bring together DRR and climate action.

At the conceptual and strategic level, most countries acknowledge the impacts of climate and disaster risks on socio-economic development within their national development plans, recognizing the importance of reducing risks and vulnerabilities through DRR and CCA measures. However, in many contexts, the synergies, and distinctions between DRR and CCA are not fully understood.[37] Climate change is generally recognized as a risk factor that exacerbates disaster exposure and vulnerabilities, yet the distinctions and similarities between DRR and CCA are rarely explicitly articulated. Often, countries treat adaptation and disaster reduction as separate initiatives rather than interconnected, interdependent processes, which may hamper the development of coherent policies and strategies that effectively integrate both domains.

DRR and CCA institutions often operate in silos and with limited or ad hoc cross-sectoral collaboration. This may result in inconsistent engagement and coordination and possible duplication of effort.

36 UNDRRs regional coherence landscape analysis reports for the Caribbean (2023), Europe and Central Asia (2025), Sub-Saharan Africa (2020) can be found here: https://www.undrr.org/crm. A draft Asia and the Pacific report is also available as a forthcoming publication.

37 World Bank (2024) Rising to the challenge - Success Stories and Strategies for Achieving Climate Adaptation and Resilience. Available at: https://www.worldbank.org/en/publication/rising-to-the-challenge-climate-adaptation-resilience

Financial coherence is not often explicit or obvious in most national policies and strategies examined. A few countries have established dedicated budget lines for DRR and CCA implementation or mechanisms to track and evaluate resilience-related expenditures.[38] Additionally, analyses of national DRR and CCA policies reveal that M&E frameworks are generally weak, with most countries lacking comprehensive systems to track progress, measure impact, and ensure accountability across and within key sectors and systems.

At the local level, key barriers include limited human, technical and financial resources to manage the substantial responsibilities assigned to local actors. Competing interests further hinder effective integration.

Despite these challenges, there are an increasing number of solutions and case studies that can be scaled up or replicated. Some are presented in this report. Using reporting mechanisms such as progress reports and indicators within the interconnected frame-works of the 2030 Agenda—and their shared goal of resilience—provides a solid foundation for conceptual and Monitoring & Evaluation (M&E) coherence when translated into national policies. National reporting processes, including Voluntary National Reviews (VNRs) on SDG implementation; Sendai Framework Monitor and reports on the midterm review of the Sendai Framework' progress reports on National Adaptation Plans (NAPs), Biennial Transparency Reports (BTRs), Nationally Determined Contributions (NDCs), National Biodiversity Strategy and Action Plan (NBSAP) and National Action Programmes (NAPs) to Combat Desertification; have significant potential to enhance both conceptual and M&E integration. Beyond these reports, reporting against globally agreed indicators such as the SDG indicators, Sendai Framework indicators, and the global goal on adaptation (GGA) indicators, when in place,[39] offer opportunities in this regard, particularly where indicators are shared.

Legal frameworks can facilitate governance arrangements that promote coherent imple-mentation of multi-risk and potential impacts management.[40] High-level political commitment can serve as a lever to increase coherence, improve coordination within governance bodies, and strengthen monitoring and evaluation processes. For instance, the Climate Resilience Execution Agency of Dominica (CREAD), responsible for coordinating resilience programmes, operates under parliamentary oversight and is governed by a high-level policy board chaired by the Prime Minister, ensuring strategic leadership and institutional convergence.[41]

The Pacific nations have been pioneers in demonstrating effective integration through the development of Joint National Action Plans for DRR and CCA, as well as establishing dedicated mechanisms for oversight and coordination of plans, and integrated institutions for implementation. This approach has proven particularly effective for small island develop-ing States facing challenges due to geographic isolation and limited resources. Efforts are ongoing across PICTs to develop Monitoring, Evaluation, and Reporting frameworks and build capacity for accessing global climate finance, though progress varies widely.[42]

More countries are making efforts to embed an understanding of interlinkages into their policies and strategies. For example, Cabo Verde explicitly incorporates CCA into its DRR strategy[43] while Côte d'Ivoire's National Programme for Climate Change (2015-2020) emphasizes policy coherence and mandates mainstreaming of CCA into disaster risk management.[44] Ethiopia's NAP (2019) underscores the importance of resilient systems through collaborative partnerships and thematic integration across sectors.[45] Similarly, Cambodia's National Strategic Development Plan (NSDP) 2019-2023 aims to mainstream climate change and disaster risk management into national and sub-national plans. In alignment with SDG 13— Take urgent action to combat climate change and its impacts —, the Cambodian Sustainable Development Goals (CSDGs) Framework 2016-2030 seeks to 'strengthen resilience and adaptive capacity to climate-related hazards and natural (sic) disasters' (p. 17).[46]

Coordination efforts also involve engaging ministries and government agencies responsi-ble for implementing sustainable development, DRR, and climate change programmes.[47] Some countries, have established joint coordination mechanisms, demonstrating a proactive approach to integrating DRR and CCA governance. Germany has leveraged the common theme of resilience to ensure institutional and operational participation across various governmental institutions. The German Strategy for Strengthening Resilience to Disasters (2022–2030),[48] developed collaboratively by all relevant government stakeholders and the interministerial working group on the implementation of the Sendai Framework, includes 420 specific measures —many related to multi-hazard early warning systems, resilient agriculture, and critical infrastructure —that assign roles to key stakeholders and generate cross-cutting benefits for both DRR and climate action communities.

Multi-stakeholder platforms and committees, such as Climate Change Committees/Councils and National DRR Platforms, have also been instrumental in improving coordination. Examples include Armenia's DRR National Platform Foundation (ARNAP) and the Climate Change Coordinating Council, which facilitate coordination and collaboration among DRR and climate action stakeholders. These platforms are complemented by initiatives such as the GREEN Armenia High-Level Policy Dialogue Platform.

At the operational level, efforts are increasing to integrate DRR and CCA within priority key sectors like agriculture, water, and energy. Approaches such as joint risk and vulnerability assessments, community-based strategies, and NbS exemplify this integration. The Roofs to Reefs Programme (R2RP), launched by the Government of Barbados and led by the Ministry of Economic Affairs and Investment, exemplifies a whole-of-government approach to CRM. The programme aims to address multiple vulnerabilities—climate, environmental, social, and infrastructural—particularly affecting low- and middle-income populations. Its focus includes strengthening housing, improving water and sanitation infrastructure, and transitioning toward clean energy sources, all while promoting environmental protection.[49] However, operational planning and integrated implementation using a CRM approach remain limited in many places.

A key element of successful CCA-DRR integration is the development of financial models that bridge the policy gap between climate action and DRR. Barbados and Trinidad and Tobago have implemented comprehensive disaster risk financing strategies that include insurance schemes and adaptation funds.[50] The People's Survival Fund (PSF) in the Philippines exemplifies an innovative financing mechanism that directly funds projects integrating CCA and DRR.[51]

Strengthening M&E systems is crucial for assessing the effectiveness of DRR-CCA policies, identifying good practices, and scaling up successful solutions, interventions, and initiatives. Improved data collection on risk and impact, including losses and damages across and within key sectors, and robust reporting mechanisms, facilitate evidence-based decision-making and better policy alignment.

38 Economic Commission for Latin America and the Caribbean (ECLAC) (2023) The economics of climate change in Latin America and the Caribbean. Available at: https://www.cepal.org/en/publications/68712-economics-climate-change-latin-america-and-caribbean-2023-financing-needs-and

39 The indicators are expected to be finalized in late 2025.

40 IFRC (2022) Reducing risk and building resilience through effective governance. Available at: https://disasterlaw.ifrc.org/node/909

41 IFRC (2021) Integrating CCA and DRR laws and policies towards a climate-resilient development: lessons from The Common-wealth of Dominica, (authored by Tommaso Natoli) Geneva. Available at: https://disasterlaw.ifrc.org/sites/default/files/media/disaster_law/2021-04/20210413_Dominica_Policy.pdf

42 UNDRR (2022) Disaster risk reduction (DRR) and climate change adaptation (CCA): Coherence pathways in Asia and the Pacific (unpublished)

43 FAO (2018) FAOLEX Database. Available at: https://www.fao.org/faolex/results/details/en/c/LEX-FAOC183009/

44 UNDP (2020) National Adaptation Plans in focus: Lessons from Côte d'Ivoire. Available at: https://www.adaptation-undp.org/sites/default/files/resources/nap-gsp_cotedivoire_countrybrief.pdf

45 Federal Democratic Republic of Ethiopia (2019) Ethiopia's National Adaptation Plan, Addis Ababa, 2019. Available at: https://www4.unfccc.int/sites/NAPC/Documents/Parties/NAP-ETH%20FINAL%20VERSION%20%20Mar%202019.pdf

46 Royal Government of Cambodia (2018) Cambodian Sustainable Development Goals (CSDGs) Framework (2016-2030), 19 November 2019. Available at: https://ncsd.moe.gov.kh/sites/default/files/2019-06/CSDG_Framework_2016-2030_English_LAST_FINAL.pdf

47 UNDRR (2022) Disaster risk reduction (DRR) and climate change adaptation (CCA): Coherence pathways in Asia and the Pacific (unpublished)

48 Federal Government of Germany (2022) German Strategy for Strengthening Resilience to Disasters. Available at: https://www.bbk.bund.de/SharedDocs/Downloads/DE/Mediathek/Publikationen/Sendai-Katrima/deutsche-strategie-resilienz-kurz-eng_download.pdf?__blob=publicationFile&v=5

49 GCF (2020) Available at: https://www.greenclimate.fund/document/r2rp-readiness

50 GFDRR (2022) Enhancing Disaster Risk Financing in the Caribbean. Technical assistance to strengthen financial protection in the Caribbean. Available at: https://www.gfdrr.org/sites/default/files/Caribbean%20DRFTA_02032022.pdf

51 Government of the Republic of the Philippines, Department of Finance website (2025) People's Survival Fund. Available at: https://psf.dof.gov.ph/



Good Practice: Cuba's journey towards integration of DRR and CCA into development

Over the past 15 years, Cuba has actively worked to improve the integration of DRR, CCA and sustainable development with support from UNDP. Since 2021, the Government has worked with UNDP to adapt their Strategy Tool for Integrating Disaster Risk Reduction and Climate Change Adaptation into Development to the Cuban context. This helped strengthen the enabling environment for disaster and climate risk-informed development by fostering policy coherence, complementarities, co-benefits and no-regrets solutions that address multidimensional and systemic risk. The timing of the tool's finalization was particularly critical, as it coincided with several legal reforms emphasizing the urgent need for greater coherence between DRR and CCA in Cuba. Benefiting from capacity building on climate and disaster risk-informed development, the Cuban government further requested support to validate the Adapted Strategic Guide at the local and sectoral levels with a focus on Ciego de Ávila province—one of the regions most affected by drought. Subsequently, the Guide was implemented in the municipality of Florencia and at the provincial level within the water resources sector. This initiative underscored the importance of integrated water resources management for building resilience to drought hazards and extreme hydrometeorological events related to climate change.[52]

It further demonstrated the importance of implementing a tool with an integrated approach that enables the diagnosis of gaps at the local and sectoral levels for effective risk management. The implementation of the Guide in Cuba also led to the development of an Action Plan to address the gaps identified during its application at the local and sectoral levels and incorporated the social component as an additional entry point for the comprehensive analysis of DRR and CCA.[53]

52 Good practice submitted by UNDP through the REAP T1 Working Group on CRM. Further info: https://www.undp.org/es/cuba/noticias/la-reduccion-de-riesgos-de-desastres-y-la-adaptacion-al-cambio-climatico-integrados-al-desarrollo

53 Find the complete document in https://www.undp.org/es/cuba/publicaciones/desarrollo-con-perspectiva-de-riesgo

2.3.1 Local Level practices and gaps in climate and disaster risk management

Coherence is most concretely exemplified at the level of implementation, which is mostly at the local level. There are notable examples of local governments and communities pioneering adaptive, inclusive, and cross-sectoral approaches to risk governance, thus providing innovative and inspiring approaches for scaling up through CRM. These practices are transforming how cities and municipalities understand, plan for, and respond to evolving disaster and climate risks and impacts.

Local governments and municipalities increasingly recognize that addressing hazards in isolation is ineffective. They are moving beyond siloed approaches by adopting nexus governance models that link DRR, CCA, and development within unified frameworks. For example, Broward County in Florida, USA, has adopted the Broward County Resilience Plan, a 50-year roadmap addressing complex hazards such a rising sea levels, intensified rainfall, storm surges and increasing heat. The plan integrates NbS, like swales and expanded green spaces, with engineered systems, such as seawalls and upgraded drainage, to protect critical infrastructure, manage stormwater and reduce urban heat. Developed through community engagement and robust data, the plan exemplifies a proactive, multi-layered resilience strategy.[54] Similarly, Himachal Pradesh, India, has shifted from a response and relief-centric approach to a proactive, comprehensive disaster risk management paradigm. The State Disaster Management Plan, initially developed in 2012 and revised in 2017 to align with the Sendai Framework, the Agenda 2030 and the Paris Agreement, emphasizes the nexus between disaster risk reduction and development. It promotes a multi-pronged approach that incorporates risk reduction into all development projects and programmes, aligning activities with guidelines issued by the National Disaster Management Authority for various hazards across high-priority areas, with active involvement from government departments and agencies.[55]

The Philippines offers a systematic way of localized approach to disaster and climate resilience. The Local Government Units (LGUs) are required to institutionalize DRR and CCA in their plans, use risk information in zoning and investments, establish dedicated offices and councils, and mobilize funds like the DRRM Fund and People's Survival Fund. Further, the Barangay Development Plans – cascade CCA/DRRM planning down to the smallest administrative unit. At least 5% of the LGU budget is earmarked for preparedness, prevention, and quick response.[56]

In contexts, where local authorities lack sufficient human and financial resources to lead effective risk management, national governments must conduct regular capacity-building activities for sub-national and local officials. This includes training on integrating implementation of DRR and CCA, as well as allocating specific budgets for local resilience activities. Ensuring local authorities are included in national planning and coordination processes is vital so that their specific needs are addressed. Many reviewed documents emphasize the importance of operational coherence at the local level and engaging affected communities, though often in broad and aspirational terms. A strong, well-financed social protection systems are essential to help governments safeguard households and livelihoods—especially children—from the most severe impacts of climate change and disasters.

54 Resilient Cities Network (2025) Broward County publishes Resilience Strategy. Available at: https://resilientcitiesnetwork.org/broward-county-publishes-updated-resilience-strategy/

55 UNDRR (2019) Words into Action guidelines: Implementation guide for local disaster risk reduction and resilience strategies. Available at: https://www.undrr.org/media/44686/download?startDownload=20250609

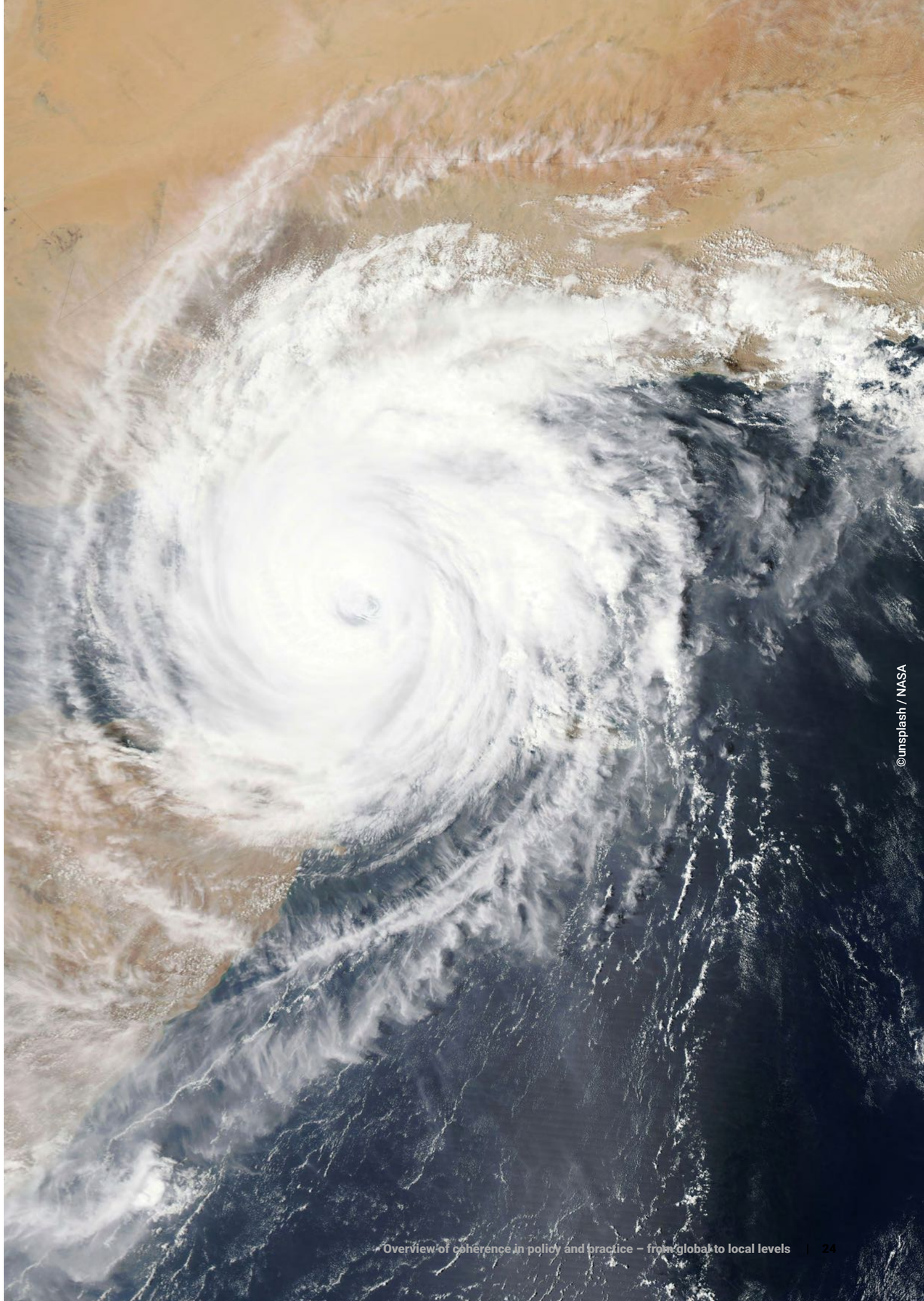
56 Republic of the Philippines, Congress of the Philippines, Philippine Disaster Risk Reduction and Management Act of 2010 RE-PUBLIC ACT No. 10121 https://lawphil.net/statutes/repacts/ra2010/ra_10121_2010.html

2.3.2 Common challenges and opportunities in strengthening DRR and CCA coherence

The analysis of available documentation and case studies reveals several recurring challenges and possible solutions, summarized in the table below:

Common Challenges	Opportunities
Conceptual: • Differences in the understanding of disaster and climate risk and impacts may limit joined-up planning and implementation among DRR and CCA stakeholders, including across key sectors and at all levels. • DRR and CCA are treated as separate policy priorities, leading to unclear strategic linkages. DRR is often equated with disaster/emergency response and hence differentiated from CCA. • National development plans rarely systematically integrate DRR-CCA objectives, resulting in inconsistencies. • The linkages between DRR and CCA in national policies, strategies and action plans are often not clearly defined within the respective documents. • Limited cross-sectoral planning, especially in agriculture, water, and urban planning, among other key sectors.	**Conceptual:** • Develop a shared understanding of risk and impact, including loss and damage, and appreciate its systemic and cascading nature. • Clarify and strengthen the terminology and links between DRR and CCA in national strategies and action plans. • Position resilience as a common outcome of sustainable development, DRR and CCA. Mandate DRR and climate action stakeholders' participation in development planning processes. • Establish common set of actions or a portfolio of risk and impact management solutions across systems, with coordination mechanisms spanning institutional, operational, and financial levels. Include sector-specific actions where most needed, depending on country context.
Institutional: • Fragmentation of understanding and responsibilities across ministries and departments hampers effective horizontal and vertical coordination. • Overlapping mandates create confusion in roles and responsibilities. • Lack of formal integrated mechanisms on multi-risks and impacts management beyond ad-hoc coordination.	**Institutional:** • Applying prevention-centric proactive approaches to manage risk in the short-, medium- and long-term provides a common basis for institutional collaboration between DRR and CCA, and across key sectors and at all levels. • Establish or strengthen national coordination platforms to formally integrate both DRR and CCA mandates across and within systems or sectors. • Revise regulatory frameworks to clarify roles and responsibilities. • Conduct stakeholder mapping and analysis to define and clarify roles, notably for key sectors and systems. • Based on a shared portfolio of solutions, strengthening capacity and engagement through sector specific guidelines for mainstreaming resilience at both national and sub-national levels.
Operational: • Coherence remains largely project-specific rather than systematic. • Overlap exists in risk and impact assessment and mapping, risk and impact management policies, risk reduction financing, and on practices and solutions—most notably in multi-hazard early warning systems, and resilient infrastructure—but collaboration remains limited. • Inconsistent risk assessments methods and lack of standardization in methodology lead to inconsistent data, fragmentation of solutions or/and duplicated efforts. • Local implementation is hampered by limited capacities and financing.	**Operational:** • Based on a shared understanding of risk, shared prioritization, and a common portfolio of solutions across key systems and sectors, develop joint action plans that include shared monitoring, defined responsibilities, and aligned resources commitments. • Organize collaborative workshops and activities on disaster and climate risk and impact management to strengthen technical coordination and collaboration among stakeholders across sectors and levels. • Conduct national and local assessments to identify existing comprehensive risks and potential climate and disaster impacts, with the aim of strengthening collaboration opportunities and developing integrated strategic frameworks, plans or strategies. • Improve coordination among government bodies, humanitarian, climate, development and finance partners, and NGOs. • Create or facilitate shared data platforms for DRR-CCA to inform about risk and impacts across key sectors and systems at different levels. • Strengthen resilience capacities at national and local level through targeted training and tools.
Financial: • Limited public finance, fragmented budgets that are managed separately, and heavily dependent on external funding. • DRR funding is largely reactive and tied to disaster response rather than proactive, preventative risk reduction and management. • Absence of budget-tagging mechanisms to track DRR and CCA investments nationally, locally, and across key sectors and systems. • Over-reliance on a narrow set of financial instruments (for example, an emphasis on insurance and contingency credits) rather than dedicated, tangible DRR and CCA investments for risk reduction, climate mitigation and adaptation, and loss and damage). • Limited climate and DRR finance available, notably in fragile or protracted crisis situations where it is most needed.	**Financial:** • Develop a joint financing strategy for DRR and CCA to improve resource mobilization and allocation, focusing on key systems and sectors, and prioritizing disaster-prone locations. • Establish a DRR-CCA finance-tracking mechanism to monitor investments and funding flows at national, local and across key sectors and systems. • Increase national budget allocations for DRR and CCA to reduce reliance on donor funding for key sectors and systems. • Develop national financing frameworks that combine investments in climate action and DRR with shock-absorption mechanisms, such as insurance schemes and contingency credits, while strengthening social protection systems and programmes. • Mobilize international funding through integrated project proposals. • Conduct investment analysis to identify funding gaps. • Ensure the engagement of finance and planning ministries and promote private sector engagement on CRM approaches. • Explore blended financing to diversify funding options.

Common Challenges	Opportunities
Monitoring & Evaluation: • Weak M&E systems, including those spanning multiple sectors, hinder the ability to track progress, assess impact, and ensure accountability. • Limited methodological, technical and human capacities to monitor the risks and impacts-including loss and damage of slow-onset events (such as sea level rise, glacier melting, ocean acidification, etc.) and non-economic losses and damages. • Data collection is often inconsistent and constrained by the lack of shared language and terminology.	**Monitoring & Evaluation:** • Develop comprehensive databases that consolidate DRR and CCA data, including across key sectors and systems, and ensure broad accessibility. • Standardize and share simple indicators of disaster and climate risk impacts (including losses and damages) aligned with international frameworks. • Jointly invest in statistical and research capacity. • Establish periodic policy and CRM advancements reviews-including for key sectors and systems. • Enhance participatory monitoring for transparency and accountability. • Strengthen methodological, technical, and human capacities to effectively monitor and assess the impacts of slow-onset events and non-economic losses.



©unsplash / NASA

3. Charting paths for implementation: Analysis of coherence at the national level

3.1 Aspects of coherence _____ 36

3.2 Level of gaps in activities in DRR strategies and NAPs _____ 41

3.3 Key areas of joint implementation _____ 42

3.4 Enabling financing for disaster risk reduction and climate action through comprehensive risk management _____ 81

©shutterstock / Peopleimages

3. Charting paths for implementation: Analysis of coherence at the national level

Progress in climate action and disaster risk governance is evident worldwide. As of 2024, 131 countries had reported national DRR strategies (SDG indicator 13.1.2), 110 countries had local DRR strategies, and 63 countries had submitted NAPs. By the end of 2024, about **48 countries globally reported having both a national DRR strategy or plan and an NAP** (reported under Sendai Framework Monitoring and for the UNFCCC and Paris Agreement, reported through the NAP Central; see figure 3 below; for the list of countries analysed see Annex I). This chapter highlights levels of coherence and areas of joint action between DRR and climate action within national planning instruments, based on an AI-informed analysis (details of the AI approach can be found in Annex II). It should be noted that the level of coherence in the documents does not automatically translate into practical implementation of plans and projects in countries. Nonetheless, it is indicative of the intent of countries to ensure coherence among these policy instruments for the implementation of actions that build resilience in an aligned, synergetic and efficient manner.

The documents of 45 of these countries were systematically assessed for this report, using AI-informed analysis to identify the level of coherence and the co-presence of specific activities – referred to as **Joint Implementation Areas (JIAs)** – which represent common areas of action for resilience building across both planning instruments. Of these, 43 countries have separate documents for DRR and CCA planning, while two (Kiribati and Tonga) have adopted joint implementation plans for climate change and disaster risk management.

The identified JIAs — covering risk assessment, preparedness, multi-hazard early warning systems, health and resilient healthcare, integrated water resources management, resilient agriculture and food systems, resilient infrastructure, NbS, urban resilience, building community resilience and human mobility –provide a broad basis for understanding mutual areas of implementation between DRR strategies and NAPs. Each JIA corresponds to specific activities developed from the UNDRR guide for design and taxonomy, which is useful when designing coordinated budget tagging, such as *Budget Tagging for Disaster Risk Reduction and Climate Change Adaptation, 2023*.[57] These areas were developed by locating clusters of specific activities likely to constitute a "principal" or "significant" budget line for DRR or CCA, grouped into broader categories (JIAs) with a common thematic focus. However, these JIAs do not represent an exhaustive list of areas and activities that could benefit from improved alignment.

The documents were analysed to provide insights across three main areas, detailed in the subsections below.

57 UNDRR (2023) Budget Tagging for Disaster Risk Reduction and Climate Change Adaptation

3.1 Aspects of coherence

This analysis aims to identify which aspects of coherence – conceptual, operational, institutional, monitoring and evaluation, and financial– are most prevalent across the sample of 45 countries. Results are presented in graph 1 and are complemented by a qualitative assessment of the institutional and strategic arrangements that facilitate strong outcomes across each aspect. The analysis acknowledges that NAPs and DRR strategies do not follow the same template and that the content and framing are determined by countries. As a result, the level of coherence is based on countries' respective context and priorities.

Graph 1: Coherence aspects across the sample of 45 countries

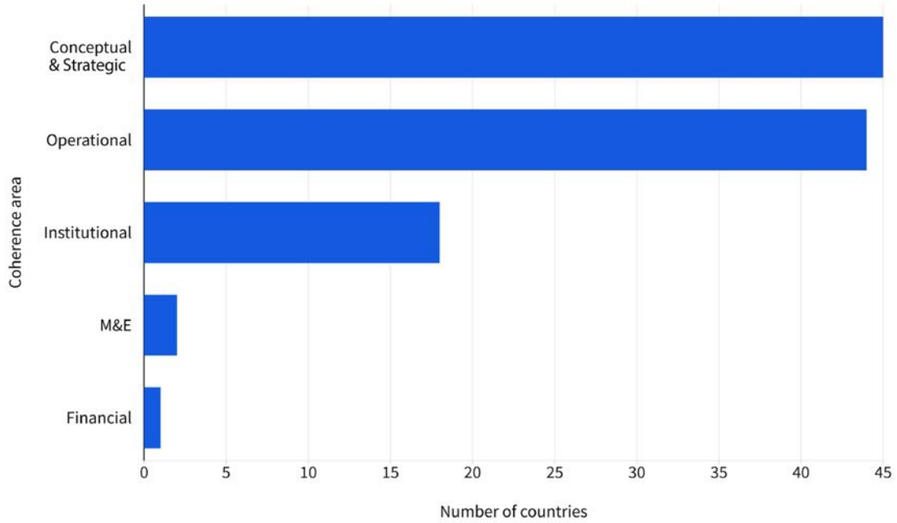
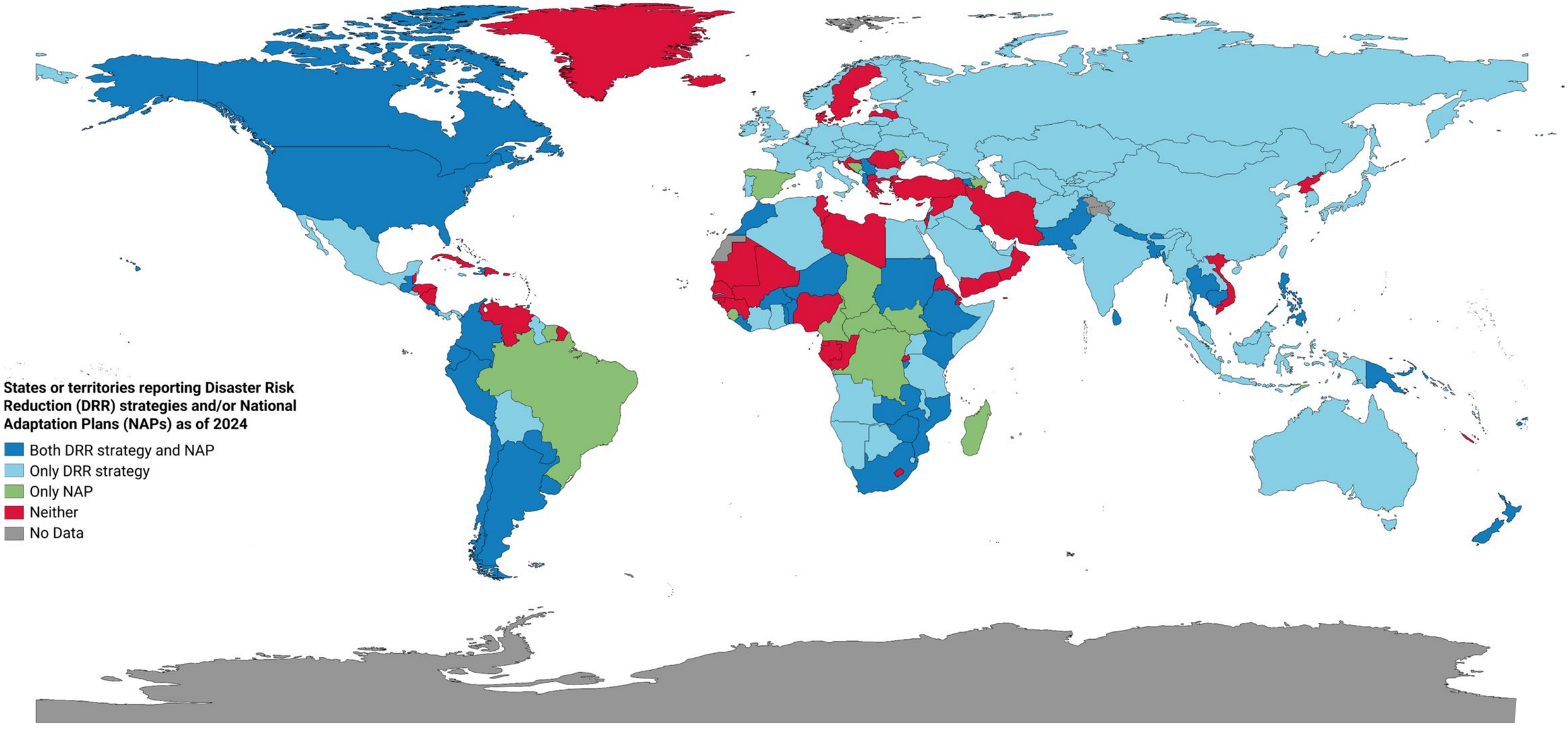


Figure 3: Overview of countries with Disaster Risk Reduction and/or National Adaptation Plans as of 2024 (UNDRR 2025)



Data source: UNDRR Sendai Framework Monitor and UNFCCC NAP Central as of December 2024;
Map source: UN Geospatial. Note that only officially reported data has been used as of 2024.
Disclaimer: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations. The final boundary between the Republic of Sudan and the Republic of South Sudan has not yet been determined. The dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties. A dispute exists between the Governments of Argentina and the United Kingdom of Great Britain and Northern Ireland concerning sovereignty over the Falkland Islands (Malvinas).

Conceptual coherence

Conceptual convergence is critical for effective risk management, enabling countries to frame hazards through a shared lens and streamline policy implementation. The analysis covering 45 countries reveals a strong conceptual alignment between NAPs and DRR strategies. As illustrated in graph 1, every country in the sample exhibits either substantial or systematic coherence across these two frameworks, underscoring a shared understanding of climate and disaster-related risks. The analysis highlights that both NAPs and DRR strategies prioritize similar areas of action, reflecting common concerns and reinforcing the need for coordinated responses to escalating climate threats.

Operational coherence

Operational coherence – defined as the commitment to joint actions that are relevant for both NAP and DRR documents – is present in almost all the countries, with most demonstrating it at either a substantial or a systematic level. This highlights substantial opportunities to deepen coherence by aligning the implementation of specific activities across national DRR and climate action agendas.

Institutional coherence

Institutional coherence varies significantly across the sample: 27 countries show limited or no institutional coherence, while 11 exhibit substantial or systematic coherence, and 7 display partial coherence. Although progress has been made in strengthening stakeholder coordination, there remains considerable room for improvement.

Monitoring and evaluation coherence

Monitoring and evaluation coherence between NAP and DRR strategies is limited, as exhibited in 43 countries, likely due to varying timelines and indicators. This level of coherence may affect the potential for ongoing collaboration and tracking progress jointly, emphasizing the need for integrated M&E frameworks.

Financial coherence

Financial coherence is the least advanced aspect, with 43 countries displaying limited or no coherence. This considers budgets and common financing mechanisms for both DRR and CCA activities, acknowledging that these are not prescriptive or according to specific templates.

Overall findings

- **Many (23) countries have moved to implementing joint activities beyond simply conceptual alignment**

- **Few have reached institutional coordination (8) and financial (4) integration stages (full coherence)**

Ten areas of joint implementation have been identified as the most common areas of convergence for implementation between DRR strategies and NAPs (see section 3.3). Countries with high levels of coherence, as shown in the documents analysed, often feature **clear lead agencies with mandates spanning both CCA and DRR**, supported by **multi-level governance structures that facilitate coordination and integrate monitoring mechanisms across national, provincial and local levels**. For example, the Philippines emphasizes a "whole-of-nation approach to disaster and climate resilience" with implementation across national and local levels, while Pakistan adopts "a truly 'whole-of-society' approach involving different tiers of government." Uruguay's National Climate Change and Variability Response System includes stakeholders from multiple ministries, alongside the National Emergency System, facilitating vertical integration from national to subnational levels.[58] Similarly, Canada's approach ensures that "regular reporting will include participation from Indigenous partners, provinces and territories, municipalities and other key stakeholders to measure collective progress,"[59] while New Zealand's governance structure involves "central and local governments, iwi, hapū, whānau, the private sector and communities".[60]

These countries also demonstrate **exceptional diversity in institutional and stakeholder engagement for an integrated monitoring process.** Uruguay involves producer organizations, public agricultural institutions and academia, while Canada's "whole-of-society" approach explicitly includes Indigenous partners alongside government entities. New Zealand's framework similarly engages diverse stakeholders, including "the research and scientific community, and communities and individuals," ensuring comprehensive monitoring that captures multiple perspectives on CCA and DRR.

Countries that display stronger levels of financial coherence tend to be characterized by **common, dedicated funding mechanisms for both CCA and DRR.** Among all the countries analysed, only four demonstrated financial coherence, the highest level of integration (Albania, Armenia, Kiribati and Tonga). Tonga and Kiribati, for instance, have integrated financing approaches within a single document, promoting resource efficiency. Another identified trend revolves around the presence of **diversified budget sources**. Bangladesh, for example, targets "blending climate finance, private sector investment, innovative financing such as green or blue bonds" to support the allocation of "6-7 percent of its annual budget on enhancing climate resilience through adaptation initiatives,"[61] while Papua New Guinea seeks to leverage "bilateral, multilateral aid, international bodies like the Green Climate Fund (GCF), Global Environment Facility, Climate Investment Funds (CIF), and private finance".[62]

Good practice: Joint Implementation Plans for DRR and Climate Action in Kiribati and Tonga

Kiribati and Tonga have developed joint national plans for DRR and climate action. The analysis of the documents showcases that the two countries are more likely, on average, to exhibit advanced aspects of coherence, such as in the financial and monitoring & evaluation areas, indicating a systematic approach to coherence at the level of JIAs. Collectively, these countries achieve an average joint implementation area score of 4.3 out of 5, significantly surpassing the average score of 2.0 out of 5 observed in the other 43 countries with separate, parallel documents (average level of coherence from conceptual (1) to operational (2), institutional (3), monitoring and evaluation (4) and monitoring and evaluation (5)). It must be noted that despite the policy integration, there are gaps in implementing and financing the joint plan in both Tonga and Kiribati. Yet, these countries demonstrate a broader scope of coherence across JIAs: all ten joint implementation areas were assessed as exhibiting at least institutional coherence in both cases. Thus, the structure of joint implementation plans for CCA and DRR offers a promising model of enhanced coherence in planning and implementation, which could be replicated in other contexts.

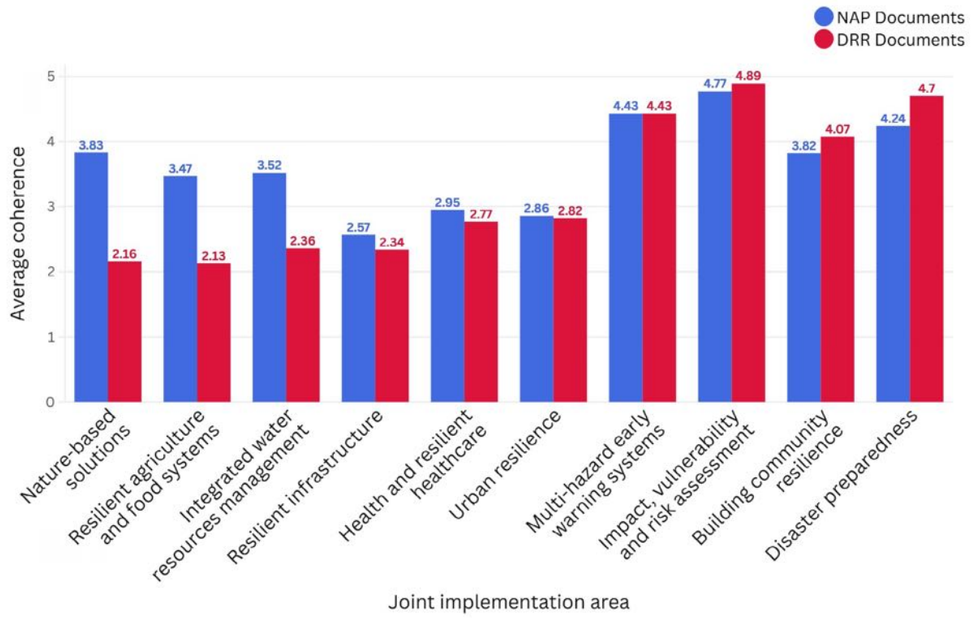
58 Government of Uruguay (2021) National Adaptation Plan to Climate Change and Variability for Cities and Infrastructure
59 Government of Canada (2024) National Adaptation Plan (NAP)
60 New Zealand (2023) National Adaptation Plan (NAP)
61 Government of Bangladesh (2023) National Adaptation Plan
62 Government of Papua New Guinea (2023) National Adaptation Plan

3.2 Level of gaps in activities in DRR strategies and NAPs

This section examines the extent to which DRR and NAP strategic documents converge in their treatment of specific activities associated with JIAs.

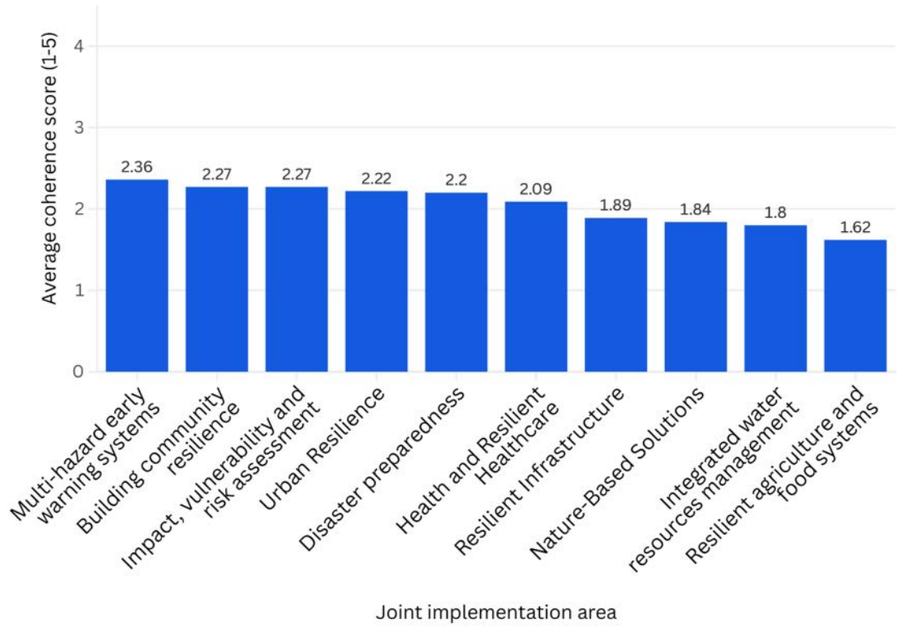
The analysis reveals a significant divergence in the specific activities addressed by each type of document. Activities related to longer-term actions (such as green and water-related infrastructure, mangrove rehabilitation, land use, etc.) are primarily covered in NAPs, while DRR strategies tend to emphasize short-term measures focused on preparedness for disaster events (e.g. formulation of contingency plans, adaptive and shock-responsive social protection, etc.) and, in some cases, medium- to long-term measures such as risk-sensitive building codes. These divergences reflect an ongoing perception and traditional mandates and time horizons around the climate change and DRR agendas, while the identification of and discussion on the JIAs and specific activities included in both NAP and DRR documents offer opportunities for integrated implementation across all time horizons.

Graph 2: Comparison of activity presence in NAP vs DRR documents by Joint Implementation Area



The JIAs that were assessed, on average, as displaying the strongest levels of coherence were early warning systems, risk assessments and urban resilience, alongside other resilience-building measures. These four JIAs were the only ones demonstrating full coherence from conceptual to operational, institutional, financial and monitoring and evaluation coherence (score of 5 out of 5) in multiple countries. In contrast, average coherence was least observed in activities related to resilient agriculture and food systems, integrated water resource management, NbS and resilient infrastructure.

Graph 3: Coherence score by Joint Implementation Area. (NB: a higher average indicates that the specific JIA is more frequently assessed as demonstrating a higher level of coherence at the national level, while a lower average suggests that coherence more commonly remains at the conceptual or operational level; average score of all analysed countries; score per country calculated as highest level of coherence from conceptual (1) to operational (2), institutional (3), monitoring and evaluation (4) and monitoring and evaluation (5)).



Specific areas and activities considered within each JIA, as well as the methodology for score calculation, are described in Annex II.

3.3 Key areas of joint implementation

This section examines the JIAs identified in greater depth, complemented by case studies from global practices to highlight specific implementation opportunities. *Climate and disaster-related displacement* has been included as an additional JIA to those derived from the analysis. Human mobility is widely recognized by international and national entities as a critical area that requires a more integrated and coherent approach.

Joint approaches for building resilience – Overview of risk and impact management solutions, key sectors and systems

Risk is interconnected across sectors, geographies, and timeframes, and hence resilience-building interventions are relevant across a range of contexts. As highlighted by the 2019 Global Assessment Report on DRR, the systemic nature of risks and the interconnectivity of systems make an integrated, whole-of-society, multi-sectoral and systems-based approach essential. The UN Resilience Guidance provides an UN-wide reference for building resilience delivering the 2030 Agenda for Sustainable Development.[63]

63 United Nations (2020) United Nations Common Guidance on Helping Build Resilient Societies, New York (UN)



The JIAs address elements related to general risk and impact management solutions, alongside key sectors and systems, as identified through the analysis. The list is not exhaustive; additional general risk and impact management solutions, as well as specific interventions for systems and sectors, could also contribute to resilience building and incentivize joint approaches. These are further elaborated in the respective JIA sections. An overview of the coherence observed in the document set analysed can be found in Annex II.

3.3.1 Impact, vulnerability and risk assessment

Understanding risk through vulnerability, risk and impact assessments is a mandatory first step for risk-informed decision-making, planning and informing action across all levels of governance. Given the increasing complexity of risks and the high impact of cascading events, a more holistic approach that considers the interactions between climate-related and non-climate-related hazards is essential. Climate and disaster-informed multi-hazard risk assessments provide a shared analytical foundation for CRM.[64]

Risk assessments underlie all global frameworks – understanding risk is the first priority of the Sendai Framework, while it forms a key target of the GGA of the Paris Agreement.An analysis of the NAPs and DRR plans across countries that have both planning documents available shows that risk and impact assessments are well configured as a foundational element. For instance, the NAPs and DRR plans of Bangladesh and Zambia demonstrate a strong understanding of risk accumulation, compounding risks and systemic vulnerabilities, recognizing the interconnected nature of hazards and vulnerabilities. Both plans also acknowledge the increasing unpredictability and intensity of hazards due to climate change and employ a comprehensive and multidimensional risk assessment methodology. On the other hand, while the DRR plans follow a multi-hazard approach including natural, biological and human-caused hazards, the NAPs focus on climate-specific risks, using sectoral and geographic vulnerability assessments to guide adaptation actions. The NAPs apply climate risk assessments and models (e.g. Shared Socio-economic Pathway (SSP) scenarios, the Coupled Model Intercomparison Project Phase 6 (CMIP6) in Bangladesh and the Representative Concentration Pathway (RCP) scenario in Zambia) while the DRR plans focus on multi-hazard disaster risk assessments, and in Zambia have a more operational focus through disaster-level risk profiles, emphasizing institutional infrastructure. The Bangladesh NAP places strong emphasis on sectoral vulnerabilities (e.g. agriculture, water and fisheries) and long-term economic impacts, including projections of GDP loss and climate-driven migration. Most risk assessments have significant gaps in assessing risks from slow-onset events (e.g. sea-level rise). Traditional probabilistic disaster risk assessment methodologies have a limited ability to explicitly incorporate baseline and future climate change scenarios. A systemic approach to assessing disaster risk integrates past, present and future considerations, by examining the underlying social, economic, technical, ecological and other factors, that besides hazard, influence the conditions for exposure and vulnerability, while explicitly accounting for potential changes in climate, rather than relying solely on baseline climate conditions.[65]

Data: Another significant challenge is the availability of high-quality, comprehensive and disaggregated data. Data can be sourced from a variety of sources, including national statistical offices, disaster risk management offices and hydrological, meteorological, geo-logical and epidemiological institutes and services, as well as private and public insurance providers, among others. Establishing coordination mechanisms, developing standardized data formats and building comprehensive national disaster and climate risk information management systems that include databases to systematically record the impact of past events are essential to supporting the development and validation/ calibration of multi-hazard risk assessments. Support is available for countries to enhance such databases and subsequent use in risk assessments, for example, DesInventar, UNDRR/WMO/UNDP's disaster tracking system, the Emergency Events Database (EM-DAT), the WMO's World Weather and Climate Extremes Archive, the Copernicus Climate Change Service among other specialized databases, and FAO's AQUASTAT Climate Information Tool.

Good practice: DELTA Resilience: An Enhanced Disaster Tracking System for Hazardous Events and Losses and Damages

Recognizing emerging user needs and modern technological solutions, UNDRR, UNDP and WMO are collaborating to develop a next generation of the Disaster and Hazardous Events Loss and Damage Tracking and Analysis System (DELTA Resilience) beta version of which was launched at the 8th Session of the Global Platform for Disaster Risk Reduction in June 2025. This comprehensive and interoperable platform builds upon the Sendai DesInventar database, now covering both hazardous events (the manifestation of a hazard that may not have led to a disaster or impact) and disaggregated disaster impacts at granular geo-graphic scales, across sectors and over time. The system and methodology, enables localized event-by-event recoding of impacts on persons, assets, goods, services, and systems, providing high-resolution data that supports the assessment of avoided losses and damages resulting from risk reduction measures. DELTA Resilience enhances analytical capabilities for better decision-making through a more comprehensive understanding of risks and their impacts.[66]

64 UNDRR and WMO (2023) Technical guidance on application of climate information for comprehensive risk management, United Nations Office for Disaster Risk Reduction and World Meteorological Organization.
Available at: https://www.undrr.org/publication/technical-guidance-application-climate-information-comprehensive-risk-management

65 National disaster risk assessment: A guide for national practitioners (https://www.undrr.org/quick/94920) and Technical guidance on comprehensive risk assessment and planning in the context of climate change (https://www.undrr.org/quick/71077)

66 For further information, see: https://www.undrr.org/L-DTracking

Progress is evident in some countries developing **joint climate and disaster risk and vulnerability assessments**. These assessments offer technical and operational entry points for aligning policies across frameworks, supporting the integration of DRR and CCA within priority sectors such as agriculture, water and energy.

Strong policy frameworks and institutional coordination is required for comprehensive risk assessment approaches to be adopted in countries. Addressing data gaps requires a unified approach, ongoing stakeholder engagement, and community involvement– particularly at the local level, where capacities are often limited. Engaging civil society and communities can help to collect granular data, including on vulnerable contexts. For example, the Pacific Resilience Programme (PREP) successfully incorporates Indigenous knowledge of disaster preparedness alongside scientific approaches to risk reduction.[67]

Several tools and knowledge products are available to support countries in conducting comprehensive risk assessments, including:

- Technical guidance on comprehensive risk assessment and planning in the context of climate change (2022) – a step-by-step guide to conducting comprehensive risk assessment in countries
- INFORM risk assessment – a suite of products for decision-making through risk assessment at the national and subnational levels, including humanitarian assessments.
- CRM products developed under the Warsaw International Mechanism – includes several case studies, policy briefs, etc.
- Hazard Information Profiles (HIPs) – define 281 hazards grouped into eight hazard types (Hydrological and Meteorological; Extraterrestrial; Geological; Environmental; Chemical; Biological; Technological; and Societal)

Coherence snapshots – Ecuador

Ecuador has formalized integrated governance of disaster risk reduction and climate change adaptation through an inter-ministerial agreement signed in 2025 between the National Risk Management Secretary (SNGR) and the Ministry of Environment and Ecological Transition (MAATE). The agreement builds on a structured dialogue to identify complementarities and sets out five joint areas of work spanning risk knowledge, stakeholder articulation, policies and planning instruments, financing and governance spaces where both institutions are expected to collaborate.

The agreement mandates the creation of coordination mechanisms between the national risk management authority and the national environmental authority, under the leadership of SNGR as the lead entity for disaster risk management and MAATE as the national environmental authority. It establishes shared concepts across both disciplines and prioritizes the articulation of risk analysis methodologies and climate scenario integration, with emphasis on generating information at the local level. By committing both institutions to integrate normative frameworks and advance a unified approach, the agreement provides a foundation for coherent governance and risk-informed adaptation in Ecuador.

67 UNDRR (2023) Midterm Review of the Sendai Framework for Disaster Risk Reduction 2015–2030: Thematic report on local, Indigenous and traditional knowledge for disaster risk reduction in the Pacific.
Available at: https://www.preventionweb.net/media/89327/download?startDownload=20250504

Coherence snapshots – Fiji

Fiji develops a collaborative structure for risk assessment that leverages specialized knowledge across government. Fiji's National Disaster Risk Reduction Policy 2018 - 2030[68] calls for "comprehensive hazard, vulnerability, capacity and risk assessments at national, divisional, district and community levels", to be informed by "climate change projections to account for changing hazard patterns". The primary responsibility for this integrated risk assessment is held by the National Disaster Management Office (NDMO), with sectoral institutions such as the Fiji Meteorological Service and the Mineral Resources Department mobilised to provide technical input to the assessment process. Fiji's 2018 NAP[69] offers a complementary approach, recognising the Fiji Meteorological Service (FMS) as the lead government agency on "gathering, storing, analysing, and disseminating information on Fiji's weather, climate, climate variability, and change", with explicit responsibility for providing risk assessment in "support of not only disaster risk management but also climate sensitive sectors such as agriculture, tourism, and fisheries". Fiji, therefore, offers an example of an approach to risk assessment based on the integration of disaster risk and climate change variables that explicitly mobilises stakeholders throughout government.

3.3.2 Disaster preparedness

Preparedness is a cross-cutting JIA that encompasses a range of early action activities, including pre-arranged financing and insurance, formulating contingency plans, conducting emergency exercises and simulations, and enhancing preparedness through risk assessments and appropriate institutional coordination to enable timely and effective disaster response.

A comparative analysis of preparedness, in particular risk transfer mechanisms, outlined in the DRR Plans and NAPs of Ethiopia, Guatemala and the Philippines, show similarity in their risk transfer approaches. In general, the NAPs have identified priority, climate-vulnerable sectors (e.g. insurance, with a focus on the agriculture and livestock sectors in Ethiopia and microinsurance for farmers and the fishery sector in the Philippines), while DRR plans provide a multisectoral view, with a focus on specific instruments (e.g. the Catastrophe Deferred Drawdown Option (CAT DDO) in Guatemala). However, neither of the plans has provided operational details of implementation, except for the NAP in the Philippines.

Preparedness mechanisms, including risk transfer solutions, need to be embedded into the larger financial landscape of a country, and hence need further convergence across planning documents. Exante financing solutions address immediate needs in times of disasters and crises. However, these resources should more broadly include activities aimed at strengthening DRR and CCA (e.g. investments in disaster risk assessment, institutional capacity-building and emergency preparedness), which address longer-term considerations. Disaster risk transfer mechanisms also provide the opportunity to alleviate disaster and climate risks, enabling governments to have the resources in advance of disasters. Regional insurance pools, such as the African Risk Capacity (ARC), Caribbean Catastrophe Risk Insurance Facility (CCRIF), the Pacific Catastrophic Risk Insurance Company (PCRIC) and the South-East Asia Disaster Risk Insurance Facility (SEADRIF), play a key role in building regional capacity, as well as collecting and disseminating information on hazards, exposure, vulnerability and risk, and providing parametric sovereign risk coverage through insurance.

68 Government of Fiji (2018) National Disaster Risk Reduction Policy 2018–203
69 Government of Fiji (2018) National Adaptation Plan (NAP)

Several risk-retention instruments can also be used for preparedness. These instruments, such as contingency and reserve funds, are usually used to manage high-frequency events that a government expects to manage annually or every few years. As climate change exacerbates the frequency and/or severity of some hazards, comprehensive risk and impact assessments become paramount for utilizing such risk-retention mechanisms.

3.3.3 Multi-hazard early warning systems

While multi-hazard early warning systems (MHEWS) are a key component of preparedness, they have been analysed separately given their specific cross-cutting nature, which transcends timescales. MHEWS are a proven DRR and CCA solution, with concrete evidence on their role in saving lives and protecting communities and systems. Their design, development, implementation and monitoring contribute to building the long-term adaptive capacities of communities by enabling them to adjust to both current and future climate-related risks.

MHEWS have emerged as a unifying agenda across different intergovernmental frameworks. They are one of the targets of the Sendai Framework (Target G) as well as of the Global Goal on Adaptation (part of Target 10a), and included in actions to avert, minimize and address loss and damage in the Paris Agreement (Article 8). MHEWS, on average, were assessed as displaying the strongest level of coherence among the JIAs identified.

An analysis of approaches to MHEWS in the DRR plans of the NAPs of Ecuador, Fiji and Mozambique demonstrates the unifying nature of MHEWS across different plans at the country level. Across countries, MHEWS is centred as an end-to-end system, highlighting its effectiveness as an adaptation and risk-reducing measure and given strategic priorities in the respective plans. Importantly, there is a high level of institutional coherence in the implementation and coordination of MHEWS, wherein national disaster management offices and national hydrometeorological offices have been commonly identified as responsible entities. However, the hazard focus of the two plans affects institutional coordination. For instance, given that MHEWS in DRR plans follow a multi-hazard approach, coordination is expanded by the inclusion of other ministries, such as infrastructure, mineral resources and land in Fiji, and sectoral agencies for hazard-specific systems (e.g. tsunami and volcanic activity) in Ecuador.

The Early Warnings for All (EW4All) initiative has recognized and boosted the importance of coherent implementation approaches and embedded the requirement for coordinated action in its structure and concept from the outset. The annual EW4All flagship report, Global Status of Multi-Hazard Early Warning Systems, showcases that among the reasons for less effective MHEWS in some countries are the limited integration of MHEWS in national and local disaster risk governance, the lack of sustainability due to project-based approaches, limited disaster risk knowledge and the lack of operational and forecasting systems and infrastructure in many places. The report observes that countries with more comprehensive risk governance mechanisms, assessed through Sendai Framework Target E on national DRR strategies, tend to have more comprehensive early warning systems.[70]

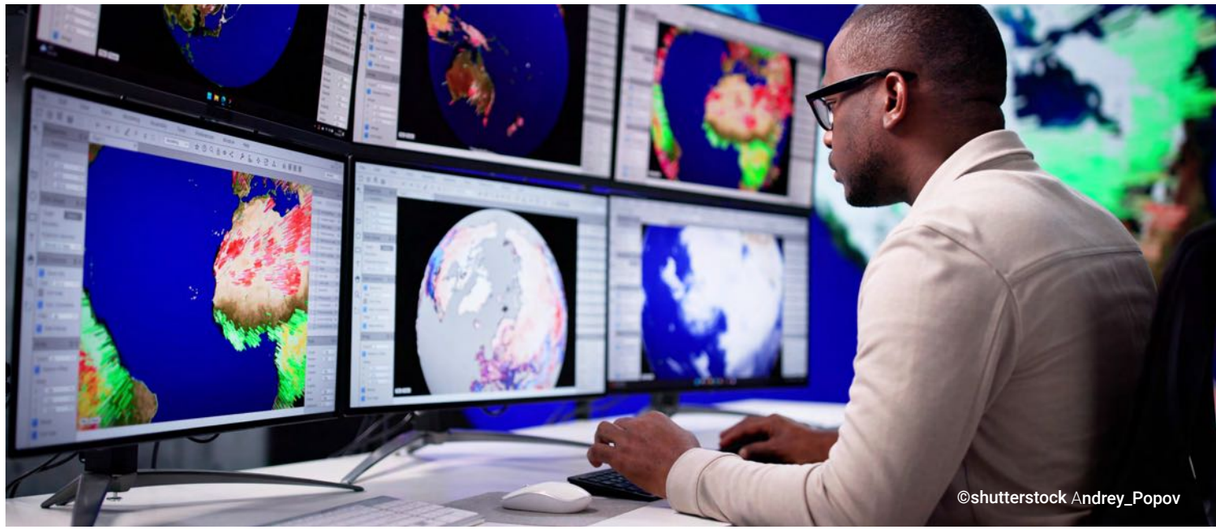
A few steps could be taken **to improve the effectiveness** of MHEWS in the long term and in a more coherent manner. A clear delineation of roles and responsibilities, as well as synchronizing objectives, budgets and programme delivery between DRR and NAPs are critical. At the local level, a country-by-country analysis has shown that the existence of a local DRR strategy is linked to a heightened probability for the availability of plans to act on early warning systems.

Multi-hazard **anticipatory approaches** and action plans strengthen early response to complex risks and cascading impacts. Regional bodies can support these approaches by sharing best practices, developing triggers, issuing actionable alerts and linking protocols across key sectors.

Several good practices and case studies have already emerged regarding enhancing MHEWS for preparedness that bridge disaster and climate action (including adaptation, minimizing, and addressing loss and damage). For example, the PREP, which spans several Pacific small island developing States (SIDS), incorporates real-time climate data and disaster risk monitoring to strengthen forecasting capabilities. The Enhancing Early Warning Systems initiative to build greater



©UNDRR


©shutterstock Andrey_Popov

70 UNDRR and WMO (2024) Global Status of Multi-Hazard Early Warning Systems. Geneva, Switzerland. Available at: https://library.wmo.int/viewer/69085/download?file=Global-Status-of-MHEWS-2024_en.pdf&type=pdf&navigator=1

resilience to hydrometeorological hazards in Timor-Leste improves community-based disaster preparedness by linking EWS with localized climate projections, allowing communities to prepare for both short-term hazards, such as cyclones, and long-term shifts in climate patterns. This GCF initiative supports the development of an end-to-end MHEWS that will inform communities about multiple hazards, including floods, heatwaves, cyclones and storm surges. The initiative considers and includes the needs of women and persons with disabilities who traditionally have less access to early warning messaging.[71]

Coherence snapshots – Tonga

Tonga demonstrates advanced MHEWS coherence through its *Joint National Action Plan 2018 - 2028* (JNAP)[72] which integrates CCA and DRR under a unified framework that explicitly prioritizes "strengthening multi-hazard early warning systems to enable timely warnings for all communities across Tonga". This approach is strengthened by clear institutional arrangements outlined in Tonga's multi-hazard early warning system policy, where the National Emergency Management Office (NEMO) and Tonga Meteorological Service (TMS) are designated as "the lead agencies for early warning systems, coordinating the dissemination of warnings through multiple channels". The JNAP also emphasises collaboration with telecommunications providers and community-level implementation through Village Disaster Committees, working in coordination with NEMO to create a comprehensive governance structure that spans from national technical agencies to local communities for both CCA and DRR purposes.

Coherence snapshots – Peru

Peru approaches coherence in early warning systems through aligned institutional responsibilities. The *2021 NAP* and the *Politica Nacional De Gestión Del Riesgo De Desastres Al 2050* assign complementary roles to the same agencies, with the NAP specifying that the National Meteorology and Hydrology Service (SENAMHI), National Water Authority (ANA), and the National Institute of Civil Defense (INDECI) are responsible for implementing the early warning system for hydro-meteorological hazards, while the DRR policy similarly positions INDECI as a central entity for emergency preparedness, including early warning capabilities. The coherence is further strengthened by shared strategic objectives. The NAP emphasizes "strengthening early warning systems to identify anomalous water conditions", whilst the DRR strategy focuses on "ensuring the attention of the population in the event of emergencies and disasters" as part of Strategic Priority 5.

3.3.4 Health and resilient healthcare

Climate change is already straining health systems, with extreme heat, degraded air and water quality, biodiversity loss affecting food security, disrupted infrastructure and logistics, and rising water- and vector-borne disease burdens manifesting in pandemics. Managing these cascading risks requires joined-up action across systems and time horizons – from early warning and emergency response to long-term system strengthening– consistent with a One Health approach.[73]

International frameworks account for the importance of the health sector in various ways. The Sendai Framework acknowledges and supports health (including biological hazards) and the protection of critical health facilities; SDG 3 and SDG 13 call for climate-resilient health systems. The 2016 Bangkok Principles promote policy coherence across the Sendai Framework, the 2030 Agenda for Sustainable Development and the Paris Agreement.[74] The UAE Framework under the GGA further adds a health target on "attaining resilience against climate change related health impacts, promoting climate-resilient health services, and significantly reducing climate-related morbidity and mortality, particularly in the most vulnerable communities."

The analysis shows consistent space for joint implementation. DRR plans typically treat health as a multi-hazard critical sector, while NAPs add climate-specific analytics and programmes (e.g. climate-sensitive disease surveillance, heat and air-quality actions). Common ground includes: clear Ministry of Health lead roles and sector responsibilities (25+ countries); integrated disease surveillance and early warning for climate-sensitive diseases (20+); vector- and water-borne disease control (20+); emergency preparedness and health contingency planning (15+); data/monitoring and climate-health research (15+); and health-facility resilience and continuity of essential services (12–15). Multi-hazard early warning systems increasingly link heat/health alerts, outbreak and air-quality advisories, and flood-related WASH warnings to sector protocols that trigger timely public-health action. Chile illustrates this linkage; the Ministry of Health acts as joint focal point, aligning people-centred disaster risk management in the health sector with adaptation priorities and actions for heat and cold waves.

The World Health Organization's (WHO) 10 building blocks offer a practical checklist for joint DRR-CCA action: leadership and governance; workforce; vulnerability, capacity and adaptation assessment; integrated risk monitoring and early warning; health and climate research; climate-resilient and sustainable technologies and infrastructure; management of environmental determinants of health; climate-informed health programmes; emergency preparedness and management; and climate and health financing.

Third, governance and institutional alignment – where the Ministry of Health leads in both documents – enables co-developing standard operational procedures, drills and performance metrics (Nepal, Chile and Tonga). Extreme heat governance, in particular, emerges as a prominent convener. For instance, in Costa Rica, pairing DRR actions for hospitals (hospital safety index and national health response protocols) with NAP targets to focus on the impacts of high temperatures and urban heat islands on vulnerable groups and the resulting service overload on healthcare (e.g. through heat-health action plans as proposed by the NAP) demonstrates a good practice.

In this analysis, joint action between DRR plans and NAPs clusters around three strands:

1. **Early warning systems and response** – shared triggers, thresholds, advisories and outreach to high-risk groups, integrated with emergency medical services and hospital surge plans; adaptation measures such as cooling centres and hydration points to make warnings more actionable (Paraguay, New Zealand and Canada).

2. **Safe & climate-ready facilities** – DRR hospital safety/continuity standards combined with NAP investments in heat-proofed power, water, ventilation and air conditioning (Costa Rica, Fiji and Tonga).

3. **Governance alignment** – Establishing the Ministry of Health as having a lead role in both documents enables the co-development of standard operating procedures, drills and performance metrics (Nepal, Chile and Tonga). Furthermore, extreme-heat governance often draws these strands together; in Costa Rica, the Hospital Safety Index and national health response protocols pair well with NAP heat-health actions for vulnerable groups.

Health system resilience should be embedded in core planning and budgeting for both DRR and CCA. Multi-hazard strategies need to prevent new risks, reduce existing risks and manage residual risks, with whole-of-government and whole-of-society participation, especially local communities and most affected groups. Priority enablers include better climate-health data and monitoring; all-hazard, multisectoral risk assessments with health embedded; interoperable MHEWS; and a trained health workforce to act on alerts and manage surges.[75]

71 UNEP (2025) An early warning system for disasters takes shape in Timor-Leste. Available at: https://www.unep.org/news-and-stories/story/early-warning-system-disasters-takes-shape-timor-leste.

72 Government of Tonga (2018) Joint National Action Plan on Climate Change Adaptation and Disaster Risk Management 2018–2028 (JNAP)

73 The UN-supported One Health approach recognizes the intrinsic link between the health of people, animals, plants and the wider environment, advocating for integrated, cross-sectoral action to address health threats such as zoonotic diseases, antimicrobi-al resistance and climate change. For further information, see: https://www.who.int/health-topics/one-health#tab=tab_1.

74 UNDRR, UN-ESCAP, UNFPA, UN Office for Project Services (2023) Disaster and Climate Resilient Health Systems. Available at: https://www.undrr.org/publication/disaster-and-climate-resilient-health-systems.

75 UNDRR and WHO (2023) Integrating Disease Outbreaks and Strengthening of Health in Whole-of Society Disaster Risk Manage-ment: A Supplemental Guide for Developing or Updating National Multi-Hazard Disaster Risk Reduction Strategies. Available at: https://www.undrr.org/media/102493/download?startDownload=20250609.

Coherence snapshots – Nepal

Nepal provides a foundation for resilience in health systems through comprehensive policy alignment. Nepal's 2021 NAP[76] establishes a dedicated program for "Strengthening Climate Sensitive Disease Surveillance System with Emergency Preparedness and Response" aiming to "establish climate-resilient health surveillance and early warning systems in 100 local governments for climate sensitive diseases," while the National Policy for Disaster Management 2018 - 2030[77] complements this by mandating "establishing health emergency operation centers at provincial and local levels" and "increasing emergency treatment capacity of hospitals and overall health services." This close strategic alignment is furthered by coordinated implementation mechanisms. Both documents assign responsibility to the same entities; the DRR policy also assigns responsibilities at provincial and local governments to implement health resilience measures.

Coherence snapshots - Tonga

Tonga demonstrates exceptional coherence in its planning documents related to health systems resilience through the development of a Joint National Action Plan 2018 - 2028[76] which integrates CCA and DRR under a unified framework that explicitly recognizes that "climate change will increase health risks including vector-borne diseases, heat-related illnesses, and injuries from extreme weather events." The Plan envisages the development of comprehensive implementation plans that address multiple dimensions of health resilience, outlining specific strategies to "strengthen physical infrastructure of health facilities to withstand cyclones, flooding, and other hazards while ensuring continued operation during emergencies through backup systems for power, water, and medical supplies" while simultaneously focusing on human capacity through programs to "develop capacity of health professionals in climate-related health issues and emergency medical response, including mobile medical teams that can deploy to affected areas during disasters". The integrated structure of the JNAP ensures coordinated institutional support for these measures.

3.3.5 Integrated water resources management

Integrated water resources management (IWRM) is a governance and development approach that can further reconcile climate action and DRR interdependencies and comple-mentarities. It is a process that facilitates coordinated development and management of water, land and related resources in a manner that does not compromise the sustainability of key ecosystems.[78] Additionally, NbS or hybrid approaches (those combining NbS with grey and hybrid infrastructure solutions) that form a part of IWRM provide an important entry point for addressing climate and disaster risks and impacts in a cost-effective and efficient manner, while providing multiple benefits. For instance, an estimated $625 million in flood damages during Hurricane Sandy could have been avoided if wet-lands were deployed for DRR .

76 Government of Nepal (2021) National Adaptation Plan (NAP)

77 Government of Nepal (2018) National Policy for Disaster Management 2018–2030

78 Adapted from the Global Assessment Report on Biodiversity and Ecosystem Services. Available at: https://www.ipbes.net/glossary-tag/integrated-water-resource-management.

The first UAE Framework target under the GGA focuses on "significantly reducing climate-induced water scarcity and enhancing climate resilience to water-related hazards towards a climate-resilient water supply, climate-resilient sanitation and towards access to safe and affordable potable water for all." More effective water resource management requires coordinated policies and activities that cover water, land, ecosystems, critical sectors such as agrifood systems and other related domains. A successful, holistic approach to water resources management requires undertaking several strategic actions: strengthening water legislation and regulations, including transboundary frameworks; strengthening vertical (national to local) and horizontal (across sectors) coordination between agencies and stakeholders, and country alignment with climate commitments, climate risk assessments and DRR priorities to eliminate silos and maximize synergies; the use of innovative and blended finance to address the increasing funding gaps for DRR and CCA; using interoperable hydrological, meteorological, socio economic and land-use data for risk and impact (with loss and damage) tracking and management data; and ensuring community ownership through empowering local and Indigenous peoples.

Within this analysis, IWRM functions as a coherence bridge between Peru's NAP and DRR plans, with NAPs prioritizing adaptive, basin-wide planning and DRR opportunities that leverage NbS, governance and long-term water-use efficiency. In Peru, the NAP emphasizes hydraulic efficiency for irrigation in climate-vulnerable basins, expanding storage capacity, improving hydrometric networks, reducing non-revenue water and promoting water-saving technologies in urban areas. It also includes plans to manage drinking water demand, enhance water supply resilience for multisectoral users, conserve and restore natural infrastructure to sustain water ecosystem services, and implement compensation mechanisms for ecosystem services to incentivize sustainable use. The DRR strategy complements this by proposing protection-oriented measures such as flood walls, dyke construction, river channelling, and NbS such as small reservoirs (Qochas/Cochas), while linking to the National Water Resources Policy to embed water-use efficiency practices within disaster risk management and safe sanitation programmes in high-risk areas. Collectively, Peru illustrates how IWRM can align water, land and ecosystem considerations across sectors to reduce climate and disaster risks while maintaining ecological integrity, though gaps remain in fully integrating water storage optimization and robust sewage design standards within DRR.

Pakistan's DRR framework centres on extensive flood risk mitigation, including multipurpose flood control infrastructure, drain widening and desilting, encroachment removal, and glacial lake outburst flood risk management, with urban flood challenges also addressed through drainage improvements and pumping capacity. While the NAP stresses increasing water-use efficiency – especially in agriculture through climate-smart practices such as drip irrigation and rainwater harvesting, and expanding storage facilities for drought and flood resilience – it also advocates for new sewage design standards to bolster urban resilience. The NAP envisions substantial investments in hard infrastructure (levees and embankments) to reduce flood impacts and improve storage via dams, reservoirs and groundwater recharge.

Recommendations for pursuing joint approaches between DRR and climate action:

- Use IWRM as a potential coherence framework: align DRR, climate risk and NAP targets with basin-wide planning; establish multi-level governance with shared data standards and loss/damage accounting; and integrate cross-sectoral policies (water, agriculture and urban sanitation) to reduce silos and improve risk-informed investments.
- Scale NbS and blended infrastructure: prioritize NbS plus hybrid grey-green solutions within IWRM to reduce flood peaks, conserve water and boost drought resilience. Pair NbS with storage and infrastructure upgrades using interoperable data to optimize siting, siz-ing and cost-benefit outcomes.
- Mainstream water efficiency, storage and risk-informed DRR standards: embed water-use efficiency, storage and demand management in DRR planning; update design standards for drains, pumping, and small reservoirs to be climate-resilient; invest in real-time, integrated dashboards for risk assessment and loss/damage tracking; and expand community-led water governance (water committees) for local buy-in.



©unsplash / maxbuergi

Coherence snapshots - Nepal

Nepal advances coherence in flooding and water management through the complementary development of specific programmes of activity. Nepal's 2021 NAP includes a sector dedicated to "Forests, Biodiversity and Watershed Conservation", as well as specific projects such as "Integrate Watershed Management for Climate Resilience", which aims to "protect and rehabilitate at least 10 major watersheds along the Chure, Siwalik and Mid-Hill regions vulnerable to climate change through multipurpose watershed management techniques by 2030". Similarly, Nepal's National Policy for Disaster Management 2018 - 2030 includes a range of activities dedicated to the sustainable management of water resources, including "promotion of bioengineering techniques for river bank protection" and the development of "watershed protections to reduce floods and landslides." Crucially, this alignment extends to the institutional level, with the Ministry of Forests and Environment identified as the key agency responsible for water management in both documents.

Good practice: Colombia: HERMANA: Building Resilience through Comprehensive Water Management

In Colombia, the HERMANA platform (HERramienta para el MANejo integral del Agua) shows how a comprehensive approach to water management can build resilience to climate and disaster risks. In the Cauca River basin, HERMANA combines real-time data and forecasts on meteorological, hydro(geo)logical, and water quality data, and includes drought indices based on satellite data. The data is fed into a web-based platform to support decision-making. The platform allows to combine weather and water data with models and local knowledge of the ground- and surface water system, such as exceedance thresholds for discharges or water quality parameters, and to generate customized dashboards, reports, overviews, forecasts and warnings tailored to the needs of water authorities and their stakeholders. The HERMANA system enhances early warning capabilities, data accessibility, and decision-making transparency, resulting in:

• Better preparedness: Strengthened forecasting and emergency planning to address floods, droughts, and increasing water demand pressures.
• Improved water governance: Greater institutional collaboration among government agencies, researchers, and technology providers.
• Risk-informed decision-making: Real-time monitoring enables faster responses to climate risks, bridging disaster risk reduction (DRR) and climate change adaptation (CCA) strategies.
• Scalability and adaptability: A flexible framework that can be replicated in other Latin American regions facing similar water management challenges.

This project demonstrates how integrating hydro-meteorological data, climate models, and participatory governance can build resilience against climate-related disasters while advancing sustainable water management. [79]

79 Good practice submitted by DELTARES to the REAP T1 Working Group on CRM. Further info: Ball et. al (2019) HERMANA: Co-Design of an Integrated Operational Water Management Tool for the Valle Del Cauca, Colombia, E-Proceedings of the 38th IAHR World Congress. IAHR 2019, and Netherlands Enterprise Agency (2024) The HERMANA Project. Available at: https://projects.rvo.nl/projects/nl-kvk-27378529-pvw4s17021

3.3.6 Resilient agriculture and food systems

Integrating agrifood systems resilience measures in national agriculture and food policies, as well as across DRR and CCA frameworks, can accelerate local implementation and build long-term resilience. Measures are most effective when they go beyond food production and adopt a full agrifood system lens, covering production, storage, transportation, consumption and waste management.[80,81]
Both extreme and slow-onset events impact crops and supply chains, driving food insecurity and malnutrition. The Global Report on Food Crises (GRFC 2025) reports 295 million people facing acute hunger across 53 countries, with climate extremes a major driver.[82] If unmanaged, hazards such as floods, droughts, cyclones, strong winds, wildfires, changes in precipitation and frost turn into disasters. Post-disaster risk assessment (2007 to 2022) shows that agriculture accounts for 23 per cent of total disaster impacts and 65 per cent of drought-related losses. These findings reinforce calls for a systems approach to agriculture and food systems resilience.[83]

The importance of resilient agriculture and food systems is reflected in the global frameworks. Sendai Framework Target C highlights reducing direct economic loss, including agriculture; SDG 2 (Zero Hunger) focuses on food security; and the GGA targets resilient food and agricultural systems. The 2021 UN Food Systems Summit promotes a systems approach and resilience action aligned with CRM.[84]

Resilient agriculture and food systems emerged consistently as a connecting issue between DRR and CCA in the analysis. Resilient agriculture and agrifood systems act as a joint workspace between both DRR plans and adaptation, with action cutting across short- to medium- and long-term time frames. For instance, nearly all countries identify droughts and floods as top threats, with associated measures to reduce impacts (e.g. Albania, Benin, Ethiopia, Nepal, Pakistan or Zambia). DRR plans analysed hazards, contingencies and operational responses, while NAPs extended action into long-term adaptation (e.g. by improving water efficiency, introducing resilient seed varieties or shifting calendars).

Generally, resilient agrifood systems are predominantly seen in NAPs, while DRR plans provide an operational backbone with early warning systems, insurance and disaster response next to NAP-specific activities such as ecosystem management and conservation practices (e.g. soil and watershed conservation). Linking agrifood-specific climate services to trigger anticipatory action demonstrates a particular good practice. In Argentina, the DRR plan references and plans for agricultural resilience in several sections. This includes the development of early warning protocols as well as localized flood level monitoring stations that support farmers in anticipating and preparing for adverse weather conditions, as well as the development of methodologies to track losses and damages to agriculture in conjunction with the Ministry of Agroindustry and National Institute of Agricultural Technology (INTA). Argentina's NAP provides further detail on the need to localize risk reduction measures in conjunction with traditional knowledge, support access to technologies for farmers, and introduce financing tools for enhancing resilience.

The DRR plan for Nepal puts forward further joint resilience-building measures in partnership with the Ministry of Agriculture and in line with its NAP. These include the promotion of climate-smart agriculture as part of a localized approach (climate-smart villages) and innovative financing, such as the "Farmers Welfare Fund" and the promotion of flood and drought-resistant agricultural systems combined with food and seed storage. While the DRR plan lists some concrete measures, financial planning is anchored in the NAP, allocating the highest budget of all adaptation priorities to agrifood resilience.

Investments in proactive disaster and climate change risk management, including anticipatory actions and agrometeorological advisory services, have proven to be cost-effective strategies for enhancing the resilience of agrifood systems. To ensure the effective implementation of these disaster and risk management measures, adequate financial investments in prevention, anticipation, absorption and adaptation capacities and related measures for overall resilience must be integrated into national and local policy frameworks, and notably in agrifood and other systems. Additionally, layered financing approaches – combining financial protection schemes, insurance and other financial instruments – can be employed to address different needs while pursuing shared objectives.

In summary, building resilient and sustainable agrifood systems requires linked and mutually reinforcing investments and clear linkages to other JIAs. While NAPs are the main vehicle, DRR strategies add key resilience elements such as food and seed storage facilities, insurance pilots, emergency food security, risk and climate information, supporting long-term adaptation and the development objectives of NAPs.

Recommendations for pursuing joint approaches between DRR and climate action:

- Climate information and early warning: synergize service and budget lines so that DRR early warning systems link to NAP agro-advisory services, for example, through shared indicators (percentage of farmers receiving actionable advisories)

- Anticipatory action and adaptive social protection: link climate information and early warnings to financing through adaptive social protection and anticipatory action

- Data and monitoring and evaluation: connect information on losses and damages in agriculture (yield/crop loss, livestock mortality) with NAP-specific key performance indicators (adoption of climate-smart practices, efficient irrigation and drought-tolerant seeds)

- Combined green–grey approaches: where NAPs promote NbS, interlinkage with disaster preparedness and response, as well as resilience standards, should be explored to increase capacity to respond to immediate shocks.

80 FAO (2025) Transforming food and agriculture through a systems approach. Available at: https://openknowledge.fao.org/items/943a2e-7e-0d50-4e45-bf60-8f71ccdc85b1

81 Climate Resilient Food Systems Alliance (CRFS Alliance) (2024) Issue brief: Accelerating Comprehensive Risk Management in Agrifood Systems. Available at: https://www.preventionweb.net/media/102464/download?startDownload=20250510

82 FAO (2025) Global Report on Food Crises (GRFC) 2025. Available at: https://www.wfp.org/publications/global-report-food-crises-grfc.

83 FAO (2023) The Impact of Disasters on Agriculture and Food Security 2023 – Avoiding and reducing losses through investment in resilience. Rome. DOI: https://doi.org/10.4060/cc7900en.

84 Please also consult the UNFSS stocktaking moments in 2023 and 2025 for additional context. Available at: https://www.unfoodsystemshub.org/un-food-systems-summit-4-stocktake/.



In Bangladesh, climate-related information for mung bean farming is shared through a combination of agrometeorological advisories and mobile phone-based interactive voice response services. More than 1 million automated weather-forecast-based harvesting advisory calls have been made thus far, which allow for farmers to take early action and protect their crops from weather-induced impacts.[85]

Coherence snapshots - Kiribati

Kiribati demonstrates advanced coherence in agricultural resilience through its Joint Implementation Plan 2019 - 2028 (KJIP)[86], which integrates CCA and DRR under a single framework, with the Ministry of Environment, Lands and Agriculture Development (MELAD) and specifically its Agriculture and Livestock Division (MELAD-ALD) assigned clear responsibility for implementing agricultural resilience measures across both CCA and disaster risk domains. Coherence is further strengthened by the KJIP's comprehensive approach that acknowledges both modern agricultural challenges and traditional knowledge systems, noting that despite the limitations of land, soil and freshwater resources, local communities have developed sophisticated agricultural livelihood systems based mainly on coconut, breadfruit, pandanus and taro. The KJIP targets support for these local food systems by increasing water and food security through integrated and sector-specific approaches and through promoting healthy and resilient ecosystems.

85 CGIAR (2023) Empowering Bangladesh's mung bean farmers to overcome climate risk-induced loss and damage. Available at: https://www.cgiar.org/initiative-result/empowering-bangladeshs-mung-bean-farmers-to-overcome-climate-risk-induced-loss-and-damage/

86 Kiribati (2019) Kiribati Joint Implementation Plan for Climate Change and Disaster Risk Management 2019–2028 (KJIP). Government of Kiribati.

Coherence snapshots - Palestine

Palestine develops coherence in agricultural resilience through coordinated planning frameworks where the 2016 NAP[87] identifies agriculture as "highly vulnerable" in both the West Bank and Gaza Strip and outlines specific adaptation measures ranging from the development of an early warning system for agriculture to rehabilitation and construction of water harvesting systems). The National Strategic Framework for Disaster Risk Reduction 2023 - 2027[88] complements this by recognizing agriculture as one of the six sectors most vulnerable to risk and calling for "updating the agricultural strategy for disaster risk reduction according to expected scenarios." The approach is further strengthened by aligned implementation mechanisms where the NAP advocates for "capacity building and awareness programs for farmers on climate-smart agricultural practices", while the DRR framework references existing agricultural protection initiatives including "a project to assist farmers affected by Israeli occupation practices" and agricultural insurance supported by the Agricultural Risk Aversion and Insurance Fund.

3.3.7 Resilient infrastructure

Resilient infrastructure is a natural JIA because decisions on networks and facilities lock in risk for decades. while society relies on them daily for water,energy, transport, health, communications and public safety, among other things. The global frameworks align strongly around resilient infrastructure: the Sendai Framework sets Target D to reduce damage to critical infrastructure and disruption of basic services, and promotes resilient health and education facilities and business continuity; the 2030 Agenda links this to SDG 9 on resilient infrastructure and SDG 11 on resilient cities, alongside goals for health, water, energy and climate; and the Paris Agreement (through the GGA) calls for "increasing the resilience of infrastructure and human settlements to climate change impacts to ensure basic and continuous essential services for all and minimizing climate-related impacts on infrastructure and human settlements."[89]

The analysis of this report shows that both documents prioritize codes and standards, retrofitting of hospitals, schools and lifelines, climate-informed project screening, continuity planning and recovery that builds back better. Working together helps close persistent gaps in data on losses and service disruption under Sendai Target D, aligns finance and governance across ministries and utilities, and ensures accessibility and inclusion so that services reach people in vulnerable conditions. It also reduces cascading failures across sectors and prevents maladaptation.

In the analysis, resilient infrastructure emerges as one of the most consistently referenced JIAs appearing across nearly all DRR plans and NAPs reviewed: nearly every DRR plan treats infrastructure as a lifeline whose failure cascades across sectors, while most NAPs convert that priority into climate-resilient upgrades, codes and standards across water, energy, transport, communications and public facilities. Conceptual coherence is high across both document types; operational coherence is visible where countries specify sector measures (for example, dam safety, flood protection, safe hospitals, and resilient power and water systems) and name lead ministries and asset owners. Institutional coherence is present but uneven, and often clearest where DRR platforms, infrastructure regulators and line ministries share mandates.

87 Palestine (2016) National Adaptation Plan (NAP). Government of Palestine.

88 Government of Palestine (2023) National Strategic Framework for Disaster Risk Reduction 2023–2027

89 UNFCCC (2023) Report of the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement on its fifth session, held in the United Arab Emirates from 30 November to 13 December 2023. Decision 2/CMA.5; Point 9. (e).

By contrast, explicit monitoring, evaluation and financing provisions are still sparse and rarely harmonized between DRR and NAPs. The pattern mirrors health and agrifood systems, with strong shared intent and overlapping portfolios, growing but incomplete operational and institutional linkages, and to some extent, signals on joint monitoring and evaluation and dedicated, long-horizon financing. Common activities include updating building codes, sector-specific resilience standards for roads, bridges, ports, power and water, lifeline service continuity and integration of risk information into public investment frameworks. NAPs more often quantify climate scenario impacts and provide long-term budgets; DRR plans more often specify emergency roles, logistics and continuity protocols.

A country like Canada prominently follows a joint approach between DRR and climate action for building climate-resilient infrastructure, providing institutional linkages between the Disaster Mitigation and Adaptation Fund (DRR) and the NAP to support community resilience. Its DRR plan has actionable projects across topics, for instance, flood control embankments, institutionalizes build back better principles for recovery and reconstruction, drainage and landslide countermeasures, and assigns agencies for roads, water, energy and telecoms. Furthermore, the NAP dedicates a full framework for infrastructure as a key system, with over 40 measures to strengthen services to communities, including climate-proofing water distribution and retrofitting public buildings or natural/green infrastructure backed by concrete indicators and localized approaches (see box for further information).

Fiji pursues a joint approach that links disaster risk reduction delivery with long-term adaptation investment to make infrastructure climate resilient. The National Disaster Risk Reduction Policy (2018–2030) converts intent into actionable projects, including coastal flood protection infrastructure, upgraded drainage, landslide countermeasures and hardening of transport, energy, communications and water systems. It assigns clear roles and responsibilities for joint DRR and NAP measures and emphasizes redundancy, so that lifeline services remain connected during crises.

Gaps observed related to insufficient data on infrastructure losses and damages, and related service disruptions from climate and disaster impacts (Sendai Framework Target D); lack of adequate funding for resilience projects; failure to incorporate multi-hazard assessments or account for the interdependent nature of infrastructure systems, and the challenges of integrating climate change projections to determine risk over time. There are also gaps in accounting for the specific needs of groups in vulnerable conditions, particularly in making infrastructure and services accessible to all. This accessibility is essential for inclusive DRR and climate action, especially across health, education, water, nature, agrifood, ocean and coast, energy, transport, urban and industry systems that underpin different SDGs.

Joint measures for resilient infrastructure can include:

- Comprehensive multi-hazard and multisectoral risk assessments and resilience stress tests.

- Designing infrastructure projects to account for climate change by incorporating likely climate scenarios and anticipated growing risks and impacts from extreme weather events. While this may entail higher upfront capital costs, it can reduce future losses. For example, in Bangladesh, factoring climate change into infrastructure design and applying appropriate building codes increased capital requirements by about $560 million for additional flood protection but could save up to $1.6 billion in losses and damages.[90]

- Improving data collection of the loss and damage to infrastructure from diverse impacts from hazards, including climate-related events, and disasters.

90 UNDRR (2022) Principles for resilient infrastructure. Available at: https://www.undrr.org/media/78694/download?startDownload=20250610.


©unsplash / afilipa

- Building codes and regulatory frameworks should be regularly reviewed and updated to address climate change and disaster risk, prioritizing new infrastructure that is climate- and disaster-resilient. Retrofitting and remodelling existing infrastructure should also aim to enhance resilience and reduce carbon footprints. Updates should account for whole-life carbon footprints, evolving climate projections and risks over the infrastructure's life cycle.

- Applying resilience principles to systematically integrate DRR and climate risks into infrastructure design, planning and implementation.

- Ensuring the design, planning and implementation of critical infrastructure is inclusive, by engaging government, local authorities, civil society, academia, the private sector and direct beneficiaries, among others.

- Putting in place the most appropriate legislative and governance systems to facilitate resilient infrastructure.

Avoiding maladaptation/negative consequences of infrastructure projects: Poorly designed or sited infrastructure can also lead to maladaptation, locking societies into higher long-term risks, shifting risks into other places or groups, increasing emissions or eroding their adaptive

capacity. An integrated approach to planning and implementation that considers the perspectives of different stakeholders and sectors and aligns DRR and climate action with development goals reduces risk for maladaptation.

Transboundary dimensions: Because a lot of infrastructure crosses borders, creating subsequent dependencies, countries should cooperate on knowledge and data-sharing, capacity-building, common approaches and resilience standards, so that vital services keep running during crises and prevention measures are implemented in time.[91]

A 2025 global study of the status of national DRR strategies confirms that infrastructure resilience is a key focus for many countries.[92] Ensuring that this is reflected in climate-related policies and documents – and, therefore, in investments – in a coherent way through active multi-stakeholder coordination and a joint approach between DRR and climate action is the next essential step.



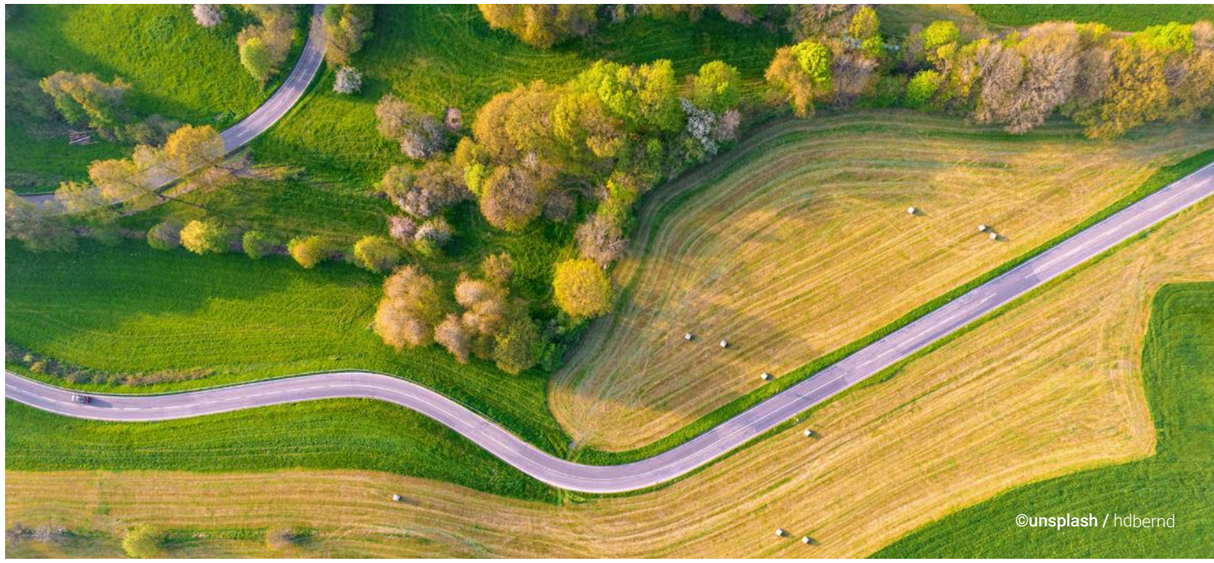
91 OECD (2019) Good Governance for Critical Infrastructure Resilience, OECD Reviews of Risk Management Policies, OECD Publishing, Paris. DOI: https://doi.org/10.1787/02f0e5a0-en

92 UNDRR (2025) Global Status of National Disaster Risk Reduction Strategies. https://www.undrr.org/2025-global-status-national-DRR-strategies

Coherence snapshots - Canada

Canada advances coherence in infrastructure resilience by embedding climate-resilience considerations and targets across policy frameworks and governance mechanisms. Canada's national DRR strategy, the Emergency Management Strategy for Canada (2019), provides a basis for infrastructure resilience by identifying climate change and critical infrastructure interdependence as key drivers of increasing disaster losses. It promotes a whole-of-society approach that engages critical infrastructure owners, emphasizes comprehensive risk assessments that integrate climate change impacts, and advances the principle of "building back better" across legislations, policies, and programs for emergency management and disaster risk reduction.

The National Adaptation Strategy (2023) sets the goal that "all infrastructure systems in Canada are climate-resilient and undergo continuous adaptation to adjust for future impacts to deliver reliable, equitable, and sustainable services to all of society" (p. 27). It is operationalised through concrete targets that ensure climate change is systematically factored into planning, design, operation, and maintenance of infrastructure, with a focus on communities at higher risk. Notably: i) incorporating climate-change resilience considerations into different Canadian Codes by 2026 (National Building Code, Highway Bridge Design Code, Electrical Code); ii) factoring CCA into decision-making processes of 80% of public and municipal organizations by 2030; iii) providing robust guidance, codes and standards for the top climate change risks to key public infrastructure systems to be adopted by all infrastructure decision makers by 2030; and, iv) continuing to close the infrastructure gap by 2030 through investments made in partnership with the Government of Canada and the First Nations, Inuit and Métis communities. This unified governance model demonstrates how a comprehensive risk management approach strengthens infrastructure resilience by aligning provincial and territorial priorities and harmonizing standards nationwide.



Good practice: Germany's BMDV Network of Experts: Advancing Climate-Resilient Infrastructure

The German national research program BMDV Network of Experts was founded in 2016 by the Ministry of Digital and Transport (BMDV) and aims to make transport infrastructure more resilient towards climate change and the impacts of extreme events. In the first phase of the BMDV Network of Experts (2016-2019), climate impact analysis was developed that was based on three steps in a spatial and indicator-based approach: exposure, sensitivity and criticality analysis of one or more transport modes towards extreme events. First, the exposure of transport infrastructure towards a climate change impact is analysed. The sensitivity analysis then aims to evaluate, which sections are vulnerable towards such an event and which are not, including already established prevention measures or adaptation strategies. These analyses are based on different indicators, which have been developed and are suitable for the different climate impacts. The concept of climate impact analysis serves as a practical and transparent framework for a network-wide prioritization and evaluation of adaptation needs across transport modes towards a changing climate. These studies are vital for developing a climate resilient and sustainable transport infrastructure. With risk analyses, climate adaptation measures can be identified, supporting reduction in disaster and climate risks.

Good practice: Germany's BMDV Network of Experts: Advancing Climate-Resilient Infrastructure

The German national research program BMDV Network of Experts was founded in 2016 by the Ministry of Digital and Transport (BMDV) and aims to make transport infrastructure more resilient towards climate change and the impacts of extreme events. In the first phase of the BMDV Network of Experts (2016-2019), climate impact analysis was developed that was based on three steps in a spatial and indicator-based approach: exposure, sensitivity and criticality analysis of one or more transport modes towards extreme events. First, the exposure of transport infrastructure towards a climate change impact is analysed. The sensitivity analysis then aims to evaluate, which sections are vulnerable towards such an event and which are not, including already established prevention measures or adaptation strategies. These analyses are based on different indicators, which have been developed and are suitable for the different climate impacts. The concept of climate impact analysis serves as a practical and transparent framework for a network-wide prioritization and evaluation of adaptation needs across transport modes towards a changing climate. These studies are vital for developing a climate resilient and sustainable transport infrastructure. With risk analyses, climate adaptation measures can be identified, supporting reduction in disaster and climate risks.

Good practice: Coherence snapshots – Lesotho: Strengthening critical infrastructure resilience through risk-informed development in Lesotho's water sector

In the Southern African Development Community (SADC) region, climate change-related water shortages pose severe risks, potentially triggering crises in energy, agriculture, health, and the economy, with the potential to drive instability. Managing water infrastructure from a systemic, transboundary, and risk-informed perspective is crucial for resilience and sustainable development. Recognizing this, the Global Initiative on Disaster Risk Management (GIDRM), commissioned by the Federal Ministry for Economic Cooperation and Development (BMZ) and implemented by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), piloted a systemic risk assessment to enhance the climate resilience of Lesotho's critical water infrastructure. The assessment, conducted in cooperation with the Climate Risk Institute (CRI), focused on the Metolong Dam Water Supply System to evaluate its reliability under changing climate conditions and accompanying risks. The action resulted in an improved understanding of the reliability of the Metolong Dam Water Supply System under changing climate conditions and the potential consequences of water supply fluctuations for key user groups. Furthermore, the initiative fostered collaboration and a shared sense of ownership among stakeholders, involving over 50 practitioners, managers, decision-makers, and community leaders through replicating the PIEVC protocol, a methodology developed by the Public Infrastructure Engineering Vulnerability Assessment Committee (PIEVC) of Canada. This participatory approach enriched the assessment with diverse perspectives and insights, which were incorporated into decision-making and risk-informed development. The initiative demonstrated strong scalability potential through its integration into national policies and regional frameworks, such as the Lesotho Water Act and the National Strategic Development Plan, setting a precedent for other regions.[93]

3.3.8 Nature-based solutions

NbS are increasingly recognized as efficient, cost-effective, flexible and sustainable ways to integrate CCA and DRR. "Nature-based solutions are actions to protect, conserve, restore, sustainably use and manage natural or modified terrestrial, freshwater, coastal and marine ecosystems which address social, economic and environmental challenges effectively and adaptively, while simultaneously providing human well-being, ecosystem services, esilience and biodiversity benefits".[94]

NbS are an umbrella concept, which includes diverse activities and approaches, including ecosystem-based adaptation (EbA) and ecosystem-based disaster risk reduction (Eco-DRR), which are particularly relevant for the development of coherent approaches.[95] NbS can be implemented as standalone solutions across and within sectors and systems or combined with other approaches, such as resilient infrastructure that blends grey, green and blue elements. They are highly applicable in infrastructure projects and offer synergistic benefits when integrated with technological, engineering and other solutions and resilience measures.

A key target of the GGA is "reducing climate impacts on ecosystems and biodiversity and accelerating the use of ecosystem-based adaptation and nature-based solutions, including through their management, enhancement, restoration and conservation and the protection of terrestrial, inland

93 Good practice submitted by Global Initiative Disaster Risk Management/GIZ and BMZ through the REAP T1 Working Group on CRM. Further info: https://www.gidrm.net/user/pages/get-started/resources/files/GIKRM_III_Factsheet_EN_Lesotho.pdf

94 UNEA (2022). Resolution UNEP/EA.5/Res

95 UNDRR (2023) Nature-Based Solutions for Comprehensive Disaster and Climate Risk Management - Toolkit for Integrated Planning and Implementation of Disaster Risk Reduction and Climate Change Adaptation. Available at: https://www.undrr.org/publication/nature-based-solutions-comprehensive-disaster-and-climate-risk-management-toolkit

water, mountain, marine and coastal ecosystems." While small-scale NbS could be implemented in a variety of cases and localities, it is essential that they are incorporated into policies and action plans for them to have tangible, long-term and large-scale impact. This will also allow for the tracking of results and adapting measures over time. Integrating NbS into national DRR strategies and NAPs (as well as NDCs) provides an opportunity for coherence as solutions have benefits for both DRR and climate action but also for environmental protection targets and development across sectors or systems underpinning the SDGs (linked to SDG 2 on ending hunger, SDGs 11 and 13 on sustainable cities and climate action, and SDGs 14 and 15, relating to life on land and sea; and o the GBF). One of the 10 principles in the CBD guidelines for EbA and Eco-DRR states that disaster response activities should be used as an opportunity to build back better and enhance adaptive capacity, integrating climate-resilient ecosystem measures throughout the disaster management cycle.[96]

An analysis of NbS across the DRR plans and NAPs of the Marshall Islands, Niger, Saint Vincent and the Grenadines, and Uruguay shows that all these countries assign multi sectoral institutional responsibilities, ensuring NbS are embedded across governance levels. In general, NAPs have identified specific sectors for applying NbS, for example, coastal conservation in the Marshall Islands; forestry, wetlands, agriculture and watersheds in Niger and Saint Vincent and the Grenadines; and soil and grassland management in Uruguay. On the other hand, the DRR plans recognize environmental protection as part of DRR and sectoral planning and have kept NbS, sometimes without explicitly naming them as such, at a broader policy level. Given the varied focus of the two sets of plans, the key institutions responsible for implementation of the two plans vary greatly.

Given the high relevance of NbS in reducing risk and adapting to climate change, they can also provide a strong basis for improving coherence in financing DRR, CCA and environmental initiatives across the Rio Conventions on climate, biodiversity and land, as noted earlier. For example, the PSF in the Philippines supports projects that blend ecosystem restoration and DRR. Mangrove restoration initiatives funded through the PSF provide natural coastal defences against storm surges, reduce disaster risk, and enhance biodiversity and climate resilience.[97]

While national and local governments have responsibility for establishing the legal framework and monitoring and evaluation mechanism, communities, civil society, academic institutions and the private sector hold important knowledge of the local context and requirements and could assist in addressing awareness and data gaps. The effective management of NbS will largely depend on the engagement of such stakeholders and are important for ensuring local ownership and buy-in. The private sector, specifically, could also support scaling up and financing NbS projects, with appropriate enabling conditions.

96 Secretariat of the Convention on Biological Diversity (2019) Voluntary guidelines for the design and effective implementation of ecosystem-based approaches to climate change adaptation and disaster risk reduction and supplementary information. Technical Series No. 93. Montreal, 156 pages.

97 Government of the Republic of the Philippines, Department of Budget and Management (2024) Bolstering climate resilience, Press release. Available at: https://www.dbm.gov.ph/index.php/management-2/2925-bolstering-climate-resilience-pangandaman-releases-p579-312-million-for-green-mitigation-projects

Good practice: The Caribbean Biodiversity Fund

The Caribbean Biodiversity Fund (CBF) acts as an umbrella trust fund that channels financing into national conservation and resilience initiatives. It promotes ecosystem-based adaptation (EbA), coastal protection, and biodiversity preservation—all of which contribute to both DRR and CCA objectives. By combining environmental sustainability with disaster and climate resilience, the CBF exemplifies coherence between conservation, adaptation, and risk reduction goals, while also strengthening national implementation capacities through its national partner funds.



©unsplash / alex_photogram

Good practice: Colombia institutionalizes ecosystem-based disaster risk reduction (Eco-DRR)

Since 2023, Colombia has laid the foundations for institutionalizing Eco-DRR. Led by the Ministry of Environment and Sustainable Development, the process produced national guidance, piloted approaches, and defined both conceptual and operational frameworks for nature-based solutions (NbS) with a DRR focus, initially emphasizing marine–coastal ecosystems. In 2025, Colombia approved its Eco-DRR Roadmap, a nationally anchored yet sub-nationally driven strategy that integrates biodiversity and ecosystem services into DRR, CCA, and sustainable development. The roadmap draws on the National Policy for the Integrated Management of Biodiversity and its Ecosystem Services, the Biodiversity Action Plan (BAP) 2030, and Colombia's Nationally Determined Contributions (NDCs). It translates global commitments under the Sendai Framework for Disaster Risk Reduction, the Kunming-Montreal Global Biodiversity Framework, and the Paris Agreement into a unified programme of action. Colombia's National Biodiversity Strategy and Action Plan (NBSAP) 2016–2030 provides the strategic foundation for the Eco-DRR Roadmap, embedding ecosystem-based adaptation (EbA) and DRR into national biodiversity policy. The approach demonstrates how biodiversity and ecosystem services reduce social, economic and environmental vulnerability to climate-related and natural hazards.

Coherence snapshots - Zimbabwe

Zimbabwe approaches coherence in NbS through aligned planning frameworks. Zimbabwe's 2024 NAP[98] prioritizes "recovery of highly threatened ecosystems and species" with US$ 120 million allocated for "natural resource-based livelihood options and habitat restoration," while the 2023 National Disaster Risk Management Strategy[99] identifies progressive environmental degradation as a significant hazard and emphasises "capacity for addressing underlying risk factors and implementation of climate change adaptation" as a key outcome of Strategic Objective 1. This is further developed by institutional alignment where both documents assign responsibility for environmental management to the same entities, with the NAP specifying the Forestry Commission and Environmental Management Agency (EMA) as implementing bodies, while the DRM strategy includes the EMA among the stakeholders in its multi-sectoral implementation framework, ensuring consistent governance of nature-based approaches across both CCA and DRR domains.

98 Government of Zimbabwe (2024) National Adaptation Plan (NAP)

99 Government of Zimbabwe (2023) National Disaster Risk Management Strategy

Coherence snapshots – The Philippines

The Philippines' 2024 NAP[100] has "scale up nature-based solutions" as one of five thematic cross-sector adaptation strategies, noting that it "emphasizes the importance of prioritizing nature-based solutions where possible to enhance climate resilience and protect vulnerable populations". The National Disaster Risk Reduction and Management Plan 2020 - 2030 (NDRRMP)[101] similarly promotes "ecosystem-based approaches to DRR as complementary solutions to engineering measures" and incorporates "Blue-Green Infrastructure" as actions that utilize natural processes for "protection, sustainable management and restoration of ecosystems." This alignment is further strengthened by coordinated institutional responsibilities, where both documents stipulate the Department of Environment and Natural Resources (DENR) as the primary agency for implementing ecosystem-based approaches, with the NAP emphasizing "active and participatory stakeholder involvement" and the NDRRMP specifying a wide variety of ministries and stakeholders as tasked with promoting "the use of appropriate ecosystem and nature-based approaches".

3.3.9 Urban resilience

Urban resilience is a central objective across global policy frameworks, recognizing that cities and human settlements are among the most critical systems for building overall resilience. The Sendai Framework pays special attention to the development of local DRR Strategies, highlighting the often cumulative impacts of disasters on communities, households and small and medium-sized enterprises, which incur a high percentage of all losses.[102] The Paris Agreement recognizes the crucial role of local and subnational governments in fast-tracking climate solutions with transformative change, particularly in urban areas. SDG 11 isspecifically dedicated to the resilience of cities and communities, calling for integrated disaster risk reduction and management at all levels to reduce the negative impacts of disasters.[103] The New Urban Agenda underscores the need for the adoption and impleme tation of DRR for reducing vulnerability, building resilience and responsiveness to natural and human-caused hazards, and for fostering mitigation of and adaptation to climate change.[104]

It is estimated that by 2030, 60 per cent of the global population will be living in urban areas. Compounding economic, social and environmental challenges cause unprecedented periods of uncertainty for many cities and municipalities. Additionally, increasing risks from extreme heat events have adverse impacts on human health, infrastructure, food security and air quality, and can lead to changes in precipitation, urban fires and accidents.[105] In June 2024, the United Nations Secretary-General issued a Call to Action on Extreme Heat, calling on governments, cities, and communities to adopt bold measures to protect populations at risk and build heat resilience. In response, an Urban Heat Risk Management Resource Package has been developed, which brings together insights from over 30 global case studies and detailed analyses of five cities – Amadora (Portugal), Incheon (Republic of Korea), Quito (Ecuador), Cape Town (South Africa) and Nairobi (Kenya), which could serve as a guide for cities and municipalities, as well as other practitioners to develop specific actions to tackle

100 Government of the Philippines (2024) National Adaptation Plan (NAP)

101 Government of the Philippines (2020) National Disaster Risk Reduction and Management Plan 2020–2030 (NDRRMP)

102 UN (2015) Sendai Framework for Disaster Risk Reduction 2015-2030. Available at: https://www.preventionweb.net/files/43291_sendaiframeworkfordrren.pdf

103 The Global Goals Campaign (2025) Goal 11: Sustainable Cities and Communities. Available at: https://www.globalgoals.org/goals/11-sustainable-cities-and-communities/

104 UN (2017) The New Urban Agenda. A/RES/71/256*. Available at: https://habitat3.org/wp-content/uploads/NUA-English.pdf

105 Making Cities Resilient 2030 (2025) Urban Heat Risk Management Resource Package. Available at: https://www.undrr.org/media/103947/download?startDownload=20250617


©unsplash / peter_borter

extreme urban heat. As urban areas continue to expand into locations where populations and assets are increasingly exposed to hazards, in some places coupled with high degrees of social inequality, informality, poverty and insecurity, CRM becomes ever more urgent.[58]

Urban resilience is influenced by how well policy instruments align at the local level to reduce exposure and vulnerability in growing urban systems. The analysis shows that urban land-use planning through building codes and municipal regulation is the strongest link between policy and practice for both NAPs and DRR strategies, underscoring a shared emphasis on regulating development to curb risk. For instance, in the cases of Armenia and Colombia, experiences illustrate how integrating risk into planning processes through local guidelines, territorial risk approaches, and climate risk considerations can progressively harden urban systems against hazards, from seismic shocks to flood events. In contrast, there is a notable drop for green infrastructure from the NAPs to DRR strategies, signalling a gap between adaptation ambitions that emphasize NbS and their operationalization within DRR planning, which may limit the co-benefits of urban greening for heat reduction, air quality and flood regulation. The patterns also reveal that more reactive or shelter-based measures, such as communal cool shelters, tend to be less prevalent in both instruments despite rising urban heat risks.

Other activities show relatively higher presence, which may reflect a broader set of cross-cutting actions (awareness, governance, financing and capacity-building) that underpin targeted infrastructure measures. The examples of Armenia and Colombia reinforce the notion that where climate and disaster risk management are coherently integrated at the city level – through updated construction norms, risk-informed territorial planning, and nature-based solutions – the coherence between NAPs and DRR strategies is enhanced, enabling more resilient urban systems. To address these challenges coherently and ensure that no one is left behind, it is crucial to understand the underlying drivers of risk, which are often underestimated yet deeply interconnected, especially within urban sectors and systems. Many of the most effective tools and methods for reducing exposure to hazards, such as land-use regulations and building code enforcement, are implemented at the local level in urban contexts. The development of city and municipality climate and DRR strategies and action plans that are aligned with long-term SDGs is a precondition for ensuring the safety and well-being of their communities. Moreover, urban-level governance bodies have the opportunity for direct communication and collaboration with communities and with non-governmental stakeholders, such as locally operating private companies, infrastructure operators, academic bodies, local NGOs and civil society groups, religious leaders and youth groups.

Recommendation for pursuing joint approaches between DRR and climate action:

- In order to bridge gaps and maximize synergies, policymakers are advised to institutionalize a shared urban resilience framework at the municipal level: a designated coordination focal point can facilitate this action. This framework should mandate the alignment of building codes, land-use planning and NbS investments across NAPs and DRR plans, ensuring that green infrastructure and cooling solutions are integral components rather than afterthoughts.
- Harnessing city-to-city platforms (e.g. Making Cities Resilient MCR 2030, UN-Habitat hubs, C40 and ICLEI – Local Governments for Sustainability) for co-learning, funding access and joint monitoring can accelerate implementation and create unified scorecards to track progress across policy domains.
- Prioritize concrete actions for communal cooling and NbS co-benefits, linking heat resilience with flood and seismic risk reduction to deliver multiple gains for urban health, liveability and climate resilience.

Several city-to-city platforms help cities and urban areas to address risks, and foster co-learning and exchange of good practices. The MCR 2030 initiative spotlights cities, with 1,844 signatory cities as of June 2025, and provides tools for integrated action, including scorecards. Other initiatives include the UN-Habitat's Urban Resilience Hub, the Rockefeller Foundation's 100 Resilient Cities, C40, ICLEI and United Cities and Local Governments. These initiatives support cities and municipalities through knowledge-sharing and capacity-building, and help identify funding opportunities for implementing a wide range of context and sector-specific disaster and climate risk and impact management solutions, including risk assessment, monitoring, MHEWS, preparedness, NbS and resilient infrastructure.[106]

106 UNDRR (2025) Disaster Resilience Scorecard for Cities. Available at: https://mcr2030.undrr.org/disaster-resilience-scorecard-cities

Coherence snapshots – Namibia: Developing a Disaster Risk Reduction Strategy for Windhoek: A Multi-Stakeholder Approach for Aligning Local Action with Global Frameworks and Enhancing Urban Resilience

The Resilience Initiative Africa (RIA), implemented by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ), in cooperation with UNDRR, supported the City of Windhoek in developing its DRR strategy. As part of the MCR2030 initiative, the project aimed to align local DRR efforts with the regional and global frameworks, including the Sendai Framework, the Paris Agreement, the New Urban Agenda, and the African Programme of Action for Disaster Risk Reduction. The strategy integrates CCA in urban planning to enhance resilience. A multi-stakeholder process involving state and non-state actors, and representatives of special interest groups, ensured that the strategy was comprehensive, inclusive, and aligned with international standards. To complement this, the team applied the Quick Risk Estimator Tool that enabled further analysis of the hazards, exposure and vulnerability, as well as explored the Climate Resilience Addendum of the MCR2030 Resilience Scorecard that allowed them to self-assess the interlinkage and integration of disaster and climate resilience strategies and practices at the sub-national level. The strategy (2025-2030) guides the city's efforts in improving resilience, addressing both current and future risks. It includes concrete solutions and measures to improve on risk governance, integrate DRR into urban planning, capacity development and financing.[107]

Coherence snapshots – Suryodaya Municipality, Nepal

Suryodaya Municipality in Nepal has taken several steps towards strengthening community-based urban resilience. The municipality joined the MCR2030 campaign and embraced the Ten Essentials for Making Cities Resilient guidelines to systematically strengthen DRR across all levels. The municipality decided to translate the Disaster Resilience Scorecard for Cities into Nepali to make global agreements and guidelines more accessible to the community members. A validation workshop, attended by emergency services, civil society, and local leaders, adapted the tool to local needs. Findings from the Disaster Resilience Scorecard led to updates to disaster preparedness plans and guided development of a GIS-based risk profile. These data were integrated into Bipad, Nepal's national DRR platform. Additionally, Suryodaya's Local Disaster and Climate Resilience Plan (LDCRP) was developed through a participatory process involving community members, experts, and municipal officials. The city is currently formulating its Local Adaptation Plan of Action (LAPA) to address long-term climate threats and strengthen coordination across resilience and adaptation agendas.[108] In DRR planning, extreme weather events and climate-related disasters are explicitly included and embedded within the DRR strategies, illustrating the integration of disaster and climate risk and impact management work.

107 Good practice submitted by the Resilience Initiative Africa/GIZ and BMZ through the REAP T1 Working Group on CRM. Further info: https://www.giz.de/en/regions/africa/sadc-botswana/news/enhancing-urban-flood-resilience-sadc-region

108 Good practice submitted by MCR2030 through the REAP T1 Working Group on CRM. Further info: https://mcr2030.undrr.org/

3.3.10 Urban resilience

This JIA represents a **spectrum of activities addressing vulnerability, social protection, science and education, and business services for disaster and climate risk reduction**. The wide variety of solutions and activities, and the numerous tangible links between JIAs described above (e.g. impact, vulnerability and risk assessments; resilient infrastructure, MHEWS and NbS) collectively illustrate how broadly CRM approaches can be applied to promote multiple solutions across critical systems.

Specific population groups often face higher disaster and climate change risks due to where they live (e.g. high exposure in flood-prone areas) and livelihood opportunities such as the crops grown (e.g. low-cost, low-yield seeds that depend on scarce rainwater). Preparedness and coping capacity are influenced by capital to invest in adaptation and resilience, and decision-making power to influence public adaptation actions. Additionally, resilience/adaptation capacity is correlated to economic and social support networks.[109]

The current analysis confirms that social protection systems are a critical JIA for aligning NAPs with DRR strategies, as they directly address vulnerability, livelihood security and resilience. In Albania, for instance, the National Disaster Risk Reduction Strategy emphasizes shock-responsive social protection to support economically vulnerable populations during disasters and to integrate DRR and CCA into social protection frameworks. It also highlights the role of education and new teaching practices dedicated to DRR/CCA, aimed at building risk literacy from school onwards, and involving businesses in risk reduction through capacity-building and resilience planning. St Vincent and the Grenadines mirrors these priorities in its NAP, stressing targeted support for marginalized groups (e.g. households led by single adults, and the elderly) during climate shocks, and integrating education on climate risks into the school system via the National School Safety Policy. Both contexts illustrate how social protection, education and business engagement contribute to a coherent, multisectoral resilience strategy that links DRR, CCA and development objectives.


©unsplash /niceyem

109 UNDP (2017) Social Vulnerability Assessment Tools for Climate Change and DRR Programming. Available at: https://www.adaptation-undp.org/resources/social-vulnerability-assessment-tools-climate-change-and-drr-programming

The analyses also reveal shared patterns: multisectoral governance and stakeholder engagement are central, with agencies such as the National Civil Protection Agency in Albania playing a coordinating role, and ministries in Saint Vincent and the Grenadines linking health, environment and education to resilience planning. Both prioritize education and risk literacy to empower communities and both acknowledge the value of shock-responsive mechanisms that can scale support during crises. While Albania emphasizes formal mechanisms to integrate DRR/CCA into social protection and to bolster private-sector resilience, Saint Vincent and the Grenadines focuses on targeted social protection for vulnerable groups and a risk-informed integration of DRR into economic planning. Together, these cases demonstrate how a coherent JIA anchored in social protection can fuse social, economic and environmental dimensions to reduce risk, accelerate recovery and build long-term climate resilience.

Recommendations for pursuing joint approaches between DRR and climate action:

- Risk assessments and analyses need to consider all elements of social vulnerability together rather than in isolation. Ensure that disaster and climate-related risks and their drivers are included and explicitly address all societal groups (including persons with disabilities, aging populations, gender aspects, children at risk, etc.) to better understand potential impacts.

- Acknowledge existing gaps – granular data, common metrics and definitions, institutional fragmentation and limited local capacities/ resources – but proceed with available tools. Use instruments such as the UNDP Social Vulnerability Assessments Tools for Climate Change and DRR Programming, and incorporate tailored vulnerability indicators in the Subnational IN-FORM Risk Index to conduct comprehensive vulnerability assessments.

- Leverage social protection systems as a core component of disaster and climate resilience. Design these systems to provide safety nets before, during and after crises, and to reduce vulnerability to future shocks, thereby strengthening long-term resilience. Scale up Adaptive Social Protection by integrating DRR and CCA into social protection frameworks for holistic poverty and vulnerability reduction across systems.

- Prioritize understanding of the linkages between DRR, CCA and development to ensure CRM uptake in future programmes and planning. Invest in building this understanding at the local community level and across stakeholders. Promote formal and informal education and public awareness to develop robust risk understanding and management.

- Develop and invest in educational programmes and tools that address the root causes of disaster and climate risk, with a focus on vulnerability, exposure and resilience. Use these programmes to inform current and future decision-makers, practitioners and the wider community.[110]

- Anchor coherence in the design and implementation of DRR and CCA interventions in existing Indigenous or local knowledge systems. This strengthens community understanding and support for such approaches and ensures that programmes are grounded in local contexts.

- Ensure Indigenous knowledge systems contribute to preparedness, multi-hazard early warning, impact and vulnerability assessments, risk assessments and resilient agrifood systems. For interventions and policies to be effective, align them with grassroots realities so that the approach is comprehensive and coherent.

- For effectiveness, tailor DRR and CCA policies, plans and strategies through engagement with grassroots communities to enhance capacities and reduce vulnerabilities at the local level.

110 UNDRR (2024) Words into Action guidelines: The Science–Policy–Society ecosystem for disaster risk reduction. Available at: https://www.undrr.org/publication/words-action-guidelines-science-policy-society-ecosystem-disaster-risk-reduction

Coherence snapshots – Bangladesh

Bangladesh has developed a Vulnerable Group Development (VGD) programme, which is one of the largest social safety net programmes in the country. It supports the provision of food security and livelihoods of poor women. The programme delivers food transfers and skills training to empower women and increase their resilience to economic and environmental shocks. The VGD initiative spans beyond immediate relief activities by linking food assistance to long-term livelihood strategies and through the provision of capacity-building elements. The beneficiaries receive training in areas such as agriculture, livestock rearing, and small-scale entrepreneurship to develop skills and become less reliant on any single source of income, making them more resilient to economic shocks.[111]

Good practice: Voices of Resilience: Viet Nam's Children Use Film to Promote DRR and Climate Action

After a flood impacted their communities, ethnic minority children in Viet Nam used participatory video to understand their situation and offer solutions to reduce disaster risk, including potential impacts of a changing climate. They developed their individual films through collaborative scriptwriting and production planning and recorded the visuals and narration to tell their story. The children used their finished films in their communities for awareness-raising and local planning. The films were also shown on television and in schools to explain the impact of floods, and advocate for greater inclusion of DRR and climate change in local and national curricula.[112]

111 UNDP & ECLAC (2024) Resilience in action: Social policies to navigate uncertainty in Latin America and the Caribbean. Thematic Table 1: Adaptive Social Protection Systems for Vulnerable Populations. XVI Ministerial Forum for Development in Latin America and the Caribbean, Barbados, October 30-31 & November 1, 2024. Available at: https://www.undp.org/sites/g/files/zskgke326/files/2024-10/technical-note-thematic-table-1-adaptive-social-protection_en.pdf

112 UNDRR (2020) Words Into Action: Engaging Children and Youth in Disaster Risk Reduction and Resilience Building. Available at: https://www.undrr.org/sites/default/files/2020-10/67704_67704wiachildyouthdrr202067704undrr_1.pdf?startDownload=true

3.3.11 Human mobility

Even though human mobility, including displacement, has not been identified as a JIA within the clustering exercise based on the methodology, it has nonetheless been recognized by international and national actors alike as an important area requiring a more integrated and coherent management approach.

The need to promote cross-sectoral approaches (and related multi-stakeholder responses) to human mobility issues is apparent in policies, plans and strategies for both DRR and climate change. The Sendai Framework acknowledges displacement as one of the main effects of disasters and it encourages States to adopt "policies and programmes addressing disaster-induced human mobility to strengthen the resilience of affected people and that of host communities", also listing recommendations to promote relevant preparedness, response and recovery, capacity-building and inclusion. The Cancun Adaptation Framework stresses the need to promote action on adaptation by undertaking work on climate change-related displacement.[113] Displacement is also central to work under the Warsaw International Mechanism, including the Executive Committee, through its workstream on climate mobility and through the work of its Task Force on Displacement.[114] These cross-cutting, comprehensive approaches are even more clearly articulated in national and local policies, the scope of which covers displacement in the context of both disasters and the adverse effects of climate change.

Climate and disaster-induced displacement is an occurrence and a process that affects all dimensions of people's short- and long-term well-being, including identity and belonging to a community, physical health and psychological welfare, access to basic services, and economic and personal security. Working effectively on displacement, therefore, involves adopting comprehensive approaches that encompass preventive and responsive interventions across DRR, CCA and all other relevant sectors. Promoting durable solutions through long-term comprehensive strategies that restore and promote access to land, housing, health, education and livelihoods, as well as the protection of human rights, is essential to averting, minimizing and addressing losses and damages, and to reducing future climate risks that forcibly displaced persons might face.

An improved understanding of the occurrence and risk of displacement[115] informs long-term strategies, not limited to short-term humanitarian interventions. Displaced persons need to be considered when developing comprehensive development, DRR and CCA strategies and action plans to reflect the specific needs of these vulnerable groups. By embedding human mobility into development planning and investment strategies, governments can create the conditions and demand for development, climate and disaster finance to respond effectively.[116]

The analysis shows that human mobility remains a relatively marginal topic within DRR or CCA policy instruments. Yet several countries are making progress toward coherent, durable solutions for human mobility within national planning, while signalling opportunities to strengthen displacement mainstreaming across all relevant sectors.

113 UNFCCC (2011) The Cancun Adaptation Framework. Third Global Platform for Disaster Risk Reduction International Conference Centre Geneva, 9 May 2011. Available at: https://www.preventionweb.net/files/globalplatform/entry_presentation~microsoftpowerpointunfcccpreeventew.pdf

114 WIM ExCOM (2018) Report of the Task Force on Displacement. Available at: https://unfccc.int/process-and-meetings/bodies/constituted-bodies/executive-committee-of-the-warsaw-international-mechanism-for-loss-and-damage/2018-report-of-the-task-force-on-displacement

115 The Internal Displacement Monitoring Centre (IDMC) released the Global Report on Internal Displacement (GRID) as a substantive source of data and analysis on the risk, scale and impacts of internal displacement. The International Organization for Migration maintains a Displacement Tracking Matrix (DTM) that gathers and analyses data to disseminate critical multi layered information on the mobility, vulnerabilities, and needs of displaced and mobile populations. The disaster tracking system by UNDRR will further enhance the understanding of displacement.

116 Asian Development Bank (ADB) and Internal Displacement Monitoring Centre (IDMC) (2024) Harnessing Development Financing for Solutions to Displacement in the context of disasters and climate change in Asia and the Pacific. DOI: DOI: http://dx.doi.org/10.22617/TCS240454-2

Argentina, Albania and Bangladesh illustrate varying degrees of integration between NAPs and DRR strategies. Argentina, for instance represents a rights-based, equity-centred trajectory. Its NAP frames climate action through social justice, foregrounding human rights and inequality, and explicitly incorporating mobility and displacement within adaptation planning. The DRR Plan complements this by recognizing the link between climate-exacerbated disasters and population displacement, and embedding resilience and adaptability measures for affected communities within DRR frameworks. This alignment reflects a coherent integration of displacement considerations across both adaptation and disaster risk reduction, anchored in social equity.

Albania demonstrates a cross-sectoral, multi-hazard approach. Its NAP stresses incorporating climate risks into sectoral development and explicitly addressing displacement within adaptation planning. The National Disaster Risk Reduction Strategy adopts a multi-hazard perspective and acknowledges that climate change can drive displacement, calling for integrated planning to manage risks across communities and sectors. This illustrates deeper integration where displacement is systematically considered within both climate adaptation and DRR, spanning multiple sectors. Moreover, analysing the case of Bangladesh shows a proactive fusion of mobility considerations within both policy streams. The NAP explicitly acknowledges climate-related displacement, projecting substantial internal migration by 2050, while the National Plan for Disaster Management integrates disaster risk management with mobility considerations and embeds climate adaptation within broader socioeconomic development. This represents a more explicit, cross-cutting integration of displacement into both DRR and climate adaptation policies, targeting long-term resilience for displaced populations and host communities.

Collectively, these cases reveal a spectrum of integration: Argentina embodies a rights-centred, unified approach across adaptation and DRR; Albania exemplifies cross-sectoral, multi-hazard planning that explicitly accounts for displacement; and Bangladesh demonstrates comprehensive, policy-wide integration of mobility considerations within both DRR and climate adaptation frameworks. These trajectories illustrate how different national contexts are progressing toward coherent management of human mobility within both NAPs and DRR plans, while also highlighting ongoing opportunities to strengthen mainstreaming across all relevant sectors.

Recommendations for joint approaches:

- Integrate mobility, particularly displacement, in Integrated Policy Frameworks: develop comprehensive policies that integrate human mobility and displacement effectively. Such frameworks should incorporate the interconnectedness of these issues, acknowledging that climate change can exacerbate disasters, leading to increased migration and displacement.

- Enhance stakeholder engagement: Foster collaboration among government agencies, civil society, and affected communities for managing human mobility and displacement.

- Promote knowledge-sharing and capacity-building: invest in training programmes and knowledge-sharing initiatives that enhance understanding of the links between climate change, DRR and human mobility. This includes developing tools and resources that equip local governments and communities to anticipate and respond to displacement scenarios effectively.

- Integrate climate and migration data: create systematic data collection processes that track climate impacts, disaster risks and human mobility trends. This integrated data can inform policy planning and disaster response strategies, ensuring that the needs of displaced populations are addressed in climate action and DRR initiatives.

- Implement flexible funding mechanisms: develop financial instruments that support joint DRR and CCA actions aimed at addressing human mobility. This includes establishing funding mechanisms that allow for rapid response to displacement crises and support for long-term strategies, ensuring that resources are available for both immediate needs and future resilience building

Coherence snapshots – Bangladesh, Vanuatu and Fiji

Bangladesh's National Strategy on Internal Displacement Management (2021) defines objectives, roles and responsibilities for both preventive and adaptive measures to avert, minimise and address displacement, through a whole-of-government and all-of-society approach.[117]

Vanuatu's National Policy on Climate Change and Disaster Induced Displacement (2018) identifies priority interventions across sectors as diverse as land-use planning and housing, food security and nutrition, infrastructure, livelihoods and access to justice.[118]
In Fiji, a Standard Operating Procedure for Planned Relocation (SOP) was developed in 2023, under the guidance of the Fijian Taskforce on Relocation and Displacement (FTRD) and its technical working group. The SOP reflects the Government of Fiji's commitment to effectively respond to the increasing need for the relocation of its communities, driven by the impacts of disasters and climate change, which are characterized by both an increase in the frequency and magnitude of extreme weather events and slow onset events such as sea level rise. The SOP requires a human-centred and human rights approach where genuine participatory and all-inclusive processes are followed.[119]



©unsplash / sifa

117 Government of the People's Republic of Bangladesh (2021) National Strategy on Internal Displacement Management. Available at: https://modmr.portal.gov.bd/sites/default/files/files/modmr.portal.gov.bd/publications/d05820e8_b72f_43a1_8cfe_4b4bd34a2560/NSIDM%20Publication(Size%206.5%20X%209.5%20in).pdf

118 Vanuatu National Disaster Management Office (NDMO) (2018) National Policy on Climate Change and Disaster-induced Displacement. Available at: https://www.iom.int/sites/g/files/tmzbdl486/files/press_release/file/iom-vanuatu-policy-climate-change-disaster-induced-displacement-2018.pdf

119 Government of the Republic of Fiji (2023) Standard Operating Procedures for Planned Relocation in the Republic of Fiji. Available at: https://www.giz.de/de/downloads/Fiji_SOP_Planned_Relocation_March2023_FINAL_web.pdf

Good practice: Integrating Displacement in local-level risk reduction planning in Kenya

As part of the 'Action and Support to Avert, Minimise and Address Displacement Related to the Adverse Effects of Climate Change' (PAMAD) project, the Platform on Disaster Displacement (PDD) supported Kenya in assessing capacities and operational priorities of all relevant stakeholders for the integration of displacement in local risk reduction and resilience plans and responses. The activity helped develop an Addendum on Disaster Displacement for UNDRR's 'Disaster Resilience Scorecard for Cities'[120] – a tool that promotes capacity assessment, capacity strengthening and operational responses for DRR at the local level.

The Addendum was developed in collaboration with Kenya's Council of Governors, 4 selected County Governments (namely Mombasa, Kisumu, Homa Bay and Garissa), as well as relevant international technical agencies. The Addendum was tested and validated through local multi-stakeholder workshops, convening representatives from all relevant sectors from the local Governments and Civil Society, with a specific attention to promoting dialogue and collaboration among those working on DRR and CCA issues.

The capacity assessment workshops were an opportunity to discuss local challenges related to averting, minimizing and addressing disaster displacement and its impacts in a changing climate, as well as identify key measures that are needed to integrate relevant issues in local policy, plans and responses. The commitment of national (i.e. Council of Governors) and local (i.e. County Governments) institutions to issues related to DRR and CCA was key for the success of this activity – especially considering that the early stages included testing and piloting a draft tool.[121]

120 UNDRR Making Cities Resilient 2030. Further info: https://mcr2030.undrr.org/disaster-displacement-scorecard

121 Good practice submitted by PDD to the REAP T1 Working Group on CRM. Further info: https://pamad.disasterdisplacement.org/countries/kenya/

3.3.12 Summary of common findings

A summary of JIAs, as analysed in NAPs and DRR strategies, and well as from supplementary research, is reflected in the table below.

Table: Common findings on approaches to NAP and DRR planning and opportunities for alignment (based on NAPs and DRR plans reviewed)

NAP approaches	DRR planning approaches
• Long-term climate-specific information based on climate projections and scenarios informs long-term actions, often following agro-ecological zones. • Multi-sector governance: embedding adaptation measures into sectoral planning and action plans with timelines, roles and indicative budgets. • Landscape planning approaches, including for NbS. • Science-based systems and capacity-building demonstrating strong emphasis on services and capacity-building programmes for people, including through gender-based approaches and including Indigenous and traditional knowledge. • Financing pathways, including concrete budgets and clearly linked to international funding arrangements such as the Adaptation Fund, Green Climate Fund or Global Environment Facility, providing additional funding sources for long-term resilience building. • Social protection for vulnerable groups embedded in medium-term programmes.	• Multi-hazard risk information, including hazards and exposure, and multi-hazard early warning systems with sector-specific services, often linked to planning and risk management at subnational levels and with a higher focus on operational planning. • Disaster preparedness: activities such as building-code enforcement, risk zoning, grain and food reserves, business continuity planning and insurance pilots. • Operational readiness and coordination/Disaster preparedness and response: operational planning from national to local levels, including standard operating procedures, drills and resource prepositioning for early action. • Resilient infrastructure: specific considerations and resilience measures for lifelines through legal and institutional frameworks. • Localized, community-based approaches: explicit focus on protecting communities from all hazards as well as including gender equality, disability, and traditional and Indigenous knowledge.

Opportunities for alignment

1. **Risk overview across timescales**
   Systematic and integrated analysis of historical impacts, current trends and future risk projections with a focus on multiple hazards, exposure and vulnerability to create a shared, continuously updated national risk profile that informs all sectoral and local plans.
2. **MHEWS as a shared programme**
   Merge NAP climate services with DRR early warning governance to build a unified, people-centred early warning and early action system with standardized messages, inclusive communication and local-level feedback loops. Define joint early-action thresholds where climate forecasts and early warnings automatically activate DRR standard operating procedures and adaptive social protection measures to protect vulnerable groups before impacts occur.
3. **Unified delivery chains from early warning to adaptive social protection**
   Link social protection systems and preparedness and local DRR plans to ensure vulnerable households receive timely support through pre-agreed channels following early warning triggers.
4. **Integrated NbS including green-grey-blue hybrid infrastructure**
   Jointly plan and finance hybrid investments that combine NAP-led ecosystem-based and nature-based solutions with DRR-led resilient infrastructure measures.
5. **Climate stress tests and standards in building codes and critical infrastructure**
   Align NAP climate scenarios with DRR building and land-use codes to ensure infrastructure design standards reflect climate change modelling and multi-hazard risks, backed by enforcement and training.
6. **Risk-layered financing connecting NAP investment pipelines and funding instruments with DRR measures and funding instruments**
   Develop a national risk financing framework that integrates both DRR and NAP budgets and projects, to manage different layers of risk efficiently and jointly harness international funding instruments.
7. **Common monitoring, evaluation, and learning (MEL) system**
   Harmonize NAP outcome-based indicators with DRR Sendai Framework Monitoring to track resilience outcomes jointly, using disaggregated data and shared national reporting platforms.
8. **Social vulnerability and inclusion mainstreamed across DRR and CCA actions**
   Apply shared vulnerability indicators and participatory methods to ensure both NAPs and DRR strategies integrate gender equality, disability inclusion, Indigenous and local knowledge, and other social dimensions into planning and delivery.

3.4 Enabling financing for disaster risk reduction and climate action through comprehensive risk management

Between 2001 and 2020, reported direct disaster losses more than doubled to over $200 billion annually and even exceeded $2.3 trillion when indirect and ecosystem costs are considered. As global temperatures rise and climate impacts intensify, climatic impacts are expected to continue increasing. International public adaptation finance flows to developing countries amounted to $28 billion in 2022, about $6 billion more than in 2021. However, the global annual adaptation finance gap is estimated at $187to €359 billion, revealing significant disparities.[122] Moreover, less than 10 per cent of all climate financing is allocated to adaptation,[123] and less than 4 per cent of disaster-related development assistance is dedicated to disaster prevention or preparedness, continuing the vicious circle of disaster-response-repeat.[124] Preceding sections have shown the complementarity and overlap between DRR and adaptation planning.

Hence, integrating DRR and CCA budgeting is a key opportunity for closing existing and growing finance gaps and avoiding investment duplications or inefficiencies. Many countries express the need for improved budget planning and dedicated financing for DRR and CCA. Very few countries reported having dedicated DRR-CCA budgets and financing mechanisms in place that track expenditure against clear outcomes and timelines. DRR and CCA funding are often managed separately, reducing efficiency and oversight. Additionally, DRR and CCA-related activities might be spread across several sectors and ministries (e.g. agriculture, infrastructure, public health, etc.), making quantifying and monitoring public expenditure and budgetary commitments related to DRR and CCA difficult to track. The absence of a unified financial strategy results in duplicated efforts and missed opportunities for resource optimization. Establishing a more cohesive framework for budgeting would facilitate better resource distribution and more effective implementation of DRR and CCA activities, including at the local level.

Other key challenges include the predominant financing of short-term projects versus long-term development and resilience programmes and the lack of predictability of external financing for developing countries. As both international and national funding for DRR and CCA is insufficient to meet the needs of developing countries, creating financial coherence and strengthening climate and disaster resilience becomes a necessity. What is required is better alignment of available resources, transparency and accountability, and locally led financing models.

Budget tagging and tracking mechanisms for public expenditure is one way for governments to better view and understanding synergies, overlaps and competing interests. To be successful, this process needs to be embedded in national budget and public investment planning cycles and integrated into financial management information systems. To assist countries in budget tagging and tracking, a guide for design and taxonomy was developed that provides detailed steps for governments to consider during development. [125]

122 United Nations Environment Programme (2024) Adaptation Gap Report 2024: Come hell and high water — As fires and floods hit the poor hardest, it is time for the world to step up adaptation actions. Nairobi. https://doi.org/10.59117 /20.500.11822/46497.

123 UNDRR (2025) 100 investments for adaptation and resilience: An interactive list of investable activities. Available at: https://www.undrr.org/financing-prevention/100-investable-activities

124 UNDRR (2021) Policy brief: Accelerating financing and de-risking investment. Available at: https://www.undrr.org/publication/policy-brief-accelerating-financing-and-de-risking-investment

125 UNDRR (2023) Budget tagging for DRR and CCA. Available at: https://www.preventionweb.net/publication/budget-tagging-disaster-risk-reduction-and-climate-change-adaptation-guide-design-and

Good practice: Risk-Sensitive Budgeting for Disaster Risk Reduction in Africa

In 2018-2019, Risk-Sensitive Budget Reviews (RSBRs) were conducted in 16 African countries to assess how national budgets integrate DRR efforts. The findings revealed significant variation in DRR investments, with total DRR expenditures averaging 4% of national budgets across the countries. Direct DRR investments, including those aimed at addressing climate-related risks, focused on specific risk-reduction activities, constituted an average of 1%. In contrast, indirect investments, which address broader vulnerabilities, accounted for 3%.[126] The investments were primarily focused on pre-disaster activities, such as disaster mitigation and prevention, with limited resources allocated to post-disaster recovery.

The report emphasized the need for better alignment between DRR and CCA investments to address overlapping challenges effectively. Key policy recommendations include increasing budget allocations to direct DRR, planning direct and indirect investment in a complementary way, enhancing coherence between DRR and CCA investments, and developing comprehensive risk financing tools that account for all phases of the risk management cycle. The report highlights that RSBRs can be an effective instrument for developing and implementing CRM approaches.

National **Disaster Risk Reduction Financing strategies** can also strengthen financing coherence and at the same time, ensure the availability of national resources dedicated to resilience.[127] Integrating a Climate and Disaster Risk Financing (CDRF) joint strategy as an integral component of disaster risk management plans and policies is a viable option, where the linkages between DRR and CCA financing are set from the start. CDRF strategies should include a variety of risk financing instruments and resources should be divided to cover both ex-ante financing needs (for which resources are spent before an event takes place) and ex-post needs (for which resources are spent after an event occurs).[128]

Another instrument, which supports governments in mobilizing additional financing, enhances coherence across different financing policies and matches different types of financing to their most appropriate use is the development of **Integrated National Financing Frameworks (INFFs)**. The INFF approach requires cooperation and coordination among stakeholders and can be used not only by governments at the national level, but also by development organizations providing aid and support to national partners.[129] INFFs use and assess the full range of possible financial sources, including from the private sector. This can help countries to better articulate their needs to the international development community.[130]

126 UNDRR (2020) Disaster Risk Reduction Investments 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

127 UN Capital Development Fund (2023) Disaster Risk Finance Strategy: Guideline Document for Pacific Island Countries (PICs). Available at: https://www.uncdf.org/article/8298/disaster-risk-finance-strategy-guideline-for-pacific-island-countries

128 United Nations University Institute for Environment and Human Security (UNU-EHS) (2021) Climate and Disaster Risk Financing Instruments: An Overview. Available at: https://climate-insurance.org/wp-content/uploads/2021/05/Climate-and-Disaster-Risk-Financing-Instruments.pdf

129 UNDRR and UNDESA (2024) Integrated National Financing Framework (INFFs) for disaster risk reduction. Available at: https://www.undrr.org/publication/integrated-national-financing-framework-inffs-disaster-risk-reduction

130 UNDP Sustainable Finance Hub (2025) Integrated National Financing Frameworks. Available at: https://sdgfinance.undp.org/our-services/INFF#:~:text=Integrated%20National%20Financing%20Frameworks%20(INFFs,meeting%20their%20sustainable%20development%20objectives.

Some positive national and regional level examples of financing DRR and CCA initiatives in a more integrated manner have emerged in the past years:

- The National Disaster Risk Management Framework (2017-2030) of Zambia, which climate risk insurance and pooling mechanisms.[131]

- The Zimbabwe Resilience Building Fund (ZRBF), a multi-stakeholder financial mechanism aligned with national policies, the SDGs and the Paris Agreement.[132]

- The PSF in the Philippines, a climate finance mechanism providing long-stream finance for adaptation projects at the local level, supporting local government units and local/community organizations to increase the resilience of communities and ecosystems to climate change and disaster risk.[133]

- National climate change trust funds in the Pacific, a key mechanism for channelling resources towards integrated DRR and CCA initiatives. These funds are typically government-managed, country-owned financing instruments designed to provide predictable, transparent and flexible funding for climate resilience and disaster preparedness. Examples include the Tuvalu Survival Fund, the Tonga Climate Change Trust Fund, the Fiji Relocation Trust Fund and the Samoa Climate Change Fund.[134] Another example is the Pacific Catastrophe Risk Assessment and Financing Initiative (PCRAFI), a regional climate and disaster risk finance instrument that promotes risk modelling and assessment, and reduces financial vulnerability by providing insurance coverage for beneficiary countries, covering tropical cyclones, earthquakes and tsunamis.[135]

- European Union initiatives, defining overlaps in DRR and CCA at a higher level of policy and strategy, integrating measures aimed at ensuring that investments are resilient to future disaster and climate risk through environmental impact assessments at state level, and considering national and subnational CCA strategies and/or action plans when reporting on disaster risk management.



©unsplash / luis_rodriguez

131 Government of the Republic of Zambia (2017) Zambia National Disaster Risk Management Framework (2017-2030. Available at: https://www.preventionweb.net/media/94858/download?startDownload=20250520

132 Zimbabwe Resilience Building Fund (ZRBF) (2023) Zimbabwe Resilience Building Fund. Available at: https://www.undp.org/zimbabwe/publications/zrbf-sustainability-interventions

133 Climate Change Commission (2025) People's Survival Fund. Available at: https://climate.gov.ph/our-programs/climate-finance/peoples-survival-fund

134 Example of a climate change trust fund in Tonga, see: https://unfccc.int/climate-action/momentum-for-change/activity-database/tonga-climate-change-trust-fund

135 Mahul, O et. al (2017) Enhancing the financial resilience of Pacific Island Countries against natural disaster and climate risk: Pacific Catastrophe Risk Assessment and Financing Initiative (PCRAFI) Program. Available at: http://documents.worldbank.org/curated/en/716481495545738079

Good practice: Development of a sub-sovereign disaster risk insurance scheme for Nagaland, India

Nagaland, one of the smallest and most agriculture-dependent states in India, has long been vulnerable to high levels of disaster and climate-related impacts and has proactively developed comprehensive strategies to address disaster and climate risks. To bolster the state's resilience against climate-induced disasters and pioneer a first insurance scheme for the 2020 monsoon season, the Nagaland State Disaster Management Authority (NSDMA) partnered with Tata AIG, Swiss Re, and the InsuResilience Solutions Fund (ISF), which co-funded an innovative insurance program. This collaborative initiative was designed to strengthen Nagaland's ability to withstand the impact of disasters by enhancing its financial resources in case of excess rainfall events, complementing the two existing national disaster response funds. An important focus of the project included facilitating the rapid disbursement of pay-outs to beneficiaries. The project set up a system that provides pay-outs through a decentralised pay-out system so that beneficiaries do not need to travel long distances to receive their compensation in case of natural calamities. As a result, 350,000 households totalling around 2 million people protected by a parametric excess rainfall insurance obtained by NSDMA.

No single financial instrument would be able to address and cover all risks. It is therefore recommended that governments combine and utilize different instruments. Blended finance options, risk transfer mechanisms, insurance, green, climate, resilience, impact and other bonds, grants and loans could be mixed and matched to address short-, medium- and long-term objectives.

Additional resources:

- UNDRR provides a list of Investable activities that build resilience across sectors and themes at: https://www.undrr.org/financing-prevention/100-investable-activities.

The NDC Partnership has developed a Climate Funds Explorer database, which allows searching by region and country and includes sectoral and cross-cutting themes, available at: https://ndcpartnership.org/knowledge-portal/climate-funds-explorer?cofinancing=All.

4. Conclusion and recommendations

©unsplash / veklabs

4. Conclusion and recommendations

Significant progress has been made in integrated and coherent approaches to DRR and climate action. Much of this is evident at the conceptual level. Where efforts are still needed, however, is in translating conceptual understanding into concrete implementation to address gaps and tackle complex interconnected disaster and climate risks in the short, medium and long term, and across sectors and systems. Several recommendations emerged from the analysis for countries to consider as they seek to improve coherence and the effectiveness of resilience building.

1. Strengthen governance towards increased coherence and long-term resilience

Engagement at the highest level of governance: Pursuing and implementing integrated approaches to DRR and climate action requires a paradigm shift in thinking about risk and the involvement of and coordination between a wide range of stakeholders at different levels. An absolute baseline and enabler of such a shift is the recognition and application of a CRM approach at the highest level of policymaking and systemically embedding CRM principles into national legal and policy frameworks, which then are translated into local policy and action plans for resilience and sustainable development.

Aligning DRR and climate action strategies and planning: DRR strategies are increasingly recognizing the role of climate change as a risk exacerbator, and CCA-related language and solutions are being integrated. NAPs and national biodiversity strategies and action plans, as well as the GGA, include and reflect DRR measures and components. Countering misconceptions relating to and understanding the benefits of greater synergies is necessary, particularly as new and emerging risks become more prevalent. These processes should proactively identify areas of synergies and alignment, embedded in the context of sustainable development and resilience, including the respective goals and objectives, roles and responsibilities, activities, and financial resources.

Joint planning and implementation are key to this level of alignment. Kiribati and Tonga, both with a joint DRR and CCA plan, among other Pacific SIDS, demonstrate one approach. Alternatively, more deliberate integration of the respective strategies and plans for DRR and climate action is necessary, as is ensuring that implementation and financing are aligned to avoid duplication and enhance efficiency.

Utilizing comprehensive risk and impacts management for resilience as a common theme and goal supports alignment across relevant DRR and climate action mechanisms (including plans and strategies), but there is a greater need for understanding how different workstreams can come together more coherently. It is also important to understand the challenges to achieving coherence.

2. Improve coordination at different levels and among all relevant stakeholders

Establish or strengthen coordination mechanisms: This will involve clarifying roles and responsibilities among CCA and DRR actors with a focus on coordination for better decision- making. Institutional coherence should be prioritized and stakeholders made aware of the value of enhancing strategic coherence for efficiency, reducing cost, maximizing benefits and capitalizing on the potential synergies between DRR and CCA.

Establishing coordination mechanisms or widening the scope of already existing coordination bodies, such as national DRR platforms, climate councils and CCA working groups and committees, etc., can enable the development of concrete synergized measures. These measures may include multi-hazard early warning systems, resilient infrastructure and nature-based solutions across key systems such as health, water, agrifood and urban systems. Creating joint technical working groups can further support this effort.

National development planning processes present another option for creating institutional and planning coherence. They can also be coordinated by the relevant configuration for monitoring and implementation of the plan.

Map convergence points and strengthen coordination between sectors and areas of work: The 11 JIAs proposed in this report are among a non-exhaustive list of sectors and areas that can benefit from a CRM approach. Building resilient systems requires integrated and interconnected solutions, such as those outlined in the JIAs. For example, when developing adaptive and resilient agrifood systems, a diverse array of solutions is implemented, including risk assessment and monitoring, MHEWS, adaptive actions, preparedness, NbS, resilient infrastructure, insurance and social protection, resilient communities, human mobility, and CRM governance and finance. Understanding these linkages and interdependencies at multiple levels is crucial for ensuing long-term resilience. Stakeholder mapping and national-level assessment exercises can help better understand possible areas of collaboration across all identified sectors that can then lead to the development of strategic frameworks and action plans that are aligned and synergistic. Conceptual integration could be further advanced by the development of sector-specific guidelines for mainstreaming resilience considerations into sectoral policy processes, with a particular focus on key areas of concern.

Strengthen resilience building at the local level: Localization of risk governance can be enhanced by empowering local authorities, integrating community-driven assessments, the traditional knowledge of Indigenous People and local communities, grassroots engagement and localized data into integrated/aligned DRR and CCA planning. Countries should promote integrated and multi-level governance by empowering subnational and municipal actors and facilitating adequate resources and peer-to-peer learning. Locally led blended or aligned adaptation and DRR mechanisms are vital in connecting national strategies to realities on the ground, enabled by national-level CRM policies being translated into subnational action plans, with adequate capacity, finance and technical support at local levels. Establishing local participatory platforms (e.g., climate and DRR-risk task forces or resilience councils) that facilitate vertical coordination and foster horizontal networks among municipalities to promote shared understanding, peer learning, pooled technical assistance and shared services are some of the measures that could assist in addressing resilience capacity gaps.

Promote and enable stakeholder leadership: The legitimacy and effectiveness of CRM approaches depend on inclusive governance that upholds human rights principles. The engagement and participation of a wide range of stakeholders, including civil society, academia, non-governmental organizations, the private sector and other actors, is critical in the planning and implementation of DRR and CCA policies and approaches to ensure coherence. Importantly, strategies and action plans must explicitly recognize, engage in the decision-making process and uphold the rights of vulnerable groups, such as women, youth, displaced and Indigenous people and local communities as co-producers of resilience.

3. Develop a shared understanding of disaster and climate risk to inform policymaking and investments

Invest in national data collection systems: The availability of high-quality disaggregated disaster and climate data, which is systematically collected at the national and subnational levels, is essential to CRM. Such systems and platforms are evolving to consider impacts from climate extreme and slow-onset events, the latter still lagging due to methodological and other gaps. The disaster tracking system is one option available to countries in this regard.[136] Data for different timescales supports the development of evidence-based strategies and action plans for the short to long term.

National statistical offices play a key role in

136 Further info: UNDRR (2025) Disaster Losses and Damages tracking. Available at: https://www.undrr.org/L-DTracking

collecting high-quality disaggregated data and can spearhead the establishment of standards necessary for systematic data collection and analysis aimed at policy design and risk-informed interventions. In addition to fulfilling reporting requirements and indicators for international instruments, such as the Sendai Framework, the SDGs and the Paris Agreement, it is essential to collaborate with national disaster risk management agencies and ministries across various sectors, as they also collect crucial planning and policy data. Furthermore, implementing data-sharing mechanisms and protocols will enhance this effort and provide the foundational data needed for CRM approaches and resilience building across key sectors and systems.

Subnational governments, when equipped with the necessary capacity and resources, play a crucial role in collecting disaggregated data as well as translating this evidence into local-level planning and action. Partnerships with academic institutions, Indigenous groups, civil society (especially for data on vulnerable groups), the private sector (particularly insurance companies) and other stakeholders can enhance granular data collection and analysis, while also facilitating access to this data for various purposes.

Conduct comprehensive risk assessments: In the context of continuously changing risk landscapes, there is a need for a comprehensive, quantitative and systemic perspective on risk and its underlying drivers that considers the full range of climate and non-climate hazards. Comprehensive risk assessments consider multiple hazards along with exposure and vulnerability components. Such assessments adopt multi-hazard and system perspectives, and identify measures based on multidisciplinary and inclusive approaches.[137]

At the local level, investing in and dedicating resources for risks and impact (with losses and damages) assessments can inform integrated planning and implementation. International initiatives, such as MCR2030 and its Disaster Resilience Scorecard for Cities, can offer initial support for assessing the level of disaster resilience and help develop the baseline analysis for preparation of local DRR and resilience strategies.

4. Increase financing for DRR and CCA, and track expenditure and progress

Align financing and tracking of DRR and climate action: DRR and climate action are or can be prioritized in different policy, planning and strategic documents under the responsibility of different institutions. Consequently, aligning financing that may cross different budget lines, entities and plans must be intentional to be effective. Developing INFFs and comprehensive Disaster Risk Financing (DRF) strategies are viable options, which offer an opportunity to strengthen financial coherence for implementing climate action and DRR priorities at scale and across key sectors and systems.

Resilience could be used as a common policy theme and finance for resilience can support the development of more holistic approaches that shift away from short-term and fragmented investment and planning processes. Putting the common goal of resilience at the centre of programmes and projects has the potential to leverage sources of funding from various financing mechanisms, including relating to climate change mechanisms (GCF, GEF, Adaptation Fund etc.).

Alignment can be strengthened with budget tagging. Areas of synergy will be more readily available for national budgets and investments. Ministries of Finance can play a central role in bringing coherence to budget planning and expenditure reviews.

As many risk and impact management interventions in each sector can have spill-over benefits for other workstreams (e.g. wastewater management, NbS, and resilient and hybrid infrastructure), and specific activities could qualify for both mitigation and adaptation funding, there is an important opportunity to highlight co-benefits and utilize resources in a coherent manner. Initiatives need to demonstrate that they can contribute to DRR, CCA and larger sustainability objectives (including for biodiversity, and land protection and regeneration) to mobilize related funding. This is especially relevant for local and community -level initiatives.

Unlock finance at the local level: Subnational-level financing is often constrained, particularly for developing countries. Aligning and blending DRR and CCA strategies at this level with coherent national planning and implementation can address some of these gaps by providing a common framework for vertical and horizontal cooperation. Collection of local disaster and climate data assists in better assessing resilience needs at different time scales and can thus aid in prioritizing financing. Funding gaps can be further addressed through the introduction of subnational disaster risk reduction and climate financing mechanisms. Examples include municipal resilience funds, green bonds and performance-based grants linked to DRR and climate action activities. Capacity-building is therefore essential to expanding the options available at the local level, including local authorities and other bodies that are key to CRM approaches.

5. Establish robust monitoring and evaluation mechanisms to track progress

The presence of both climate action and DRR activities within international reporting documents such as DRR strategies, NAPs, NDCs and National Communications (under UNFCCC) creates the opportunity for risk and impact reduction work to draw on common financial instruments mobilized for the implementation of those documents.

Alignment and complementarity between DRR and climate action are growing and should be reflected in M&E systems accordingly. The Sendai Framework Monitor and the GGA demonstrate global synergies that can be translated into national and subnational M&E systems. The analysis of DRR and CCA documents in chapter 3 underscored the severe lack of coherence in M&E mechanisms. Therefore, M&E frameworks provide an opportunity to highlight convergence points between DRR, CCA and sustainable development and enhance coherence in planning and budgeting. They can also bridge gaps between national policy and regional and global frameworks.

6. Translate global and regional coherence for national and subnational implementation

International processes are increasingly recognizing coherence between agendas and national and local priorities and provide the opportunity for financial integration on multiple levels. At the project level, the global climate finance architecture creates opportunities for coherently funded DRR and climate action activities and solutions. Funding mechanisms such as the GCF provide project-based financing for adaptation initiatives, including areas linked to DRR, such as multi-hazard early warning systems and flood risk management.

Loss and damage mechanisms are available to developing countries for implementing and further boosting synergistic disaster risk reduction and climate action activities. The Fund for responding to Loss and Damage was established under the climate change treaties but also has DRR measures embedded in its governing instrument. The Santiago Network is available to provide technical assistance activities relevant to loss and damage, including CRM approaches.

137 UNDRR (2022) Technical Guidance on Comprehensive Risk Assessment and Planning in the Context of Climate Change. Available at: https://www.undrr.org/crm

SANTIAGO NETWORK

The Santiago Network, established in 2019 under the Warsaw International Mechanism with a mandate of catalysing technical assistance for averting, minimizing and addressing loss and damage associated with climate change, seeks to enhance knowledge, capacity-building and access to finance by developing countries through organizations, bodies, networks and experts who serve as network members. It is accessible to governments as well as civil society and other entities, provided that the relevant eligibility criteria are met and the requests for technical assistance are aligned with national loss and damage priorities. The technical assistance covers CRM approaches as an area for technical assistance.[138]

To conclude, CRM is not an additional layer of complexity in the development architecture; instead, it is a strategic enabler of risk and adaptive comprehensive governance. By embedding coherence and synergistic CRM approaches in national and sectoral development planning, countries can shift from reactive responses to proactive and holistic risk reduction strategies. As climate and disaster risks become increasingly interconnected and transboundary, coherence in policy and practice becomes increasingly imperative for resilience, equity and sustainability. As these links are increasingly recognized, the value of translating them into tangible actions grows, with greater justification to move from planning to implementation, and to shift from working in silos to working together for building a resilient future for all.

138 Further information available at: https://Santiago-network.org

References

ADB & IDMC (2024) Harnessing Development Financing for Solutions to Displacement in the context of disasters and climate change in Asia and the Pacific. DOI: DOI: http://dx.doi.org/10.22617/TCS240454-2

African Financial Alliance on Climate Change (AFAC) (2023) Strategy 2023-2027: Mobilizing Africa's financial sector for low-carbon and climate-resilient development. Link: https://www.afdb.org/sites/default/files/documents/publications/afdb_afac_strategic_plan_2023-2027_01.09.2023_draft_5.pdf

African Union (2025) Agenda 2063: The Africa We Want. African Union webpage. Link: https://au.int/en/agenda2063/overview

African Union Development Agency (2020) Draft Africa Climate Change Strategy: 2020 – 2030. Available at: https://www.nepad.org/publication/draft-africa-climate-change-strategy-2020-2030

African Union (2017) Programme of Action for the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030 in Africa. Available at: https://www.undrr.org/media/45264/download?startDownload=20250918

African Union, NEPAD, African Development Bank, African Development Fund, UN, UNISDR (2004) Africa Regional Strategy for Disaster Risk Reduction. Available at: https://www.preventionweb.net/files/4038_africaregionalstrategy1.pdf?startDownload=true

ASEAN Secretariat (2020) ASEAN Agreement on Disaster Management and Emergency Response (AADMER) Work Programme 2021-2025 Jakarta, ASEAN Secretariat, December 2020. Link: https://asean.org/wp-content/uploads/2021/08/AADMER-Work-Programme-2021-2025.pdf

Ball, S.; M.F. Sanchez; M. Werner; S.T. Escobar Carmona; C.Y. Soto Chavez; M. Wuis; S. Contreras, K; Douben, M; Visser; J.E. Hunink (2019) HERMANA: Co-Design of an Integrated Operational Water Management Tool for the Valle Del Cauca, Colombia, E-Proceedings of the 38th IAHR World Congress. IAHR 2019. - Case provided in re-sponse to the request for case studies and good practice for the CRM Global Report 2025

Bangladesh (2023) National Adaptation Plan. Government of Bangladesh

BMU (German Environment Agency) (2022) Towards a joint implementation of the 2030 Agenda / SDGs and the Paris Agreement. Link: https://www.umweltbundesamt.de/sites/default/files/medien/479/publikationen/cc_46-2021_towards_a_joint_implementation_of_the_2030_agenda.pdf

Bojić, D., Baas, S. and Wolf, J. (2019) Governance challenges for disaster risk reduction and climate change adaptation convergence in agriculture. Guidance for analysis. Governance and Policy Support. Discussion paper. Rome. FAO. Licence: CC BY-NC-SA 3.0 IGO.

Government of Canada (2024) National Adaptation Plan (NAP).

Caribbean Biodiversity Fund website (2025). Link: https://caribbeanbiodiversityfund.org/

Caribbean Community (CARICOM) (n.d.) Natural Resource Policy Booklet. Link: https://caricom.org/wp-content/uploads/Caricom-Carib-Community-Booklet-natural-resource-policy.pdf

Caribbean Development Bank website (2025). Link: https://www.caribank.org/

CCRIF website (2025). Link: https://www.ccrif.org/?language_content_entity=en

CDEMA (2014) Regional Comprehensive Disaster Management - Strategy and Results Framework. Caribbean Disaster Emergency Management Agency. Link: https://www.cdema.org/CDM_Strategy_2014-2024.pdf

CDRI website (2025) Link: https://cdri.world/about/

CGIAR (2023) Empowering Bangladesh's mung bean farmers to overcome climate risk-induced loss and damage. Link: https://www.cgiar.org/initiative-result/empowering-bangladeshs-mung-bean-farmers-to-overcome-climate-risk-induced-loss-and-damage/;

Chevalier, R. (2017) Africa's common climate response and action plan. South African Institute of International Affairs (SAIIA). Link: https://saiia.org.za/wp-content/uploads/2022/06/Policy-Briefing-261-chevallier.pdf

Choi, S., Weingärtner, L., Gaile, B., Cardenas, D., Wickramasinghe, K., Nicholson, K., Broermann, S., Bio Tchané, Y. and Steele, P. (2023) Tracking the money for climate adaptation and disaster risk reduction. IIED, London. Link: https://www.undrr.org/media/86703/download?startDownload=20250519

Cities & Regions in the UNFCCC Process website (2025) Link: https://www.cities-and-regions.org/outcomes/

Climate Change Commission (2025) People's Survival Fund. Link: https://climate.gov.ph/our-programs/climate-finance/peoples-survival-fund

Climate Resilient Food Systems Alliance (CRFS Alliance) (2024) Issue brief: Accelerating Comprehensive Risk Management in Agrifood Systems. Link: https://www.preventionweb.net/media/102464/download?startDownload=20250510

Climate Risk and Early Warning Systems (CREWS) website: https://crews-initiative.org/what-we-do/; WMO (2015) Climate Risk and Early Warning Systems (CREWS). Link: https://wmo.int/activities/climate-risk-and-early-warning-systems-crews

Economic Commission for Latin America and the Caribbean (ECLAC), The economics of climate change in Latin America and the Caribbean, 2023: financing needs and policy tools for the transition to low-carbon and climate-resilient economies (LC/TS.2023/154), Santiago, 2023. Link: https://www.cepal.org/en/publications/68712-economics-climate-change-latin-america-and-caribbean-2023-financing-needs-and

European Commission (EC) (2024) Critical Infrastructure Resilience at EU-level. Link: https://home-affairs.ec.europa.eu/policies/internal-security/counter-terrorism-and-radicalisation/protection/critical-infrastructure-resilience-eu-level_en

Fakhruddin, B. (2025) Reclaiming water's role in preventing disasters. PreventionWeb. Link: https://www.preventionweb.net/drr-community-voices/reclaiming-waters-role-preventing-disasters

FAO (2025). Global Report on Food Crises (GRFC) 2025. Available at: https://www.wfp.org/publications/global-report-food-crises-grfc

FAO (2025). Transforming food and agriculture through a systems approach. Available at: https://openknowledge.fao.org/items/943a2e7e-0d50-4e45-bf60-8f71ccdc85b1

FAO (2023) The Impact of Disasters on Agriculture and Food Security 2023 – Avoiding and reducing losses through investment in resilience. Rome. DOI: https://doi.org/10.4060/cc7900en

FAO (2018) FAOLEX Database. Link: https://www.fao.org/faolex/results/details/en/c/LEX-FAOC183009/

Federal Democratic Republic of Ethiopia (2019) Ethiopia's National Adaptation Plan, Addis Ababa, 2019. Link: https://www4.unfccc.int/sites/NAPC/Documents/Parties/NAP-ETH%20FINAL%20VERSION%20%20Mar%202019.pdf

Federal Government of Germany. (2022). German Strategy for Strengthening Resilience to Disasters. Available at: https://www.bbk.bund.de/SharedDocs/Downloads/DE/Mediathek/Publikationen/Sendai-Katrima/deutsche-strategie-resilienz-kurz-eng_download.pdf

Fi-compass website (2025) The European Agricultural Fund for Rural Development. Link: https://www.fi-compass.eu/funds/eafrd

GCA (2022) Climate Risks in Africa. Link: https://gca.org/wp-content/uploads/2023/01/GCA_State-and-Trends-in-Adaptation-2022_Climate-Risks-in-Africa.pdf

GCF (2025). GCF Website. Link: https://www.greenclimate.fund/about

GCF (2020) Link: https://www.greenclimate.fund/document/r2rp-readiness

GFDRR (2015) Disaster Risk Financing and Insurance Program: Strengthening Financial Resilience to Disasters. Link: https://www.gfdrr.org/sites/default/files/publication/thematic-note-diaster-risk-financing-and-insurance-program.pdf

GFDRR (2022) Enhancing Disaster Risk Financing in the Caribbean. Technical assistance to strengthen financial protection in the Caribbean. Link: https://www.gfdrr.org/sites/default/files/Caribbean%20DRFTA_02032022.pdf

Global Shield Financing Facility (2025). Website: https://www.globalshieldfinancingfacility.org/what-gsff

Government of the People's Republic of Bangladesh (2021) National Strategy on Internal Displacement Manage-ment. Link: https://modmr.portal.gov.bd/sites/default/files/files/modmr.portal.gov.bd/publications/d05820e8_b72f_43a1_8cfe_4b4bd34a2560/NSIDM%20Publication(Size%206.5%20X%209.5%20in).pdf

Government of Canada. (2019). Emergency Management Strategy for Canada: Toward a Resilient 2030. Public Safety Canada. Available at: https://www.publicsafety.gc.ca/cnt/rsrcs/pblctns/mrgncy-mngmnt-strtgy/index-en.aspx

Government of the Republic of Fiji (2018) National Adaptation Plan (NAP)

Government of the Republic of Fiji (2018) National Disaster Risk Reduction Policy 2018–2030

Government of the Republic of Fiji (2023) Standard Operating Procedures for Planned Relocation in the Republic of Fiji. Office of the Prime Minister, Republic of Fiji. Link: https://www.giz.de/de/downloads/Fiji_SOP_Planned_Relocation_March2023_FINAL_web.pdf

Government of the Republic of Guatemala (2024) Política Nacional para la Reducción del Riesgo de Desastres de Guatemala 2024–2034 (PNRRD). Government of Guatemala

Government of the Republic of Guatemala (2019) National Adaptation Plan (NAP). Government of Guatemala

Government of the Republic of Kiribati (2014 & 2019) Kiribati Joint Implementation Plan for Climate Change and Disaster Risk Management 2019-2028. Link: https://napglobalnetwork.org/wp-content/uploads/2019/09/Kiribati-Joint-Implementation-Plan-for-Climate-Change-and-Disaster-Risk-Management-2019-2028.pdf

Government of the Federal Democratic Republic of Nepal (2018) National Policy for Disaster Management 2018–2030

Government of the Federal Democratic Republic of Nepal (2021) National Adaptation Plan (NAP)

Government of New Zealand (2023) National Adaptation Plan (NAP)

Government of State of Palestine (2023) National Strategic Framework for Disaster Risk Reduction 2023–2027

Government of the State of Palestine (2016) National Adaptation Plan (NAP)

Government of the Independent States of Papua New Guinea (2023) National Adaptation Plan

Government of Republic of Peru (2021) Política Nacional de Gestión del Riesgo de Desastres al 2050

Government of the Republic of Peru (2021) National Adaptation Plan (NAP)

Government of the Republic of the Philippines, Department of Finance website (2025) People's Survival Fund. Link: https://psf.dof.gov.ph/

Government of the Republic of the Philippines (2024) National Adaptation Plan (NAP)

Government of the Republic of the Philippines, Department of Budget and Management (2024) Bolstering climate resilience PANGANDAMAN Releases P579.312 million for Green Mitigation Projects. Link: https://www.dbm.gov.ph/index.php/management-2/2925-bolstering-climate-resilience-pangandaman-releases-p579-312-million-for-green-mitigation-projects

Government of the Republic of the Philippines (2020) National Disaster Risk Reduction and Management Plan 2020–2030 (NDRRMP)

Government of the Republic of the Philippines, Congress of the Philippines (2010) Philippine Disaster Risk Reduction and Management Act of 2010, Republic Act No. 10121. Link: https://lawphil.net/statutes/repacts/ra2010/ra_10121_2010.html

Government of the Kingdom of Tonga (2018) Joint National Action Plan on Climate Change Adaptation and Disaster Risk Management 2018–2028 (JNAP)

Government of the United States of America (2025) National Adaptation and Resilience Planning Strategy.

Government of the United States of America, Federal Emergency Management Agency (FEMA) (2018) Strategic Plan of the Federal Emergency Management Agency 2018–2022

Government of the Oriental Republic of Uruguay (2021) National Adaptation Plan to Climate Change and Variability for Cities and Infrastructure

Government of the Republic of Zambia (2017) Zambia National Disaster Risk Management Framework (2017-2030): Operationalizing the Sendai Framework. Office of the Vice-President Disaster Risk Management & Mitigation Unit. Link: https://www.preventionweb.net/media/94858/download?startDownload=20250520

Government of the Republic of Zimbabwe (2024) National Adaptation Plan (NAP)

Government of the Republic of Zimbabwe (2023) National Disaster Risk Management Strategy

Handmer, J., Stevance, A., Rickards, L. & Nalau, J. (2019) Achieving Risk Reduction Across Sendai Paris and the-SDGs. International Science Council. Link: https://council.science/wp-content/uploads/2019/05/ISC_Achieving-Risk-Reduction-Across-Sendai-Paris-and-the-SDGs_May-2019.pdf

IDMC (2025) Displacement, disasters and climate change. Link: https://www.internal-displacement.org/displacement-risk/

IFRC (2022) Reducing risk and building resilience through effective governance. Link: https://disasterlaw.ifrc.org/node/909

IFRC (2021) Integrating CCA and DRR laws and policies towards a climate-resilient development: lessons from The Commonwealth of Dominica, (authored by Tommaso Natoli), Geneva. Link: https://disasterlaw.ifrc.org/sites/default/files/media/disaster_law/2021-04/20210413_Dominica_Policy.pdf

Integrated National Financing Frameworks (INFF) website (2025) About INFFs. Link: https://inff.org/about/about-inffs#international-support-for-inff

IPBES (2019) Global Assessment Report on Biodiversity and Ecosystem Services – Glossary entry: Integrated Water Resource Management (IWRM). Link: https://www.ipbes.net/glossary-tag/integrated-water-resource-management

IUCN website (2025). Link: https://iucn.org/our-work/nature-based-solutions

Lewis, C. T. & Su, M.-C. (2021) Climate Change Adaptation and Sectoral Policy Coherence in the Caribbean. Sus-tainability 13; DOI: 10.3390/su13158518.

Mahul, O.; Cook, S. J.; Prasad, R. (2017) Enhancing the financial resilience of Pacific Island Countries against natural disaster and climate risk: Pacific Catastrophe Risk Assessment and Financing Initiative (PCRAFI) Pro-gram: Phase II (English). Washington, D.C.: World Bank Group. http://documents.worldbank.org/curated/en/716481495545738079

Matikinca, P., Nyamakura, B. & Shackleton, S. (2024) Climate change adaptation and disaster risk reduction in South Africa's local municipal plans. S. Afr. J. Sci 120; DOI: 10.17159/sajs.2024/15797

MCR 2030 (2025) Urban Heat Risk Management Resource Package. Link: https://www.undrr.org/media/103947/download?startDownload=20250617

Michelle Scobie (2016) Policy coherence in climate governance in Caribbean Small Island Developing States. Environmental Science & Policy 58, 16–28; DOI: 10.1016/j.envsci.2015.12.008

Netherlands Enterprise Agency (2024) The HERMANA Project. Available at: https://projects.rvo.nl/projects/nl-kvk-27378529-pvw4s17021

OECD (2024) Compendium of Good Practices on Quality Infrastructure 2024: Building Resilience to Natural Disas-ters, OECD Publishing, Paris. DOI: https://doi.org/10.1787/54d26e88-en.

OECD (2023) Environment at a Glance in Latin America and the Caribbean - Spotlight on Climate Change. Link: https://www.oecd.org/en/publications/environment-at-a-glance-in-latin-america-and-the-caribbean_2431bd6c-en.html

OECD (2023) Towards Climate Resilience and Neutrality in Latin America and the Caribbean. Link: https://www.oecd.org/en/publications/2023/10/towards-climate-resilience-and-neutrality-in-latin-america-and-the-caribbean_7589d040.html

OECD (2020) Common Ground Between the Paris Agreement and the Sendai Framework. Link: https://www.oecd.org/content/dam/oecd/en/publications/reports/2020/04/common-ground-between-the-paris-agreement-and-the-sendai-framework_d525587d/3edc8d09-en.pdf

OECD (2019) Good Governance for Critical Infrastructure Resilience, OECD Reviews of Risk Management Policies, OECD Publishing, Paris. DOI: https://doi.org/10.1787/02f0e5a0-en

Organization of Eastern Caribbean States (OECS) (2020) St. Georges Declaration. Link: https://theshift.oecs.org/files/OECS_SGD_2040_St_Georges_Declaration_August_2020.pdf

Pacific Community (SPC), Secretariat of the Pacific Regional Environment Programme (SPREP), Pacific Islands Forum Secretariat (PIFS), UNDP, UNISDR & University of the South Pacific (USP) (2016) Framework for Resilient Development in the Pacific An Integrated Approach to Address Climate Change and Disaster Risk Management (FRDP) 2017 – 2030. Link: https://pacificdisability.org/wp-content/uploads/2024/04/FRDP_2016_Resilient_Dev_pacific.pdf

Pacific Island Forum (PIF) (2018) Boe Declaration on Regional Security, Nauru, September 2018. Link: https://pacificsecurity.net/wp-content/uploads/2021/02/Boe-Declaration-on-Regional-Security.pdf

Resilient Cities Network (2025) Broward County publishes Resilience Strategy. Link: https://resilientcitiesnetwork.org/broward-county-publishes-updated-resilience-strategy/

Royal Government of Cambodia (2018) Cambodian Sustainable Development Goals (CSDGs) Framework (2016-2030), 19 November 2019. Link: https://ncsd.moe.gov.kh/sites/default/files/2019-06/CSDG_Framework_2016-2030_English_LAST_FINAL.pdf

Santiago Network (2025) Santiago Network homepage. Link: https://Santiago-network.org

Secretariat of the Convention on Biological Diversity (2019) Voluntary guidelines for the design and effective implementation of ecosystem-based approaches to climate change adaptation and disaster risk reduction and supplementary information. Technical Series No. 93. Montreal, 156 pages.

Sendai Framework Midterm Review (2023) Link: https://sendaiframework-mtr.undrr.org/

Shaw, R., SVRK, P. & Chiba, Y. (2016) SDGs, DRR and CCA: Potential for Strengthening Inter-linkages. Link: https://www.researchgate.net/publication/313675433_SDGs_DRR_and_CCA_Potential_for_Strengthening_Inter-linkages

Thacker, S.; Adshead, D.; Fantini, C.; Palmer, R.; Ghosal, R.; Adeoti, T.; Morgan, G.; Stratton-Short, S. (2021) Infra-structure for climate action. UNOPS, Copenhagen, Denmark. Link: https://content.unops.org/publications/Infrastructure-for-climate-action_EN.pdf

The Global Goals (2025) Goal 11: Sustainable Cities and Communities. Link: https://www.globalgoals.org/goals/11-sustainable-cities-and-communities/

The Inter-American Institute for Cooperation on Agriculture (IICA) (2023) NDC Scoping Report for 9 Caribbean Countries: Policy Analysis. Link: https://repositorio.iica.int/items/fc8617aa-7c90-485c-aac4-2f646dd2f51e

The Inter-American Institute for Cooperation on Agriculture (IICA) (2023). Link: https://repositorio.iica.int/items/fc8617aa-7c90-485c-aac4-2f646dd2f51e

UAE Framework for Global Climate Resilience, Decision -/CMA.5: Glasgow–Sharm el-Sheikh work programme on the global goal on adaptation referred to in decision 7/CMA.3 (2023). Link: https://unfccc.int/sites/default/files/resource/cma5_auv_8a_gga.pdf

UN (2023) United Nations Conference on the Midterm Comprehensive Review of the Implementation of the Objectives of the International Decade for Action, "Water for Sustainable Development", 2018–2028 New York, 22–24 March 2023. Interactive dialogue 3: Water for climate, resilience and environment – source to sea, biodiversity, climate, resilience and disaster risk reduction Concept paper prepared by the Secretariat. Link: https://docs.un.org/en/A/CONF.240/2023/6

UN (2021) Climate and Disaster Resilient Infrastructure: Building Resilience to Future Uncertainties and Shocks. Link: https://www.preventionweb.net/media/73007/download?startDownload=20250611

UN (2020) United Nations Common Guidance on Helping Build Resilient Societies, New York (United Nations).

UN (2017) The New Urban Agenda. A/RES/71/256*. Link: https://habitat3.org/wp-content/uploads/NUA-English.pdf

UN (2015) Sendai Framework for Disaster Risk Reduction 2015-2030. Link: https://www.preventionweb.net/files/43291_sendaiframeworkfordrren.pdf

UNCCD (2017) Decision 7/COP.13 The future strategic framework of the Convention. Link: https://www.unccd.int/sites/default/files/sessions/documents/2019-08/7COP13_0.pdf

UNCCD (1994) United Nations Convention to Combat Desertification. Link: https://www.unccd.int/sites/default/files/2022-02/UNCCD_Convention_ENG_0_0.pdf

UN General Assembly (2015) 70/1. Transforming our world: the 2030 Agenda for Sustainable Development. Resolution adopted by the General Assembly on 25 September 2015. Seventieth session Agenda items 15 and 116. Link: https://docs.un.org/en/A/RES/70/1

UNCDF (2023) Disaster Risk Finance Strategy: Guideline Document for Pacific Island Countries (PICs). Link: https://www.uncdf.org/article/8298/disaster-risk-finance-strategy-guideline-for-pacific-island-countries

UNDP Sustainable Finance Hub (2025) Integrated National Financing Frameworks. Link: https://sdgfinance.undp.org/our-ser-vic-es/INFF#:~:text=Integrated%20National%20Financing%20Frameworks%20(INFFs,meeting%20their%20sustainable%20development%20objectives

UNDP & ECLAC (2024) Resilience in action: Social policies to navigate uncertainty in Latin America and the Caribbean. Thematic Table 1: Adaptive Social Protection Systems for Vulnerable Populations. XVI Ministerial Forum for Development in Latin America and the Caribbean, Barbados, October 30-31 & November 1, 2024. Link: https://www.undp.org/sites/g/files/zskgke326/files/2024-10/technical-note-thematic-table-1-adaptive-social-protection_en.pdf

UNDP (2020) National Adaptation Plans in focus: Lessons from Côte d'Ivoire. Link: https://www.adaptation-undp.org/sites/default/files/resources/nap-gsp_cotedivoire_countrybrief.pdf

UNDP (2020) Risk-Informed Development: A Strategy Tool for Integrating Disaster Risk Reduction and Climate Change Adaptation into Development. Link: https://www.undp.org/publications/risk-informed-development-strategy-tool-integrating-disaster-risk-reduction-and-climate-change-adaptation-development

UNDP (2017) Social Vulnerability Assessment Tools for Climate Change and DRR Programming. Link: https://www.adaptation-undp.org/resources/social-vulnerability-assessment-tools-climate-change-and-drr-programming

UNDRR (2025) 100 investments for adaptation and resilience: An interactive list of investable activities. Link: https://www.undrr.org/financing-prevention/100-investable-activities

UNDRR (2025) Disaster Resilience Scorecard for Cities. Link: https://mcr2030.undrr.org/disaster-resilience-scorecard-cities

UNDRR (2025) Disaster risk reduction and climate change adaptation: Coherence pathways in Europe and Cen-tral Asia. Link: https://www.undrr.org/publication/disaster-risk-reduction-and-climate-change-adaptation-coherence-pathways-europe-and

UNDRR (2025) DTS: An enhanced tracking system for hazardous events and disaster losses and damages. Link: https://www.undrr.org/building-risk-knowledge/disaster-losses-and-damages-tracking-system-dts

UNDRR (2025) Global Assessment Report on Disaster Risk Reduction 2025 (GAR25). Link: https://www.undrr.org/gar/gar2025UNDRR (2025) Hazard Information Profiles (HIPs): 2025 version. Link: https://www.undrr.org/publication/documents-and-publications/hazard-information-profiles-hips-2025-version

UNDRR (2025) Hazard Information Profiles (HIPs): https://www.undrr.org/publication/hazard-information-profiles-hips

UNDRR (2025) Strengthening disaster risk reduction in national biodiversity strategies and action plans. Link: https://www.undrr.org/publication/strengthening-disaster-risk-reduction-national-biodiversity-strategies-and-action-plans

UNDRR (2025) Water risks and resilience. Link: https://www.undrr.org/implementing-sendai-framework/sendai-framework-action/water-risks-and-resilience

UNDRR (2025) National disaster risk assessment: A guide for national practitioners. Link: https://www.undrr.org/quick/94920

UNDRR (2025) Making Cities Resilient 2030: Disaster Displacement Scorecard. Link: https://mcr2030.undrr.org/disaster-displacement-scorecard

UNDRR (2025) 2025 Global Status of National Disaster Risk Reduction Strategies. Link: https://www.undrr.org/2025-global-status-national-DRR-strategies

UNDRR web site (2025) Enhance infrastructure resilience. Link: https://www.undrr.org/resilient-infrastructure/enhance-infrastructure-resilience

UNDRR & WMO (2024) Global Status of Multi-Hazard Early Warning Systems. Geneva, Switzerland. Link: https://library.wmo.int/viewer/69085/download?file=Global-Status-of-MHEWS-2024_en.pdf&type=pdf&navigator=1

UNDRR (2024) Handbook on the use of risk knowledge for multi-hazard early warning systems 2024. Link: https://www.undrr.org/publication/handbook-use-risk-knowledge-multi-hazard-early-warning-systems-2024

UNDRR (2024) Resilience Expenditure Landscape: Tracking spending on disaster risk reduction and climate change adaptation. Link: https://www.undrr.org/media/98344/download?startDownload=20250519

UNDRR (2024) Words into Action guidelines: The Science–Policy–Society ecosystem for disaster risk reduction. Link: https://www.undrr.org/publication/words-action-guidelines-science-policy-society-ecosystem-disaster-risk-reduction

UNDRR & UNDESA (2024) Integrated National Financing Framework (INFFs) for disaster risk reduction. Link: https://www.undrr.org/publication/integrated-national-financing-framework-inffs-disaster-risk-reduction

UNDRR & SEI (2023) Disaster risk reduction and climate change adaptation: Pathways for sustainable development and policy coherence in the Caribbean region through comprehensive risk management. Link: https://www.undrr.org/media/90864/download?startDownload=20250522

UNDRR & WHO (2023) Integrating Disease Outbreaks and Strengthening of Health in Whole-of Society Disaster Risk Management: A Supplemental Guide for Developing or Updating National Multi-Hazard Disaster Risk Reduction Strategies. Link: https://www.undrr.org/media/102493/download?startDownload=20250609

UNDRR & WMO (2023) Technical guidance on application of climate information for comprehensive risk management, United Nations Office for Disaster Risk Reduction and World Meteorological Organization. Link: https://www.undrr.org/publication/technical-guidance-application-climate-information-comprehensive-risk-management

UNDRR, UN-ESCAP, UNFPA, UN Office for Project Services (2023) Disaster and Climate Resilient Health Systems. Link: https://www.undrr.org/publication/disaster-and-climate-resilient-health-systems

UNDRR (2023) Budget Tagging for Disaster Risk Reduction and Climate Change Adaptation. Link: https://www.preventionweb.net/publication/budget-tagging-disaster-risk-reduction-and-climate-change-adaptation-guide-design-and

UNDRR (2023) Disaster Risk Reduction and Climate Change Adaptation: Pathways for Sustainable Development and Policy Coherence in the Caribbean Region through Comprehensive Risk Management. Link: https://www.undrr.org/publication/disaster-risk-reduction-and-climate-change-adaptation-pathways-sustainable-development

UNDRR (2023) Midterm Review of the Sendai Framework for Disaster Risk Reduction 2015–2030: Thematic report on local, Indigenous and traditional knowledge for disaster risk reduction in the Pacific. Link: https://www.preventionweb.net/media/89327/download?startDownload=20250504

UNDRR (2023) Nature-Based Solutions for Comprehensive Disaster and Climate Risk Management - Toolkit for Integrated Planning and Implementation of Disaster Risk Reduction and Climate Change Adaptation. Link: https://www.undrr.org/publication/nature-based-solutions-comprehensive-disaster-and-climate-risk-management-toolkit

UNDRR (2023) Policy brief: Urban disaster resilience. Link: https://www.undrr.org/publication/policy-brief-urban-disaster-resilience

UNDRR (2022) Addressing the interplay of the Sendai Framework with Sustainable Development Goals in Latin America and the Caribbean: Moving forward or going backwards? Link: https://www.undrr.org/publication/addressing-interplay-sendai-framework-sustainable-development-goals-latin-america-and

UNDRR (2022) Disaster risk reduction (DRR) and climate change adaptation (CCA): Coherence pathways in Asia and the Pacific. UNDRR (not published)

UNDRR (2022) Principles for resilient infrastructure. Link: https://www.undrr.org/media/78694/download?startDownload=20250610

UNDRR (2022) Technical Guidance on Comprehensive Risk Assessment and Planning in the Context of Climate Change. Link: https://www.undrr.org/media/79566/download?startDownload=20250526

UNDRR (2021) Addressing the infrastructure failure data gap: A governance challenge. Link: https://www.undrr.org/publication/addressing-infrastructure-failure-data-gap-governance-challenge

UNDRR (2021) Policy brief: Accelerating financing and de-risking investment. Link: https://www.undrr.org/publication/policy-brief-accelerating-financing-and-de-risking-investment

UNDRR (2021) Promoting Synergy and Alignment Between Climate Change Adaptation and Disaster Risk Reduction in the Context of National Adaptation Plans: A Supplement to the UNFCCC NAP Technical Guidelines. Link: https://www.undrr.org/media/79532/download?startDownload=20250503

UNDRR (2021) Words into Action: Nature-Based Solutions for Disaster Risk Reduction. Link: https://www.undrr.org/words-action-nature-based-solutions-disaster-risk-reduction

UNDRR (2020) Disaster Risk Reduction and Climate Change Adaptation: Pathways for policy coherence in Sub-Saharan Africa. Link: https://www.undrr.org/publication/disaster-risk-reduction-and-climate-change-adaptation-pathways-policy-coherence-sub

UNDRR (2020) Disaster Risk Reduction Investments in Africa: Evidence from 16 Risk-sensitive Budget Reviews. Link: https://www.undrr.org/publication/disaster-risk-reduction-investment-africa-evidence-16-risk-sensitive-budget-reviews

UNDRR (2020) Words into Action: Engaging Children and Youth in Disaster Risk Reduction and Resilience Building. Link: https://www.undrr.org/sites/default/files/2020-10/67704_67704wiachildyouthdrr2020677 04undrr_1.pdf?startDownload=true

UNDRR (2019) Global Assessment Report on Disaster Risk Reduction 2019. Link: https://www.undrr.org/publication/global-assessment-report-disaster-risk-reduction-2019

UNDRR (2019) Words into Action guidelines: Implementation guide for local disaster risk reduction and resilience strategies. Link: https://www.undrr.org/media/44686/download?startDownload=20250609

UNDRR (2015) Sendai Framework for Disaster Risk Reduction 2015-2030. Link: https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030

UNEP (2025) An early warning system for disasters takes shape in Timor-Leste. Link: https://www.unep.org/news-and-stories/story/early-warning-system-disasters-takes-shape-timor-leste#:~:text=How%20nature%20can%20help%20cities,International%20Centre%20for%20Theoretical%20Physics.

UNEP (2024) Adaptation Gap Report 2024: Come hell and high water — As fires and floods hit the poor hardest, it is time for the world to step up adaptation actions. Nairobi. https://doi.org/10.59117/20.500.11822/46497.

UNEP (2022) Convention on Biological Diversity. CBD/COP/DEC/15/4. Kunming-Montreal Global Biodiversity Framework. Link: https://www.cbd.int/doc/decisions/cop-15/cop-15-dec-04-en.pdf

UNFCCC (2025) Approaches to address Loss and Damage associated with Climate Change impacts in developing countries. Link: https://unfccc.int/topics/adaptation-and-resilience/workstreams/approaches-to-address-loss-and-damage-associated-with-climate-change-impacts-in-developing-countries

UNFCCC (2025) Warsaw International Mechanism for Loss and Damage associated with Climate Change Im-pacts. Link: https://unfccc.int/topics/adaptation-and-resilience/workstreams/loss-and-damage/warsaw-international-mechanism

UNFCCC (2023) Global Stocktake of the Paris Agreement. Link: https://unfccc.int/topics/global-stocktake

UNFCCC (2017) Opportunities and options for integrating climate change adaptation with the Sustainable Development Goals and the Sendai Framework for Disaster Risk Reduction 2015-2030. Link: https://unfccc.int/sites/default/files/resource/techpaper_adaptation.pdf

UNFCCC (2015) Adoption of the Paris Agreement - Paris Agreement text English. Conference of the Parties Twenty-first session Paris, 30 November to 11 December 2015. Link: https://unfccc.int/resource/docs/2015/cop21/eng/l09r01.pdf

UNFCCC (2023). Report of the Conference of the Parties – Decision 2/CMA.5. Available at: https://unfccc.int/sites/default/files/resource/cma5auv8a_gga.pdf

UNFCCC (2011) The Cancun Adaptation Framework. Third Global Platform for Disaster Risk Reduction International Conference Centre Geneva, 9 May 2011. Link: https://www.preventionweb.net/files/globalplatform/entry_presentation~microsoftpowerpointun-fcccpreeventew.pdf

United Nations Conference on the Midterm Comprehensive Review of the Implementation of the Objectives of the International Decade for Action, "Water for Sustainable Development", 2018–2028 New York, 22–24 March 2023. Interactive dialogue 3: Water for climate, resilience and environment – source to sea, biodiversity, climate, resilience and disaster risk reduction Concept paper prepared by the Secretariat** Link: https://docs.un.org/en/A/CONF.240/2023/6

United Nations (2023) Sustainable Development Goals Report 2023. Link: https://unstats.un.org/sdgs/report/2023/

UNSDG (2021) UN Common Guidance on Resilience. Link: https://unsdg.un.org/sites/default/files/2021-09/UN-Resilience-Guidance-Final-Sept.pdf

UNStats (2025) Global indicator framework for the Sustainable Development Goals and targets of the 2030 Agenda for Sustainable Development. E/CN.3/2025/6. Link: https://unstats.un.org/sdgs/indicators/Global-Indicator-Framework-after-2025-review-English.pdf

UNU-EHS (2021) Climate and Disaster Risk Financing Instruments: An Overview. Link: https://climate-insurance.org/wp-content/uploads/2021/05/Climate-and-Disaster-Risk-Financing-Instruments.pdf

Vanuatu National Disaster Management Office (NDMO) (2018) National Policy on Climate Change and Disaster-induced Displacement. Link: https://www.iom.int/sites/g/files/tmzbdl486/files/press_release/file/iom-vanuatu-policy-climate-change-disaster-induced-displacement-2018.pdf

Wettengel, J. (2025) Global losses from natural disasters reached 320 billion U.S. dollars in 2024. Clean Energy Wire. Link: https://www.cleanenergywire.org/news/global-losses-natural-disasters-reached-320-billion-us-dollars-2024#:~:text=Natural%20disasters%20worldwide%20caused%20losses,German%20reinsurance%20company%20Munich%20RE

WHO (2015) New climate change agreement a historic win for human health. The Paris Agreement is potentially the strongest public health agreement of the century. Link: https://www.who.int/news-room/commentaries/detail/new-climate-change-agreement-a-historic-win-for-human-health

WIM ExCOM (2018) Report of the Task Force on Displacement. Link: https://unfccc.int/process-and-meetings/bodies/constituted-bodies/executive-committee-of-the-warsaw-international-mechanism-for-loss-and-damage/2018-report-of-the-task-force-on-displacement

WMO (2025) Early Warnings for All webpage. Link: https://earlywarningsforall.org/site/early-warnings-all

WMO (2025) State of the Global Climate 2024. Link: https://wmo.int/publication-series/state-of-global-climate-2024

World Bank (2024) Rising to the challenge - Success Stories and Strategies for Achieving Climate Adaptation and Resilience. Link: https://www.worldbank.org/en/publication/rising-to-the-challenge-climate-adaptation-resilience

Zimbabwe Resilience Building Fund (ZRBF) (2023) Zimbabwe Resilience Building Fund (ZRBF): Sustainability of Interventions May 2015 – March 2023. Link: https://www.undp.org/zimbabwe/publications/zrbf-sustainability-interventions

Annex I: List of analysed country documents

Forty-five countries have been considered for the AI-informed analysis for Chapter 3, which have submitted both a national DRR strategy and a NAP.

Of these, two countries (Kiribati and Tonga) had a joint plan which was manually analysed.

Table: Overview of DRR strategies and National Adaptation Plans analysed (as reported under the Sendai Framework Monitor and UNFCCC NAP Central until December 2024)

Country	Analysed Policies
Albania	National Adaptation Plan to Climate Change in Albania, 2019 National Disaster Risk Reduction Strategy 2023-2030
Argentina	National Adaptation Plan 2022 Plan Nacional para la Reducción del Riesgo De Desastres 2018 - 2023
Armenia	National Action Program of Adaptation to Climate Change and the List of Measures for 2021-2025 Disaster Risk Management National Strategy of the Republic of Armenia, 2017
Bangladesh	National Adaptation Plan of Bangladesh 2023-2050 National Plan for Disaster Management 2021-2025
Benin	Plan national d'adaptation aux changements climatiques du Bénin, 2022 Stratégie Nationale de Réduction des Risques de Catastrophe 2019-2030
Burkina Faso	Burkina Faso National Climate Change Adaptation Plan, 2015 Plan d'action national pour le renforcement des capacités en matière de réduction des risques de catastrophe 2015-2019
Cabo Verde	National Adaptation Plan of Cabo Verde, 2021 Estratégia Nacional de Redução de Riscos de Desastres Cabo Verde, 2017
Cambodia	Cambodia Climate Change Strategic Plan 2014-2023 National Action Plan for Disaster Risk Reduction 2024-2030
Canada	Canada's National Adaptation Strategy, 2023 Emergency Management Strategy for Canada, 2019

Country	Analysed Policies
Chile	Plan de Acción Nacional de Cambio Climático, 2014 Plataforma Nacional para la Reducción del Riesgo de Desastres, 2020 – 2030
Colombia	Plan Nacional de Adaptación al Cambio Climático, 2021 Plan Nacional de Gestión del Riesgo de Desastres 2015 – 2030
Costa Rica	Plan Nacional de Adaptación al Cambio Climático 2022-2026 Plan Nacional de Gestión del Riesgo 2016-2020
Ecuador	Plan Nacional de Adaptación al Cambio Climático del Ecuador 2022-2027 Plan Nacional para la Reducción de Riesgos en Ecuador, 2023
Ethiopia	Ethiopia's National Adaptation Plan, 2019 National Policy and Strategy on Disaster Risk Management, 2018
Fiji	Republic of Fiji National Adaptation Plan, 2018 The Republic of Fiji National Disaster Risk Reduction Policy 2018-2030
Grenada	National Climate Change Adaptation Plan for Grenada, Carriacou and Petite Martinique 2017-2021 Grenada Disaster Management Bill, 2023
Guatemala	Plan de Acción Nacional de Cambio Climático del Guatemala: Segunda Edición, 2018 Política Nacional para la Reducción del Riesgo de Desastres de Guatemala 2024 -2034
Haiti	Plan National d'Adaptation au Changement Climatique 2022-2030 Plan national de gestion des risques de désastre 2019-2030
Kenya	Kenya National Adapation Plan 2015-2030 Kenya National Disaster Risk Management Policy 2017
Kiribati	Kiribati Joint Implementation Plan for Climate Change and Disaster Risk Management 2019-2028
Liberia	Liberia National Adaptation Plan 2020-2030 National Action Plan for Disaster Risk Reduction 2016-2021
Marshall Islands	The National Adaptation Plan of the Republic of the Marshall Islands, 2023 Disaster Risk Management Act, 2023
Morocco	Stratégie Nationale de Gestion des Risques au Maroc 2021-2030 Stratégie Nationale de Gestion des Risques Naturales au Maroc, Plan d'action prioritaire 2021-2023
Mozambique	Mozambique's National Adaptation Plan, 2023 Moçambique Plano Director para a Redução do Risco de Desas-tres 2017-2030
Nepal	Nepal National Adaptation Plan 2021-2050 National Policy and Strategic Action Plan for Disaster Risk Reduc-tion and Management 2018-2030
New Zealand	Adapt and thrive: Building a climate-resilient New Zealand, 2022 New Zealand National Disaster Resilience Strategy, 2019
Niger	Plan National d'Adaptation aux changements climatiques, 2022 Stratégie Nationale de Réduction des Risques de Catastrophe, 2019
Pakistan	Pakistan National Adaptation Plan, 2023 National Disaster Response Plan, 2019
Papua New Guinea	Papua New Guinea National Adaptation Plan, 2023 National Disaster Risk Reduction Framework 2017-2030
Paraguay	Plan Nacional de Adaptación al Cambio Climático 2022 Plan Nacional de Implementación del Marco de Sendai 2018-2022
Peru	Plan Nacional de Adaptación al Cambio Climático del Perú 2021 Política Nacional de Gestión del Riesgo de Desastres al 2050
Philippines	National Adaptation Plan of the Philippines 2023-2050 National Disaster Risk Reduction and Management Plan 2020-2030
Saint Lucia	The Saint Lucia Climate Change Adaptation Policy, 2015 Saint Lucia's National Adaptation Plan 2018-2028
Saint Vincent and the Grenadines	National Adaptation Plan for Saint Vincent and the Grenadines, 2019 Comprehensive Disaster Management Country Work Programme 2020-2024

Country	Analysed Policies
Serbia	Climate Change Adaptation Programme for the period 2023-2030 Action Plan for the Implementation of the National Disaster Risk Management Programme 2016-2020
Somalia	Somalia's National Adaptation Plan Framework, 2022 National Disaster Risk Management Policy, 2020
Sri Lanka	National Adaptation Plan for Climate Change Impacts in Sri Lanka 2016-2025 National Disaster Management Plan 2022-2030
State of Palestine	National Adaptation Plan to Climate Change, 2016 The National Strategy for Disaster Risk Reduction in Palestine 2023–2027
Thailand	Thailand's National Adaptation Plan, 2023 This National disaster Risk Management Plan, 2015
Togo	Plan National d'Adaption aux Changements Climatiques du Togo 2017-2021 Plateforme Nationale De Reduction des Risques de Catastrophes 2022-2026
Tonga	Joint National Action Plan 2 on Climate Change and Disaster Risk Management 2018-2028
United States of America	U.S. National Adaptation and Resilience Planning Strategy, 2025 2018-2022 Strategic Plan of the Federal Emergency Management Agency
Uruguay	National Adaptation Plan to Climate Change and Variability for Cities and Infrastructures in Uruguay, 2021 Plan Nacional de Adaptación a la Variabilidad y el Cambio Climático para el Sector Agropecuario de Uruguay, 2019 National Adaptation Plan to Climate Change and Variability for Coastal Zone in Uruguay, 2021 Plan Nacional de Adaptación a la Variabilidad y al Cambio Climático Sector Energía, 2024 Política Nacional de Gestión Integral del Riesgo de Emergencias y Desastres en Uruguay 2019-2030
Zambia	National Adaptation Plan for Zambia, 2023 Zambia National Disaster Risk Management Framework 2017-2030
Zimbabwe	Zimbabwe's National Climate Change Adaptation Plan, 2024 Zimbabwe National Disaster Risk Management Draft Strategy, 2023

Annex II: AI analysis methodology

The analysis of the documents reported by countries (national DRR strategies and NAPs, or JNAPs) was developed with the support of AI, which facilitated the systematic assessment of 91 documents against the specific activity matrix. The specific activity matrix was developed by locating clusters of specific activities assessed as likely to characterise a "principal" or "significant" budget line for DRR and CCA (UNDRR 2023) within broader categories (JIAs) characterised by a common thematic focus (see synonym dictionary – Annex III).

This approach proceeded in three steps:

4. The development of a Python code to render policy documents into a format accessible to analysis by large language models (LLMs), with a particular focus on challenging, information-rich formats such as tables and matrices. An open source code used to make PDFs and scans accessible to LLMs can be found here: https://github.com/GovML/UNDRR_CompartiveAnalysis

5. The use of Claude-Sonnet-3.7 LLM to populate the specific activity matrix, identifying specific activities and their associations with budgets, timelines and institutions, making use of both exact and semantic matching tools. Claude-Sonnet was selected due to a low propensity for hallucination, a feature developed and confirmed through specific prompt engineering. Bias introduced by the wording of prompts was addressed by both the use of semantic matching tools and the population of a domain-specific synonym dictionary to ensure comprehensive coverage for each joint implementation area.

6. The use of Claude-Sonnet-3.7 LLM to develop 35 qualitative responses per document, providing a detailed and navigable overview of the contents of each document, including through direct evidence and quotation. The prompt architecture to derive these responses was drawn from previous iterations of the Coherence Pathways analysis, with additional prompts to explore specific joint implementation areas (see Annex III).

These detailed qualitative responses were used to verify the outcome of the population of the specific activity matrix, with a human-in-the-loop approach ensuring that the impression provided by the matrix matched the qualitative overview. The result was a two-step, AI-informed analysis, with a systematic assessment of 40 activities compared against a qualitative overview of 35 thematic questions.

The 1-5 scoring used for calculating the level of coherence for the 10 JIAs in Chapter 3 was based on the following principle: the average score was calculated from the assessment of each JIA at the national level , where conceptual coherence was scored as 1, operational coherence as 2, institutional coherence as 3, monitoring and evaluation coherence as 4 and financial coherence as 5. As such, a higher average indicates that the concrete JIA is more commonly assessed as displaying a higher level of coherence at the national level, whereas a lower average means that coherence more commonly remains at the conceptual or operational level.

For the purposes of this analysis, the aggregation of the coherence of specific activities into coherence at the level of a country proceeds as follows:

- Where one or two of the ten joint implementation areas indicated the presence of an aspect of coherence, the country is assessed as demonstrating a limited manifestation of this aspect of coherence

- Where three or four of the ten joint implementation areas indicated the presence of an aspect of coherence, the country is assessed as demonstrating a partial manifestation of this aspect of coherence

- Where five, six or seven of the ten joint implementation areas indicated the presence of an aspect of coherence, the country is assessed as demonstrating a substantial manifestation of this aspect of coherence

- Where eight, nine or ten of the ten joint implementation areas indicated the presence of an aspect of coherence, the country is assessed as demonstrating a systematic manifestation of this aspect of coherence

Specific Calculations

Numerical Coherence Score for Joint Implementation Areas

A. Each activity is assessed for level of coherence, per the criteria above

B. Each joint implementation area is assigned the highest level of coherence that the specific activities (excepting the general "other" category) within it realise for a particular country. Therefore, if Resilient Agriculture and Food Systems manifests Institutional Coherence in just one of the four possible specific activities, it would still be assigned a score of 3.

C. To provide the general coherence scores per JIA, an average of JIA scores across the 45-country sample is taken. For example, if 10 countries scored 1,1,2,2,2,2,2,3,3,5, the JIA average would be 2.3.

Conceptual	Operational	Institutional	Monitoring & Evaluation	Financial	Coherence score
True	False	False	False	False	1
True	True	False	False	False	2
True	True	True	False	False	3
True	True	True	True	False	4
True	True	True	True	False	5

Table 1: Overview of country coherence levels by joint implementation area (total: 45 analysed countries)

JIA	Level 1 - Conceptual Coherence	Level 2 - Operational Coherence	Level 3 - Institutional Coherence	Level 4 - Monitoring & Evalua-tion Coherence	Level 5 - Financial Coherence
Impact, vulnerability and risk assessment	44	42	13	2	1
Multi-hazard early warning systems	44	37	22	2	1
Disaster preparedness	45	39	12	2	1
Health and resilient healthcare	45	31	15	3	0
Integrated water resource management	45	25	8	2	1
Resilient Agriculture and Food Systems	45	16	9	2	1
Resilient infrastructure	44	28	11	2	0
Nature-based Solutions	44	27	10	2	0
Urban Resilience	45	39	14	2	0
Building community resilience	45	42	12	2	1
Human mobility	n.a.	n.a.	n.a.	n.a.	n.a.

Categorical Coherence Score for Countries

A. Each country is assessed as manifesting one of four categories of coherence, for each of the possible aspects of coherence, per the criteria above. These are limited, partial, substantial and systematic. For example, if seven JIAs demonstrated institutional coherence - that is, seven JIAs had at least one specific activity that demonstrated institutional coherence - the country would be considered as demonstrating substantial institutional coherence in its documentary profile.

B. For this analysis, each JIA is considered as realising multiple aspects of coherence. Therefore, seven JIAs demonstrating institutional coherence does not preclude 10 JIAs demonstrating conceptual coherence.

Discussion of limitations:

This study addressed documents at diverse levels of specificity to develop a broad dataset for analysis. This lack of differentiation meant that in a small minority of documents a lack of dedicated activities and institutions was indexed as a lack of coherence, as the code searched for a level of specificity that would be inappropriate for the document type. Other studies may wish to compare a subset of strategic documents such as legislative frameworks, strategic overviews or action plans to overcome this limitation.

The Python code developed as part of this study was tailored for assessing both text and tables for key information. However, the code is less effective deriving information from image formats, which may have led to the exclusion of information contained in organograms or other diagrams. Other studies may wish to develop more precise approaches to integrating data contained within images into the policy analysis to overcome this limitation.

Recommendations for future improvement and application of the method:

This approach has proved effective in integrating LLM technology into systematic policy analysis. Looking forward, potential future applications of this approach could be:

- Developing an analysis of a different or wider set of strategy documents. Making use of a different prompt architecture to identify the presence of different specific activities and deriving insights on this basis. For example, it would be possible to use the approach of this study to understand the mainstreaming of climate adaptation commitments across sectoral policy documents.

- Producing a 'live' database of policy commitments, timelines and budgets. Making use of LLM technology to populate a continuously updated database that provides a real-time overview of key details in diverse policy documents. With refinements in coding and enhanced compute power of LLMs, an ongoing improvement in the accuracy and comprehensiveness of this analysis can be expected.

- Assessing the types of strategic arrangement that result in practical implementation. Given a knowledge of implemented projects, it would be possible to provide a systematic assessment of the policy and institutional set-ups that most commonly result in implementation and thereby to offer recommendations for the attainment of practical, concrete results.

- Further improving the synonyms dictionary items and categories as well as the prompt architecture.

Annex III: AI analysis – synonyms dictionary and prompt architecture

Table: Synonyms dictionary – overview of areas and activities under the JIAs

Name of JIA	Included Activities/areas and synonyms
Impact, Vulnerability and Risk Assessment	Multi-criteria infrastructure vulnerability assessment Probabilistic risk assessment methodologies Impact, vulnerability and risk assessment Vulnerability Assessment Probabilistic infrastructure risk assessment Multi-hazard city vulnerability assessment Multi-hazard vulnerability assessment City-wide resilience assessment frameworks Community-driven vulnerability assessments Health vulnerability and capacity assessment Disaggregated vulnerability assessment
Multi-hazard Early Warning Systems	End-to-end early warning systems Impact-based early warning systems Syndromic surveillance early warning systems Integrated flood early warning systems Climate-sensitive disease surveillance systems Sentinel infectious disease surveillance Weather forecasting and early-warning systems for agriculture Operations of weather forecasting and early-warning services (non–sector specific; for sector-specific applications, see for example "Agriculture" broad area) Climate information system
Resilient Agriculture and Food Systems	Agrifood system resilience Climate-smart agriculture Drought-resistant cultivar development Agroclimatic zoning systems Crop phenological adaptation Conservation tillage practices Bund construction and maintenance Agroecological intensification Agrometeorology services Probabilistic seasonal forecasting Climate-indexed agricultural planning Farmer field schools Ecosystem service payments for agriculture Micro-catchment water harvesting Deficit irrigation systems Soil organic carbon sequestration Ex-situ crop genetic conservation Livelihood portfolio diversification Community seed banks Index-based agricultural insurance Contour bunding techniques Sustainable agricultural intensification Agricultural system resilience metrics Impact-based forecasting for agriculture Automated weather stations for farming Participatory climate services Integrated pest and disease management Silvopastoral systems integration Climate-resilient agricultural value chains Smart agricultural advisories Climate-adaptive farm management Support for switching to drought-resistant varieties/crops Planting patterns that increase diversity of growing periods Weather forecasting and early-warning systems for agriculture Other activities related to resilient agriculture

Name of JIA	Included Activities/areas and synonyms
Resilient Infrastructure	Structural improvements to roads and bridges to increase resilience to disasters; Reinforce slopes and embankments around railways and upgrade track drainage; Enhancing resilience of cyber infrastructure, including through cyberprotec-tion laws and practices and cybersecurity; Diversify energy sources and mainstream climate and disaster impact into energy planning; Other activities related to resilient critical infrastructure. Infrastructure system hardening Climate-proofed structural engineering Performance-based resilience standards Geotechnical slope stabilization Riprap embankment reinforcement Critical information infrastructure protection Network security control systems Multi-criteria infrastructure vulnerability assessment All-hazards infrastructure design approach Transportation lifeline redundancy Decentralized energy microgrids Hydraulic track drainage upgrades Probabilistic infrastructure risk assessment Distributed generation networks Redundancy systems Lifeline infrastructure service continuity Active network redundancy architecture Hazard-resistant construction codes Performance-based engineering standards Climate change infrastructure adaptation pathways Critical node protection systems Energy diversification portfolio planning Essential service continuity planning Supply chain vulnerability mapping Structural and non-structural retrofitting Decentralized infrastructure management Accelerated infrastructure stress testing Telecommunications redundancy networks Climate risk mainstreaming in infrastructure planning Critical facility strategic relocation
Nature-Based Solutions	Forestry approaches including agroforestry, afforestation and reforestation, and forest fire services; Mangrove rehabilitation; Actions to restore biodiversity in wetlands, peatlands and riverine ecosystems; Land or marine protected areas (e.g., establishment, enforcement); Other activities related to nature-based solutions. Ecosystem-based disaster risk reduction Multifunctional agroforestry systems Mangrove hydrological rehabilitation Strategic reforestation for slope stabilization Ecological succession-based afforestation Constructed wetland conservation Peatland hydrological restoration Riverine floodplain ecosystem rehabilitation Biodiversity corridor conservation Integrated protected area management Marine protected area zoning systems Ecological buffer zone establishment Green-gray infrastructure integration Natural flood attenuation Systematic ecosystem restoration Integrated watershed management Coastal defense ecosystem services Ecological bioshield implementation Blue carbon sequestration projects Living shoreline stabilization techniques Riparian buffer zone restoration Soil bioengineering for slope protection Ecological connectivity corridors Forest fire risk management services Habitat conservation planning Landscape-scale land management Adaptive natural resource management Assisted natural regeneration techniques Nature-based ecological engineering Functional biodiversity landscape planning

Name of JIA	Included Activities/areas and synonyms
Disaster Preparedness	Codified risk knowledge management Operations of weather forecasting and early-warning services (non–sector specific; for sector-specific applications, see for example "Agriculture" broad area); Prearranging finance for more effective response, such as through climate and disaster risk finance and insurance instruments; Formulation of contingency plans and emergency simulations; Enhancing preparedness through risk assessment, planning, appropriate institutional coordination and mainstreaming of DRR and CCA; Other activities related to Preparedness Actions. Multi-hazard contingency planning Integrated emergency preparedness Probabilistic risk assessment methodologies Parametric climate risk finance instruments Risk-layered disaster insurance Table-top emergency simulations Risk-informed development planning Cross-sectoral institutional coordination Horizontal and vertical DRR mainstreaming Threshold-based forecast financing Mass evacuation planning protocols Strategic risk communication frameworks Community-based simulation drills Incident command system training Standard operating procedures for crises Multi-level disaster risk governance Targeted capacity building for emergency management Integrated weather monitoring networks Sovereign risk transfer mechanisms Parametric trigger insurance products Pre-positioned disaster planning Multi-dimensional scenario planning Business continuity management systems Emergency operations coordination centers Whole-of-society coordination frameworks
Health and Resilient Healthcare	Expand prevention and care for climate-sensitive diseases (e.g., malaria, dengue, diarrhoea); Pandemic prevention and response (e.g., research, institutions, regulations, awareness, enforcement); Improve regulations and enforcement for hazardous waste to reduce pollution hazards; Enhanced structural resilience of healthcare institutions and networks to climate change and disasters; Other activities related to health and resilient healthcare. Climate-sensitive disease surveillance systems Vector-borne disease integrated management Health systems resilience frameworks Healthcare structural and functional hardening Pandemic preparedness capacities Sentinel infectious disease surveillance Disaster medicine protocols Health emergency incident management systems Hazardous waste disposal regulations Environmental health determinants protection Medical logistics and supply chain resilience Health vulnerability and capacity assessment Syndromic surveillance early warning systems Public health emergency operations protocols Extreme heat illness prevention protocols Waterborne pathogen monitoring and prevention Medical infrastructure structural resilience Community health worker disaster response networks Health emergency risk communication Healthcare service continuity during disasters Heat-health action planning Medical evacuation coordination planning Emergency telemedicine service networks Healthcare business continuity planning Essential medicine stockpiling Hospital all-hazards disaster preparedness Health workforce surge capacity development Climate-sensitive health monitoring One Health cross-sectoral approaches Biological hazard containment management

Name of JIA	Included Activities/areas and synonyms
Integrated Water Resource Management	Flood barriers and other hard infrastructure to mitigate flood risk; Water-use efficiency practices; Construct/rehabilitate water storage; New sewage design standards, especially with a focus on reducing contamination when capacity is exceeded; Other areas related to water resource management Engineered flood barriers Integrated stormwater management Participatory watershed management Demand-side water efficiency practices Rooftop rainwater harvesting systems Basin-scale water resources management Risk-informed floodplain management Multipurpose water storage construction Water retention structure rehabilitation Urban drainage systems enhancement Climate-resilient sewage design standards Structural flood control infrastructure Gray water recycling initiatives Upstream floodwater retention systems Managed aquifer recharge Riverbank stabilization Risk-based dam safety measures Engineered flood diversion channels Water demand management measures Real-time hydrological monitoring Integrated flood early warning systems Source water quality protection Nature-based wastewater treatment Sustainable urban drainage systems (SUDS) Engineered infiltration basins Stormwater detention facilities Permeable pavement technologies Naturalized channel restoration Adaptive water allocation planning GIS-based flood risk mapping
Urban Resilience	Reinforce public buildings to seismically safe and flood-proof standards; Urban land use planning through building codes and municipal regulation to enhance resilience to disasters, including through improved design and use of flood plains; Green infrastructure, including urban green spaces, farms, corridors and gardens; Build communal cool shelters; Other activities related to urban resilience. Risk-sensitive urban master planning Performance-based building code enforcement Seismic retrofitting standards Flood-proof construction standards Risk-informed municipal land use regulation Multi-functional green infrastructure Urban heat island reduction strategies Networked urban green spaces City-wide resilience assessment frameworks Public cooling shelter networks Urban ecosystem services valuation Smart city monitoring technologies Urban canopy management Municipal emergency response planning Transit-oriented resilient urban design Participatory informal settlement upgrading Urban circular economy measures Green roofing systems Multi-hazard city vulnerability assessment Evidence-based municipal adaptation planning Mixed-use compact city development Tsunami vertical evacuation structures Heat wave urban cooling centers Integrated city stormwater systems Urban watersensitive design Climate-responsive urban microclimates Universal access pedestrian infrastructure Urban biodiversity conservation measures Distributed city energy resilience

Name of JIA	Included Activities/areas and synonyms
Addressing Vulnerability and Building Community Resilience	Livelihood programmes targeting households vulnerable to climate- and disaster-related risks, or those in vulnerable areas; Shock-responsive social protection (e.g., research, design, grants, institutions, monitoring); Introduce new teaching practices/ materials dedicated to DRR/CCA, including through research at higher education institutions; Business services for risk reduction (e.g., networking, information); Other activities related to society and livelihoods. Systemic vulnerability reduction strategies Adaptive capacity asset building Household livelihood diversification Scalable shock-responsive social protection Community-based resilience planning Disaster risk education curriculum Cross-generational knowledge transfer Climate-resilient alternative livelihoods Adaptive livelihood approaches Social cohesion resilience building Participatory climate risk awareness Asset-based household resilience strategies Gender-transformative resilience programming Community-led local adaptation planning Traditional ecological knowledge integration Bonding and bridging social capital MSME business continuity planning Microinsurance for climate risks Private sector risk reduction services Sectoral economic diversification Disaster risk-informed microfinance Climate-proofed value chain development Community-based resource management Adaptive skills vocational training Multi-channel risk communication campaigns Inclusive resilience governance Tangible and intangible cultural heritage safeguarding Community-driven vulnerability assessments Adaptive social safety nets Risk-informed educational curricula

Table: Prompt architecture

Document Details	Prompts for both national DRR strategies/plans and National Adaptation Plans (NAPs)
Strategic and conceptual	Does the document aim to build resilience to climate and disaster risks and avoid the creation of new risks? Does the document demonstrate a sophisticated understanding of risk accumulation?
	Does the document refer to or establish regional guidance or domestic laws for DRR and CCA?
	Does the document address DRR, CCA and Sustainable Development jointly, including through a joint conceptual background?
	Does the document seek to mainstream DRR and CCA jointly into other sectors? Does the document identify specific sectors for which DRR and CCA are relevant considerations, and refer to sectoral policies if appropriate?
	Does the document identify a lead entity for policy guidance and promote coordination amongst DRR and CCA entities?
	Does the document accurately assess and consider risks at the national level, and do so in a coherent manner?
Institutional	Does the document describe coordination mechanisms or joint policy instruments to support coherence between DRR and CCA?
	Does the document describe coordination mechanisms for sustainable development as a mechanism for strengthening coherence? [example: resilience platform, SDG platform]
	Does the document identify a lead agency for a coordination mechanism? Does the document position DRR and CCA under the responsibility of the same mechanism or institution?
	Does the document describe a multi-sector mechanism for achieving coherence at sub-national levels?
	Does the document describe the roles and responsibilities of DRR and CCA actors in creating coherence?
Operational	Does the document indicate that the formulation and implementation of policy is based on engagement from both DRR and CCA stakeholders?
	Does the document identify a lead entity for guidance in implementation?
	Does the document include a detailed cross-sectoral plan of action that outlines specific activities?
	Does the document make reference to specific hazards (NAP) or long-term climatic processes (DRR)?
	Does the document include a plan of action for DRR and CCA?
Financial	Does the document include a specific, detailed budget that dedicates resources to the attainment of DRR and CCA outcomes?
	Does the document include an estimation of budget in support of joint DRR and CCA activities?
	Does the document promote risk insurance schemes to reduce the impact of climate change and natural hazards?
	Does the document refer to or establish budget tracking methodologies to account for DRR and CCA expenditure?
	Does the document include reference to or the creation of common financing mechanisms for DRR and CCA?
MER	Does the document specify indicators for DRR and CCA outcomes?
	Does the document reference both DRR and CCA stakeholders within a monitoring and evaluation framework?
	Does the document associate indicators for DRR and CCA with institutions, timelines and budgets? If so, what are the timelines for DRR and CCA activities?
	Does the document include common indicators for DRR and CCA within a monitoring and evaluation framework?
	Does the document responsibilise DRR and CCA stakeholders for coordination and coaction within a monitoring and evaluation framework?
	Does the document make provision for joint review processes between DRR and CCA stakeholders?
	Does the document demonstrate alignment with global indicators and reporting mechanisms including SFM, SDGs and National Communications?
Joint Implementation Areas	How does the document reference, development, projectise and responsibilise risk assessment and mapping?
	How does the document reference, development, projectise and responsibilise resilience in agriculture and food systems?
	How does the document reference, development, projectise and responsibilise Nature-Based Solutions?
	How does the document reference, development, projectise and responsibilise Early Warning Systems?
	How does the document reference, development, projectise and responsibilise the resilience of infrastructure
	How does the document reference, development, projectise and responsibilise actions related to health and the resilience of healthcare systems?
	How does the document reference, development, projectise and responsibilise actions related to disaster preparedness?
	How does the document reference, development, projectise and responsibilise actions related to urban resilience?
	How does the document reference, development, projectise and responsibilise other areas of mutual concern between DRR and climate action?

UNDRR
UN Office for Disaster Risk Reduction

REAP Risk-informed Early Action Partnership

7bis Avenue de la Paix, CH1211
Geneva 2, Switzerland

www.undrr.org
www.preventionweb.net