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Item 5 of the provisional agenda
Joint annual report of the Executive Committee of the Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts and the Santiago network for averting, minimizing and addressing loss and damage associated with the adverse effects of climate change

Subsidiary Body for Implementation
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Addendum

Voluntary guidelines for enhancing collection and management of data and information relevant to loss and damage to inform the preparation of biennial transparency reports[1]

1. As part of the outcome of the first global stocktake, the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement, at its fifth session, requested the Executive Committee of the Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts to prepare, building on the work of its expert groups, technical expert group and task force, voluntary guidelines for enhancing the collection and management of data and information to inform the preparation of biennial transparency reports.[2]

2. In response, the Executive Committee prepared a draft outline of the guidelines, which was endorsed at its 21st meeting, and an annotated outline, which was endorsed at its 23rd meeting. Subsequently, the Executive Committee finalized and endorsed the voluntary

[1] The guidelines are the work of the Executive Committee of the Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts. They do not reflect the views of Parties or constitute consensus or agreement among Parties. They are voluntary and non-prescriptive, are presented without prejudice to the positions of Parties and do not prejudge any future decision of the Conference of the Parties or the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement.

[2] Decision 1/CMA.5, para. 133.

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guidelines for enhancing collection and management of data and information relevant to loss and damage to inform the preparation of biennial transparency reports at its 25th meeting.

3. The voluntary guidelines as endorsed by the Executive Committee at its 25th meeting are contained in the annex and being issued without formal editing.

Annex

Voluntary guidelines for enhancing collection and management of data and information relevant to loss and damage to inform the preparation of biennial transparency reports*, [1]

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* Not formally edited or formatted.

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I. Introduction

1. This chapter outlines the context and mandate for these voluntary guidelines for enhancing the collection and management of data and information relevant to loss and damage to inform the preparation of a loss and damage section of BTRs by Parties in accordance with national circumstances. Reporting on loss and damage is voluntary, and these guidelines are intended to support Parties wishing to provide such information in their biennial transparency reports (BTRs) by offering flexible and practical guidance to report on information as guided in the modalities, procedures and guidelines for the transparency framework for action and support referred to in Article 13 of the Paris Agreement (MPGs).

2. Loss and damage, and the actions taken to respond to them, is understood in a variety of ways depending on regional, national, and local contexts. Accordingly, these guidelines are non-prescriptive in nature and present a menu of approaches rather than a single methodology. They are designed to assist Parties wishing to report on loss and damage in their BTRs by providing practical resources that can be used to collect and compile relevant data and information on: reporting on observed and potential climate change impacts, including those related to extreme weather events and slow onset events, drawing upon the best available science (chapter II); activities related to averting, minimizing and addressing loss and damage (chapter III); institutional arrangements to facilitate the implementation of activities (chapter IV). In addition, chapters V and VI provide information on good practices for collecting and managing data, and processes and support for preparing BTRs, respectively.

3. Parties may adapt the guidance as appropriate in line with their national circumstances and contexts and capability. The target users are 1) government officials responsible for preparing a country's BTR; 2) those responsible for providing the relevant data and information; 3) organizations that support those government actors; and 4) teams of reviewers that undertake voluntary review of adaptation and loss and damage information of submitted BTRs.

Background information

4. Article 13 of the Paris Agreement established an enhanced transparency framework for action and support, with built-in flexibility which takes into account Parties' different capacities and builds upon collective experience. Decision 18/CMA.1 sets out the MPGs, including provisions for reporting information on loss and damage under the section on information related to climate change impacts and adaptation pursuant to Article 7 of the Paris Agreement.[2] In particular, paragraph 115 of the annex of decision 18/CMA.1[3] states that each interested Party may provide, as appropriate, information related to enhancing understanding, action and support, on a cooperative and facilitative basis, to avert, minimize and address loss and damage associated with climate change impacts, taking into account projected changes in climate-related risks, vulnerabilities, adaptive capacities and exposure, including, as appropriate, on:

(a) Observed and potential climate change impacts, including those related to extreme weather events and slow onset events, drawing upon the best available science;

(b) Activities related to averting, minimizing and addressing loss and damage associated with the adverse effects of climate change;

(c) Institutional arrangements to facilitate the implementation of the activities referred to in paragraph 4 (b) above.

5. The Executive Committee of the Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts (WIM) was requested by decision

[2] Decision 18/CMA.1, annex, para. 115.

[3] Decision 18/CMA.1, annex, para. 115. For the information on the reporting cycle, see decision 18/CMA.1, para. 3, for associated flexibility, see decision 18/CMA1, annex, paras. 4–6, and for the reporting format, see decision 18/CMA.1, annex, paras 10–16.

1/CMA.5 to prepare voluntary guidelines for enhancing the collection and management of data and information relevant to loss and damage to inform the preparation of BTRs, building on the work of its expert groups, technical expert group and task force.[4] The guidelines contained in this document are non-prescriptive and intended to be applied voluntarily by interested Parties to assist with their reporting on information relevant to loss and damage in their BTRs.

6. The following guiding principles underpinned the development of the voluntary guidelines to ensure that they are practical and implementable for all Parties, including those with limited data and institutional capacities, while providing a flexible menu of approaches that can be adapted according to national circumstances and evolve as new methods and tools for loss and damage assessment emerge:[5]

(a) Building on existing information and processes, including lessons from the first BTRs;

(b) Providing practical recommendations on sources of data and information;

(c) Offering examples of different possible ways through which countries can report on loss and damage;

(d) Including cross-references to useful guides and resources; and

(e) Drawing on case studies and examples.

7. The development of the guidelines was led by the Executive Committee, with technical contributions from experts across its thematic expert groups, and support from the UNFCCC secretariat. The Committee convened a stakeholder consultation event at SB 62 and conducted two rounds of review on the draft guidelines, which included review by the Consultative Group of Experts.

II. Reporting on observed and potential climate change impacts, including those related to extreme weather events and slow onset events, drawing upon the best available science

8. This chapter delves into different quantitative and qualitative data sources that can be used in reporting observed and projected impacts from both extreme and slow onset events and resulting both in economic and non-economic loss and damage. It highlights, with specific examples, selected thematic areas for which impacts result in losses. The overall aim of the chapter is to describe several approaches for countries to report data on loss and damage. The chapter is divided into two sub-sections, focusing on observed and projected impacts. Accompanying sources of data with web links are catalogued in appendix I.

9. Loss and damage is context specific and countries have reported a wide range of impacts and risks. Table 1 presents examples of loss and damage signatures reported by countries in their BTRs (see appendix II for information on associated hazards included in the reporting and countries that reported on these types of impacts).

Table 1
Examples of loss and damage signatures which countries included in biennial transparency reports (illustrative and non-exhaustive)

Loss type	*Examples of reported impacts*
Economic and GDP	• Significant percentage loss of national GDP • Damages to material assets • Annual economic burdens • Monetary value of single-event damages

[4] Decision 1/CMA.5, para. 133.

[5] Agreed at the 21st meeting of the WIM Executive Committee (September 2024).

Loss type	*Examples of reported impacts*
Livelihoods and jobs	• Displacement of communities • Loss of jobs (especially in tourism) • Closure of businesses and service sectors • Mass injury and illness following disaster events
Agriculture and production	• Crop yield reductions (soybean, corn, rice, quinoa) • Loss of agrifood harvests • Destruction of granaries and equipment • Saltwater intrusion compromising subsistence crops • Large-scale inundation of agricultural land
Livestock and fisheries	• Livestock deaths (broadly or specific number killed in a single event) • Significant decline in fish stocks and aquatic populations
Infrastructure and property	• Homes destroyed/collapsed • Damage to bridges, roads, schools, and hospitals • Submergence of hotels • Damage to hydropower and energy infrastructure
Life and health	• Direct casualties from extreme weather • Heat-related mortality • Indirect deaths from starvation and disease • Disability caused by disasters
Biodiversity and ecosystems	• Coral bleaching • Mortality of wildlife species • Loss of large trees supplying food and shelter • General ecosystem service depletion • Large-scale forest area burned • Areas lost to insect and invasive species
Land and water resources	• Permanent land loss due to sea level rise, rising lake levels and erosion • Declining lake levels and severe water shortages • Loss of irrigation capacity • Groundwater salinization • Desertification and soil degradation
Social cohesion and culture	• Loss of cultural sites, traditional medicines, and farming practices • Loss of Indigenous languages and community cohesion due to relocation

A. Observed impacts, including those related to extreme weather events and slow onset events, drawing upon the best available science

10. Observed impacts are diverse and can be caused by discrete/single events or cascading and compounding ones. These impacts can be reported using a mix of quantitative and qualitative approaches and data,[6] drawing on a range of national sources.

11. As impact is context specific, and can be economic or non-economic in nature, a range of approaches will be necessary, including quantitative reporting from losses and damages tracking systems and official statistics, as well as qualitative approaches, including case studies, which draw on qualitative and, when relevant, quantitative data for non-economic losses (see box 1).

Box 1
Reporting on displacement-related impacts
Data on displacement and its impacts is essential for understanding the full scope of economic and non-economic loss and damage among climate-vulnerable populations and for planning responses that minimize further harm. At the global level, the Global Internal Displacement Database provides data on internal displacement across countries and territories. Potential data source for displacement-related assessments are also identified in the *Technical guide on accessing financial resources aiming to avert, minimize and address the impacts of displacement associated with the adverse effects of climate change.*[7]

12. Among the observed adverse effects of climate change that can be captured in BTRs are the following:

(a) Economic impact, including absolute values and as a percentage of the gross domestic product (GDP);

(b) Population affected, number of people, locations – where available, localized or community-level impact including marginalized and vulnerable populations such as children, persons with disabilities, Indigenous Peoples, women and youth, among others;[8]

(c) Sectors affected, particularly those playing a socio-economic role in the country – as relevant, selected data aggregating the impact on key populations, disruptions to production of goods and delivery of services and damage to assets may be included. E.g. the education sector observing impact on school infrastructure and the instructional time lost due to extreme events;

(d) Non-economic losses (NELs), including losses affecting individuals (life, health, mobility), society (territory, cultural heritage, Indigenous knowledge, cultural identity), and the environment (ecosystem services and biodiversity).

13. Disaggregated data, including by gender, age, disability and income level, where feasible, can offer entry points to better comprehend the intersectionality of climate change impacts.

14. Economic losses can be directly quantified in monetary or numerical terms, such as damage to infrastructure, crop losses, or reduced economic output. Methodologies such as damage and loss assessments (DaLA)/post-disaster needs assessments (PDNAs)[9] are commonly used to estimate these losses across sectors and at the national level, often expressing impacts as a share of GDP. Such quantified measures of loss and damage assessments can be further assessed to understand the adverse effects of climate change.

[6] Indicative use cases of data on losses and damages can be found at https://www.undrr.org/building-risk-knowledge/disaster-data and https://www.preventionweb.net/disaster-losses-and-damages-data-use-cases.

[7] See https://unfccc.int/technical-guide-on-accessing_financial_resources.

[8] Despite data limitations, where available, impacts on informal settlements, "undocumented" migrants, homeless populations, and Indigenous Peoples, should be captured.

[9] The PDNA is a government-led exercise that pulls together information on the impacts of a disaster from a broad range of sectors, cross-cutting themes and perspectives into one comprehensive report.

15. Tracking NELs depends on data availability, methodologies, and national capacity, and may involve both quantitative data (e.g. displaced populations, damaged cultural sites) and qualitative evidence (e.g. oral histories, community perceptions). Relevant data may be collected and reported to other mechanisms outside the UNFCCC and the Paris Agreement, e.g. biodiversity losses to the Convention on Biological Diversity and land degradation to the United Nations Convention to Combat Desertification. Countries are increasingly establishing national databases, in collaboration with relevant national ministries and institutions, to have a central repository of such data.

16. International cultural heritage frameworks highlighted by the UNFCCC (2024)[10] provide structured approaches to document and safeguard intangible values. Combining quantitative, qualitative, and participatory methods enables more comprehensive reporting of non-economic loss and damage alongside economic impacts.

17. Observed impacts are most often evident following single events, but are influenced by interconnected hazards, including slow onset events that compound long-term effects. Within the BTR cycle, observed impact can be from single hazardous events and/or cumulative for several events over a specified period. Some impacts occur over decades and may not be fully observable within a single BTR reporting period. Hence, as data on the impact of slow onset events are identified and assessed, this can be included along with trends such as increased exposure, frequency of events and impact, etc.

B. Potential climate change impacts, including those related to extreme weather events and slow onset events, drawing upon the best available science

18. Climate models provide projections of how physical climate variables, such as temperature, precipitation, soil moisture and sea level, may evolve under different scenarios. Combining these projections with information on current and future exposure, vulnerability and capacities can support assessments of potential consequences for people, assets, ecosystems and economies, including systemic and cascading risks. Such assessments can help inform planning, decision-making and reporting on potential climate change impacts[11] (see box 2 below).

19. Key international sources include the assessment reports, datasets and the Interactive Atlas of the Intergovernmental Panel on Climate Change (IPCC), which provide projections, sectoral and regional risk information, and associated uncertainties.[12] The IPCC Interactive Atlas provides regional and national projections across the scenarios of the Sixth Assessment Report,[13] which when combined with information on vulnerability and exposure, can provide valuable insights into loss and damage. Additional publicly available information is provided in appendix I.

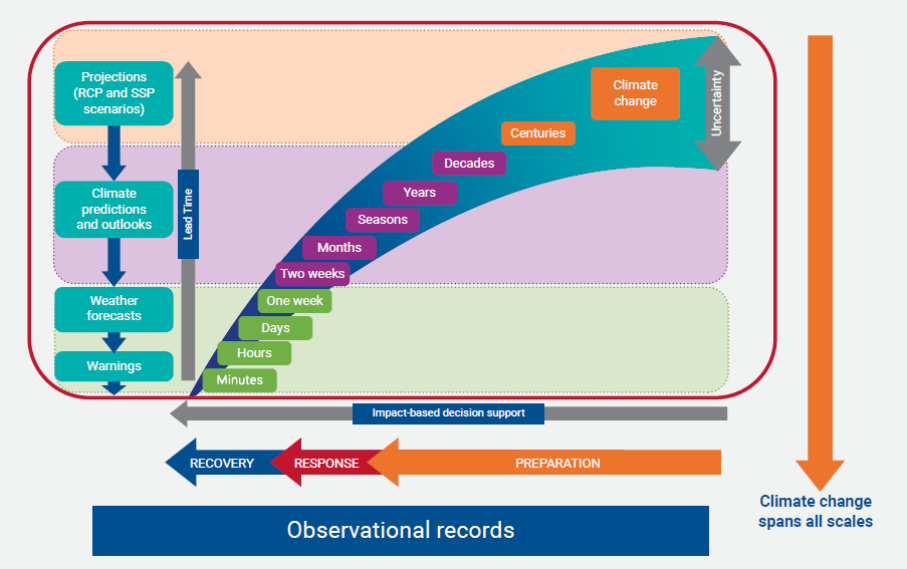
Box 2
Understanding risk across timescales
Observations and projections of weather and climate hazards across different timescales can support understanding of potential climate change impacts, particularly when combined with information on observed impacts, exposure and vulnerability. Information ranging from short-term forecasts to long-term climate projections can help identify current and future climate-related risks and provide a basis for reporting potential climate change impacts in BTRs.

[10] See https://unfccc.int/sites/default/files/resource/nels_paper_2024.pdf.

[11] UNDRR. 2022. Technical Guidance on Comprehensive Risk Assessment and Planning in the Context of Climate Change. Geneva: UNDRR. Available at: https://www.undrr.org/publication/technical-guidance-comprehensive-risk-assessment-and-planning-context-climate-change. The document was developed as part of TEG-CRM workplan.

[12] See https://www.ipcc-data.org/.

[13] See https://interactive-atlas.ipcc.ch/.



Source: UNDRR and WMO. 2023. *Technical guidance on application of climate information for comprehensive risk management*. Geneva: UNDRR. Available at https://www.undrr.org/publication/technical-guidance-application-climate-information-comprehensive-risk-management.

20. Countries may also draw on national, regional and downscaled projections and risk assessments produced by meteorological and hydrological services, sectoral institutions, academia and other relevant entities. Examples include the State of the Climate in Africa[14] State of the Caribbean Climate,[15] and the State of the Jamaican Climate,[16] providing information on past and present climate and, where available, downscaled future projections and potential impact.

21. Open-source tools such as Risk Changes[17] and CLIMADA[18] can support the assessment of current and future climate-related risks and the implications of different adaptation and risk reduction measures. By simulating alternative scenarios, they can help estimate avoided losses, reduced exposure and other potential benefits, thereby informing cost-benefit analysis and policy prioritization. While freely accessible and customizable, their effective application may require technical capacity, access to quality hazard, exposure and vulnerability data, and institutional arrangements that support the integration of risk modelling into planning and reporting processes.

III. Reporting on activities related to averting, minimizing and addressing loss and damage

22. This chapter provides a flexible menu of approaches that countries may use to report on activities undertaken across different areas of practice in the context of loss and damage. A country may select any of the approaches presented in this chapter, or other approaches suited to their national context, to report on activities to avert, minimize and address loss and damage. Reporting may also draw on both ex-ante and ex-post perspectives and can include relevant information on support, such as institutional arrangements, policies, finance, technology, implementation, and capacity-building, associated with these activities. When reporting on activities, Parties may, where feasible, indicate the climate-related risks, observed impacts, affected sectors, population groups or geographic areas to which the

[14] See https://wmo.int/publication-series/state-of-climate-africa.
[15] See https://www.caribank.org/publications-and-resources/resource-library/reports/state-caribbean-climate.
[16] See https://www.pioj.gov.jm/product/state-of-the-jamaican-climate-vol-iii-information-for-resilience-building-summary-for-policymakers/.
[17] See https://riskchanges.org/.
[18] See https://climada.ethz.ch/.

activity responds. This can help demonstrate the relevance of reported activities to national loss and damage priorities and link information reported under this chapter to information on observed and potential impacts. Such linkages may be qualitative and need not require formal attribution analysis or quantified estimates of avoided losses.

23. The loss and damage section of BTRs can also provide information on support for averting, minimizing and addressing loss and damage (see box 3 for an example of how such information has been reported on support provided). Information on support received or needed, including through the Fund for responding to Loss and Damage (FRLD) and the Santiago network, can also be included alongside the description of how measures were implemented. Despite the challenges in costing, some countries have provided information related to impacts (see box 3 for an example from Egypt).

Box 3
Reporting on support for averting, minimizing and addressing loss and damage

In its BTR, New Zealand highlights support provided to Pacific Island countries to strengthen resilience and address loss and damage risks. Reported activities include support for early warning systems and preparedness for water-related emergencies, the establishment of the Pacific Community Centre for Ocean Science to improve access to scientific data and inform responses to ocean-related loss and damage, and initiatives to enhance financial preparedness and resilience through climate risk insurance. These efforts are presented as contributing to the prevention, minimization and management of climate-related loss and damage in the Pacific region.

Egypt's efforts to avert, minimize, and address loss and damage associated with climate change are grounded in the need to respond to projected climate-related risks, vulnerabilities, and adaptive capacities across various sectors. Observed and potential impacts, including extreme weather events such as floods and heatwaves, along with slow onset events like desertification and sea level rise, pose severe threats to critical areas especially the Nile Delta. These challenges threaten key sectors like agriculture and water resources, which are vital to Egypt’s economy and food security. Over the last 20 years, natural hazards have killed nearly 1,500 people, causing USD 346.7 million in economic damages. Notable events include a deadly 2009 rockslide in Cairo and severe flooding in 2010 that displaced thousands of people and damaged over 4,000 houses. Climate change is expected to increase the potential impact of hazards.[19]

24. Table 2 presents selected, non-exhaustive approaches for organizing information on activities to avert, minimize and address loss and damage. These approaches illustrate different ways of structuring quantitative and qualitative information and do not prescribe a reporting format.

25. These approaches can accommodate a broad range of activities, though collecting and maintaining the data and information needed for their application depend on national circumstances and capacities, including the availability, quality and consistency of data across sectors and scales. These factors may influence the extent to which countries are able to apply these approaches in practice.

26. Regardless of the approach selected, Parties may, as appropriate, describe: (a) the activity or measure; (b) its objective and the loss and damage-related risk or impact it seeks to address; (c) the sector, location or population groups concerned; (d) the implementing institution or partners; (e) the stage of implementation and available evidence of results; and (f) relevant support received, support needed or implementation gaps. Both quantitative data and qualitative information are important for capturing the full range of losses and damages associated with climate change impacts.

[19] Global Facility for Disaster Reduction and Recovery. 2019. Annual report. Washington DC: GFDRR. Available at https://www.gfdrr.org/en/publication/gfdrr-annual-report-2019.

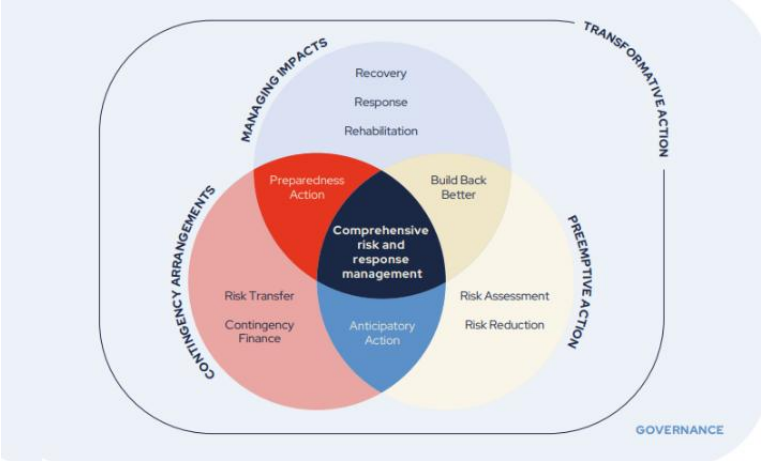
Table 2
Overview of select, potential approaches for reporting activities related to averting, minimizing and addressing loss and damage (illustrative and non-exhaustive)

Approach	*Description*	*Strengths/advantages of applying this approach*	*Limitations/challenges/potential pitfalls of applying this approach*
Compendium Vol. 2 comprehensive risk and response management framing	Capturing information around risk management and response phases that are broadly clustered by: • Pre-emptive action, including anticipatory action, risk assessment, risk reduction, and build back better; • Contingency arrangements, including anticipatory action, risk transfer, contingency finance, preparedness action; • Managing impacts, including response, rehabilitation, reconstruction and recovery, anticipatory action, and preparedness action.	• Conducive to reporting actions aimed at different temporal scales, including long-term resilience-building measures, capturing community-driven and localized efforts, enabling countries to demonstrate coherence across time horizons. • Facilitates whole-of-system approaches for reporting that involve multiple sectors, allowing for more transformative action. • Conducive to integration into existing reporting systems and established methodologies, such as those available in disaster risk reduction processes. • Provides a coherent way to connect preventive action, preparedness, impact management, recovery, transformation and governance, including across sectors and time horizons.	• There may be potential duplicative information across specific risk management phases (e.g. preventive, reduction, retention, recovery) with the cluster on anticipatory action. • May require a mapping exercise across multiple policies, institutions and data sources; not all elements may be equally developed or documented in a national context.
Article 8.4 of the Paris Agreement	Capturing information on undertaken activities using the following as organizing principles: • Slow onset events; • Events that may involve irreversible and permanent loss and damage; • Non-economic losses; • Resilience of communities, livelihoods and ecosystems; • Early warning systems; • Emergency preparedness; • Comprehensive risk assessment and management;	• Enables the documentation of long-term and often existential climate risks faced by vulnerable communities. • Closely reflects internationally agreed Paris Agreement areas of cooperation and facilitation; can help highlight issues that may otherwise receive limited attention, including slow onset events, non-economic losses and irreversible or permanent loss and damage.	• Clustering information on a combination of hazards, a range of losses and a selection of risk management approaches, may lead to duplication of information in some cases. • The Article 8.4 areas combine hazards, impact types and response measures, which may make the categories less analytically consistent and create overlap between entries.

Approach	*Description*	*Strengths/advantages of applying this approach*	*Limitations/challenges/potential pitfalls of applying this approach*
	• Risk insurance facilities, climate risk pooling and other insurance solutions.		
Risk-based approach	Capturing information by: • Emergency response; • Risk governance; • Climate resilience building; • Risk information and monitoring; • Community resilience; • Capacity-building and institutional strengthening.	• Places climate risk as the main risk considered looking at averting, minimizing and addressing loss and damage in an integrated manner. • Strengthens the link between reported actions and identified climate risks, facilitating the use of risk information in monitoring and evidence-based decision-making. • Helps link reported activities to identified hazards, exposure, vulnerability and projected risks, thereby strengthening the evidence base for prioritization and decision-making.	• Community-level and locally specific risks may be overlooked if reporting relies primarily on national-level assessments and aggregated data. • Its application may depend on the availability of up-to-date, disaggregated risk information and technical capacity to interpret risk assessment; aggregation can obscure locally specific risks and lived experience.
Averting-minimizing-addressing framing	Clustering information by undertaken activities that: • Averted loss and damage; • Minimized loss and damage; • Addressed loss and damage.	• Aligns with Paris Agreement terminology, making reported information more easily relatable to loss and damage provisions under the UNFCCC processes. • Can be applied even where national systems are still developing, as it does not require advanced risk modelling or a single loss and damage methodology.	• Boundaries between averting, minimizing and addressing may be blurred; a strictly ex ante/ex post presentation can obscure activities that have multiple objectives or operate across different time horizons.

A. Approach using the comprehensive risk and response management framing from the Compendium Vol. 2

27. This section presents practical examples of how information on measures undertaken in the context of loss and damage can be organized using the comprehensive risk and response management framing (displayed in the figure below).



1. About the framework

28. The comprehensive risk and response management framework was developed through the Executive Committee's Compendium on Comprehensive Risk Management Approaches Vol. 2[22] as a practical way to identify, organize and communicate measures relevant to averting, minimizing and addressing loss and damage. The framework comprises five interconnected elements: pre-emptive action; contingency arrangements; managing impacts; transformative action; and governance.

29. For BTR reporting, the framework can provide a structured way of organizing information on existing national measures across these five elements. Drawing on information from disaster risk reduction strategies, climate policies, financing instruments, preparedness and response systems, and post-disaster assessments, countries can present a broad range of actions in a coherent and internationally recognized format.

2. How to apply the comprehensive risk and response management framing in a biennial transparency report

30. In applying the comprehensive risk and response management framework, countries can take stock of existing national measures across sectors and policy frameworks and map them onto the most relevant element of the comprehensive risk and response management framework. Information can then be presented to describe the purpose of each measure, actors involved for implementation, and the available evidence. Identified gaps (e.g. data, assessments, etc.) can also form part of the analysis and be reported transparently.

31. The Compendium notes that no country has fully operationalized all elements of the comprehensive risk and response management framework in practice.[23] At the same time, the framework can be applied for reporting in contexts where systems are still evolving and not fully mature. The examples below illustrate two possible applications of the framework: 1) organizing information from an established operational system for direct BTR reporting purposes (Costa Rica); and 2) structuring and analysing evidence on loss and damage to inform national processes including for reporting (Bhutan).

[22] WIM Executive Committee. 2025. *Compendium on comprehensive risk management approaches. Vol. 2.* Bonn: UNFCCC. Available at https://unfccc.int/compendium-on-comprehensive-risk-management-approaches-volume-2.

[23] See footnote 20 above.

Box 4

Costa Rica: recognizing elements of the comprehensive risk and response management framework in an established national risk management system and BTR reporting

Countries with mature national risk management frameworks may find that their existing systems already reflect elements of the comprehensive risk and response management framework, even where the framework has not been explicitly applied. Costa Rica's first BTR illustrates this: its reporting on activities to avert, minimize and address loss and damage draws on the National Risk Management System (SNGR), governed under Law No. 8488, which operates across three subsystems — Risk Reduction, Preparations and Response, and Reconstruction – that correspond closely to the pre-emptive action, contingency arrangements, and managing impacts clusters of the comprehensive risk and response management framework. Financial planning requirements under the National Policy on Risk Management 2016–2030 (Política Nacional de Gestión de Riesgo; PNGR) address contingency finance, while post-disaster reconstruction guidelines under the National Climate Change Adaptation Policy (PNACC) reflect build-back-better principles. The National Climate Change Metrics System (SINAMECC) provides an integrated data infrastructure tracking climate initiatives across mitigation, adaptation, and risk.

While Costa Rica did not explicitly apply the comprehensive risk and response management framework in preparing its BTR, the substance of its reporting already reflects several of its elements in practice. This suggests that for countries with established risk management systems, deliberately applying the comprehensive risk and response management framing in future BTR cycles does not require generating new evidence or building new systems. Rather, it would primarily involve mapping existing information onto the framework's structure – making the logic of the comprehensive risk and response management framework explicit, improving the coherence and comparability of reported activities, and enabling a more comprehensive account of how national efforts contribute to averting, minimizing and addressing loss and damage.

Source: Gobierno de Costa Rica. 2024. Primer Informe Bienal de Transparencia.

Box 5

Bhutan: using the comprehensive risk and response management framing to build a national loss and damage evidence base

Bhutan illustrates a different starting point: a data-scarce developing country recently graduated from the LDC status, with no prior national methodologies on loss and damage, which used the Compendium Vol. 2 explicitly to build its evidence base in a bottom-up and inclusive manner.

The 2025 Assessment of Climate-Induced Loss and Damage in Bhutan was designed using the comprehensive risk and response management framework, which provided internationally recognized categories when none existed nationally. Through district-level consultations across all 20 districts, Bhutan defined six national loss and damage signatures covering food and water security, health, infrastructure, ecosystems, energy, and cultural heritage. These were complemented by documentation of pre-emptive measures, such as early warning systems and disaster risk reduction investments, as well as evidence under "managing impacts" through case studies of recent events, including the 2023 flash floods and recurring global flood risks.

NELs, including threats to sacred landscapes, mental health impacts, and erosion of traditional knowledge, were documented using qualitative evidence. The Assessment explicitly identifies contingency finance for loss and damage as a gap, and documents this as a priority support need.

While the Assessment has not yet been used to report on undertaken actions in Bhutan's BTR, it demonstrated the framework's value as a diagnostic tool: generating structured, nationally validated evidence that can directly inform and strengthen loss and damage reporting in subsequent BTR cycles. This example highlights how the comprehensive risk and response management framework can structure a participatory national

assessment process that generates an evidence base for reporting, even where data systems are fragmented. It also illustrates identifying and documenting gaps can be a useful outcome in itself.

Source: Department of Environment and Climate Change, Ministry of Energy and Natural Resources, Bhutan, and UNDP. 2025. *Assessment of Climate-Induced Loss and Damage in Bhutan*. Available at: https://www.undp.org/bhutan/publications/assessment-climate-induced-loss-and-damage-bhutan.

B. Approach using the Paris Agreement Article 8, paragraph 4 clustering

32. This section presents an approach for organizing information on activities undertaken in the context of loss and damage using the areas of cooperation and facilitation set out in Article 8, paragraph 4, of the Paris Agreement.[24] By mapping activities to one or more of these areas, countries may present information on averting, minimizing and addressing loss and damage in a structured manner that reflects established international policy categories. To avoid duplication, information already described in the previous subsections is not repeated here.

33. In applying this approach, countries may draw on existing sources such as disaster risk reduction strategies, national adaptation plans, sectoral policies and post-disaster assessments to illustrate how national measures, policies and initiatives contribute to different dimensions of loss and damage. Activities may span multiple areas and can be reflected accordingly. This approach may also help identify areas where information is limited. Presenting such gaps alongside existing activities can provide additional context on national efforts and needs in relation to loss and damage.

Box 6
Fiji: planned relocation and loss and damage

Fiji's Planned Relocation Guidelines illustrate how a national policy approach can address multiple areas identified in Article 8, paragraph 4, of the Paris Agreement. The Guidelines respond to slow onset processes, such as sea level rise and coastal erosion, and to situations involving potential irreversible and permanent loss and damage. They also recognize NELs, including impacts on culture, identity and community cohesion, while supporting the resilience of communities and livelihoods through planned relocation processes.

Source: Ministry of Economy, Fiji, and GIZ. 2025. *The Planned Relocation Guidelines.* Available at https://mecc.gov.fj/wp-content/uploads/2025/12/Planned-Relocation-Guidelines_Fiji.pdf.

C. Approach using risk-based approach

34. This approach uses climate risk as the organizing principle for reporting activities related to averting, minimizing and addressing loss and damage. It can help illustrate how measures across different sectors and timescales contribute to reducing current and future risks, including residual risk.

35. When applying a risk-based framing, Parties may map relevant activities to one or more of the six areas presented in table 2.[25] Activities may cut across multiple areas and can be reported under the area that best reflects their primary objective or contribution. Taken together, information across these areas can provide an integrated picture of national efforts to manage climate-related risks and address loss and damage associated with climate change impacts.

[24] For the eight areas identified in Article 8, para. 4, of the Paris Agreement, see table 2.

[25] The six areas are: emergency response; risk governance; risk information and monitoring; community resilience; climate resilience building; and capacity-building and institutional strengthening (see table 2).

D. Approach using the averting, minimizing, and addressing framing

36. Actions to avert, minimize and address loss and damage encompass a broad range of measures undertaken before, during and after climate-related impacts, spanning the full cycle of risk and response management. These may include efforts to anticipate and reduce risks, prepare for and respond to climate impacts, support recovery and longer-term responses to unavoidable losses and damages, and strengthen enabling conditions such as institutions, finance, information systems and partnerships.

37. The averting-minimizing-addressing framing can be used to organize information on activities undertaken in the context of loss and damage. Activities may contribute to more than one objective and may be presented in the way that best reflects their primary intended contribution, in accordance with national circumstances. In this regard, there is no single common approach for determining whether a particular activity contributes primarily to averting, minimizing or addressing loss and damage.

38. Reporting to date indicates that similar types of activities, and in some cases the same activities undertaken in comparable contexts, have been reported as contributing to averting, minimizing or addressing loss and damage. The following types of activities have been reported across all three averting-minimizing-addressing actions: enhancing early warning systems, awareness-raising efforts, improving the climate resilience of infrastructure, and undertaking risk assessment, analysis and mapping. Accordingly, this section does not prescribe how particular activities should be reflected within the averting-minimizing-addressing framing.

39. One way of applying the 'averting-minimizing-addressing' framing is to present information on undertaken activities along an ex-ante to ex-post continuum, as illustrated in table 3. The examples are indicative and non-exhaustive and are intended to illustrate the range of activities that countries may choose to report.

Table 3
Illustrative examples of activities related to averting, minimizing and addressing loss and damage along an ex-ante to ex-post continuum

	Ex-ante activities (ahead of event/ impact)	*Ex-post activities (during/following event)*
Averting loss and damage Minimizing loss and damage Addressing loss and damage *Countries can place activities, if so they wish, along the "avert-minimize-address" continuum of action on loss and damage	Risk assessment, planning and preparedness: • Early warning systems; • Preparedness plans and strategies to avert and minimize loss and damage, including those integrated into national risk management frameworks; • Guidance /approach to addressing slow onset events; Policy, governance and institutional arrangements: • Recovery governance and policy, including standards and guidance on how to build resilient infrastructure for key sectors and community resilience; • Guidance addressing non-economic loss and economic loss; Risk reduction and resilience building;	Damage and needs assessment: • Assessment of loss and damage including estimates of recovery needs from the events; • Post-disaster needs assessments; Emergency response and relief: • Increased social protection schemes and top up cash transfers; • Other emergency assistance and relief measures provided following climate-related events; Recovery and reconstruction: • Recovery frameworks; • Sector recovery and reconstruction plans; • Reconstruction of schools and hospitals, transport, energy and other public infrastructure; Support for affected communities and livelihoods: • Activities to support vulnerable communities recover

	Ex-ante activities (ahead of event/ impact)	*Ex-post activities (during/following event)*
	Finance, insurance and risk transfer: • Contingency finance mechanisms, climate risk insurance, risk pooling arrangements, social protection measures with anticipatory triggers, etc.; Capacity-building, knowledge and partnerships: • Capacity-building activities such as trainings on disaster needs assessment, disaster and climate resilient infrastructure; • Partnerships and collaboration established to support averting, minimizing and addressing loss and damage.	from economic and non-economic loss; • Local-level and community participation in recovery and reconstruction; Displacement, relocation and migration: • Resettlement of displaced communities; Policy learning and institutional strengthening: • Policies updated to facilitate post-event recovery and reconstruction.

IV. Reporting on institutional arrangements to facilitate the implementation of activities

40. This chapter provides illustrative examples of information on institutions and arrangements that have contributed to the implementation, coordination or collection of information of activities that are reported under the MPGs component (b).[26]

41. Such arrangements may take different forms, including governmental bodies (e.g. ministries, agencies, offices, centres), national frameworks and systems, coordination mechanisms, regulations and legislation, financial schemes, and regional or international collaboration arrangements. Institutional arrangements differ across countries and reflect national circumstances, governance systems, and capacities. The examples included in this section are non-prescriptive and non-exhaustive and can be adapted to national circumstances.

A. Coordination and institutional arrangements

42. A central feature of national climate institutional arrangements is formal coordination across ministries and government agencies. Information included in BTRs may describe how coordination across ministries, government agencies and different levels of government supports activities related to loss and damage. Given the cross-cutting nature of loss and damage, such information can describe arrangements that facilitate information sharing, planning, implementation and coordination across sectors. Reporting may also highlight linkages between national and subnational institutions, including mechanisms for coordination, implementation, data sharing and reporting

43. The institutional arrangements reported by countries may differ in their mandate, legal basis and institutional placement. Information provided may, where relevant, explain how coordination functions are organized, how responsibilities are distributed across institutions and levels of government, and whether arrangements are supported through legislation, policies or administrative measures.

[26] Decision 18/CMA.1, annex, para 115(b).

44. Where relevant, information on technical secretariats responsible for coordination, analysis, and administrative functions, and climate councils, independent expert bodies or similar mechanisms mandated to advise government, assess progress, and enhance transparency, may help explain how loss and damage-related information is coordinated, analysed and communicated within national reporting systems. Such information can provide context on the institutional processes that underpin reporting and implementation.

45. Regional and international cooperation arrangements may also form part of the institutional landscape supporting cooperation in managing shared climate risks and impacts. Information on such arrangements can illustrate how countries have engaged in technical cooperation, information sharing, preparedness, response, knowledge exchange and implementation of activities in relation to shared climate risks and impacts that resulted in losses or damages.

Box 7
Country examples: institutionalized coordination system

Colombia's SISCLIMA provides an illustrative example of a highly institutionalized coordination system.[27] Its Inter Sectoral Climate Change Commission includes senior ministers and specialized agencies and is jointly led by the Ministry of Environment and Sustainable Development and the National Planning Department. This arrangement combines technical climate expertise with strong influence over development planning and budgeting, helping embed climate objectives in national investment decisions.

The Philippines' Climate Change Commission under the Office of the President is chaired by the President and serves as the lead climate policymaking body, with authority to guide, monitor, and evaluate climate action across government. It also oversees an interministerial NDC Technical Working Group, linking NDC implementation with finance and planning processes, and reporting directly to executive and legislative branches.

Tuvalu reported in its first BTR that the Climate Change Department under the Ministry of Home Affairs, Climate Change and Environment serves as the national focal point for climate change and the primary contact for a wide range of international bodies (UNFCCC, GCF, GEF, Adaptation Fund, CIF, World Bank, UNDP, UNEP, SPREP, SPC, and others). These partnerships facilitate access to technical expertise, best practices, and financial resources for implementing adaptation and loss and damage initiatives.[28]

In its first BTR, the Maldives reported that several measures have been taken to address the loss and damage, which includes strengthening legal and institutional frameworks, such as building the capacity of national institutions and improving their coordination. A Climate Emergency Act (Law No. 09/2021) was enacted in 2021, which stipulates actions to address the climate emergency and serves as an overarching policy document which also guides the country's national efforts in averting, minimizing and addressing loss and damage.[29]

B. Information on arrangements for relevant support

46. Information on institutional arrangements may include those that support the identification of needs, mobilization and coordination of resources, implementation of activities, and the monitoring and reporting of support related to loss and damage. Such information can help explain how support was accessed, managed and linked to national priorities. This may include arrangements for accessing finance, technology, information systems, capacity-building and technical assistance, as well as engagement with regional organizations, technical networks, the Santiago network, the FRLD, and other relevant support initiatives. The specific information in this regard could include:

[27] NDC Partnership (2026), Best Practice Brief: Country Coordination Mechanisms. https://ndcpartnership.org/sites/default/files/2026-02/country-coordination-mechanisms-best-practice-brief.pdf.

[28] See https://unfccc.int/documents/657387.

[29] See https://unfccc.int/documents/643923.

(a) Loss and damage contact points;

(b) National focal points for the FRLD;

(c) National liaisons to the Santiago network secretariat;

(d) Processes for identifying needs and preparing funding or technical assistance requests;

(e) Institutional arrangements for managing, allocating, and tracking support received; and

(f) Mechanisms linking support to national priorities and planning processes.

47. Additional examples may include climate information platforms, disaster loss databases and other mechanisms that support risk assessment, planning, implementation and reporting.

Box 8
Bangladesh: institutional arrangements for channelling support to local actors

Bangladesh's Climate Bridge Fund provides an example of an arrangement for channelling support to locally led activities for communities displaced, or at risk of displacement, by climate change impacts. Its secretariat coordinates with relevant government entities, manages reporting and quality-assurance requirements, and provides technical assistance to local civil society organizations. Information on such arrangements may help explain how support is accessed, coordinated and delivered to affected communities, including the roles of institutions involved and mechanisms for managing and reporting on the use of resources.

Source: https://explore.brac.net/program/climate-bridge-fund/.

Box 9
Country examples: arrangements for accessing, coordinating, and managing support

Vanuatu reported in its first BTR the development of a long-term nationally determined programme to address loss and damage under the Santiago network with key interventions to strengthen capacity and loss and damage finance planning. These interventions include national loss and damage visioning; assessment of loss and damage capacity development needs; approaches and methodologies for knowledge management, capacity building and communication; and requests to the FRLD.[30]

Belgium reported in its first BTR that the Flemish government provides capacity-building by supporting local governments through the climate adaptation tools, an impact tool and a planning tool of the Flemish Environmental Agency. These tools provide information on the impact of climate change at the municipal and district level and on possible adaptation measures to address these effects, including the costs and benefits.[31]

V. Good practices for collecting and managing data

48. The availability, quality, accessibility and comprehensiveness of data can influence the extent to which loss and damage associated with climate change impacts is reflected in BTRs. This chapter presents illustrative approaches to collecting and managing data, drawing on selected BTR submissions, existing guidance, relevant literature and practical experience. The examples highlight ways of organizing and using data to support reporting on climate-related impacts, including economic and non-economic losses and damage associated with extreme weather events and slow onset events. A non-exhaustive list of potential data sources is provided in appendix I.

[30] See https://unfccc.int/documents/645814.

[31] See https://unfccc.int/documents/645814. See https://unfccc.int/documents/644983.

A. Good practices in data collection

49. A foundational good practice is to collect quantitative impact data systematically at national and subnational levels, disaggregated, as appropriate, by hazard, time frame (single events, annual totals, or multi-year trends) and sector. Building on existing sources, such as disaster loss databases, post-disaster needs assessments, insurance data and sectoral assessments, can support consistent reporting across BTR cycles while minimizing additional data collection and reporting burdens.

50. Qualitative data collection is equally important, particularly for NELs. Such approaches can help identify and articulate the values and meanings associated with affected places, practices and relationships, and support the integration of these insights into reporting. Good practices include structured engagement with Indigenous Peoples, local communities, and vulnerable groups to document losses through consultations, oral histories, community testimony, and cultural inventories.

Box 11
Jamaica: documenting intangible cultural heritage
The Jamaica Memory Bank Programme documents traditions, rituals, music and community narratives. Although established to preserve intangible cultural heritage, it may also provide qualitative evidence of changes in cultural assets that are at risk from climate impacts. Systematic cultural documentation programmes provide the qualitative evidence base that enables a Party to capture NELs in BTR reporting that would otherwise be absent from quantitative-only assessments.

51. The disaggregation of data can shed light on differentiated impacts that aggregate statistics can obscure, and inform more targeted action. Triangulating quantitative and qualitative data sources can strengthen the robustness and interpretability of loss and damage assessments, and present the full spectrum of losses for the same event.

Box 12
Disaggregation and inclusivity
Cabo Verde's integration of climate and disaster modules into its national household survey illustrates how official statistics systems can generate regular, representative, and disaggregated data without creating parallel reporting structures. By embedding disaster exposure, losses, perceptions and coping behaviours into an existing survey instrument, the National Statistics Institute ensured data quality, comparability over time and therefore was able to show household level impact from climate-related hazardous events. This experience provides a practical model for reducing reporting burdens for loss and damage data collection and reporting.

52. The use of sector specific assessments improves the understanding of loss and damage in critical systems. Approaches that combine quantitative and qualitative methodologies can capture multidimensional impacts that are otherwise underestimated.

Box 13
Sector specific and thematic assessments

Climate health risk assessments in Fiji and Ghana, developed in collaboration with the World Health Organization, combine climate data, epidemiology, and vulnerability mapping to identify priority health impacts and adaptation limits. These assessments inform health national adaptation plans while also identifying residual risks, such as irreversible physical and mental health impacts, that constitute NELs.

For displacement, thematic tools have been developed to assess complex impacts such as displacement. In Chile, the International Organization for Migration's cost of displacement tool combines national data proxies with local interviews to estimate both economic and non-economic impact of displacement over its full duration. Such approaches demonstrate how mixed quantitative and qualitative methodologies can capture multidimensional impacts that are otherwise underestimated.

53. Slow onset events are harder to attribute and quantify but can be more severe over time. Combining long-run hazard trend data from meteorological and hydrological services with sectoral impact data sourced from disaster tracking systems can support the assessment of cumulative impacts associated with slow onset and compound events. These are valuable to demonstrate impact, especially where this has socio-economic and environmental implications in the short- to long terms. It can also act as proxy for similar areas where detailed studies are not available.

Box 14
Mongolia: long-term data on compound events
Mongolia's dzud, a compound hazard combining summer drought with severe winter conditions, causes significant livestock mortality and impacts livelihood. Mongolia maintains decades-long subnational livestock mortality records through the Ministry of Food, Agriculture and Light Industry and national statistics systems. These records provide an evidence base for documenting the impacts of dzud, and also underpin the Index-Based Livestock Insurance Programme. This illustrates how long-run government-owned hazard data can serve both transparency and risk management purposes.

54. Scenario-based risk assessments can support reporting on potential climate change impacts under paragraph 115(a) of the MPGs by combining climate projections with exposure and vulnerability information. While not a substitute for site specific studies, this approach strengthens the anticipatory dimension of loss and damage reporting, which requires significant technical capacity. It may also support the identification of emerging risks affecting critical sectors, livelihoods, and socially and culturally significant values over time.

Box 15
Forward looking and scenario-based risk assessment

Côte d'Ivoire's national flood risk platform integrates climate projections under different emissions scenarios with exposure and vulnerability data to model how flood risk may evolve under different scenarios. By testing protection scenarios and visualizing results through dashboards and maps, the platform supports strategic planning, identification of avoided losses, and alignment with the Paris Agreement and other global agreements such as the Sendai Framework.
Malawi's Spatial Data Platform (MASDAP) combines hazard, exposure, and vulnerability data to support disaster risk management and anticipatory action. Community mapping integrated into MASDAP has helped identify flood-prone areas, at-risk infrastructure, and vulnerable settlements, providing a spatial evidence base for contingency planning, early action, and recovery.[32]
Australia's National Climate Risk Assessment, developed by the Australian Climate Service, provides a nationally comprehensive, cross-sectoral assessment of current and future climate risks. Covering eight key systems and 11 regions, it identifies 11 priority risks – including risks from floods, cyclones, heatwaves, droughts, and sea level rise – and includes risks specifically identified for Aboriginal and Torres Strait Islander peoples. The assessment illustrates how a nationally owned, multi-agency risk assessment can generate the forward-looking evidence base needed to inform adaptation planning and potentially BTR reporting.

B. Good practices in managing data through institutional coordination

55. The quality of data available for BTR reporting depends not only on individual collection methodologies but on coordinated institutional systems that produce, manage, and sustain that data over time, as highlighted in chapter IV. A country may have robust data from a single post-disaster assessment but lack the mechanisms to regenerate comparable data for subsequent BTR cycles. Databases that systematically capture data on hazardous

[32] WIM Executive Committee. 2019. *Compendium on comprehensive risk management approaches*. Bonn: UNFCCC. Available at https://unfccc.int/documents/200759.

events (by hydrological and meteorological services) and resultant impacts (by disaster management institutions) are a good basis for generating data for reporting in BTRs, particularly where they are maintained on a consistent basis across successive reporting cycles.

56. Good practice in this regard includes embedding data production in national policy and legal frameworks that mandate regular collection, assigning clear responsibilities across agencies, and ensuring that loss and damage data informs, and is informed by, national climate change policies (e.g. NDCs, NAPs), disaster risk reduction strategies, and broader development strategies and plans. This includes identifying which entities hold relevant data; meteorological services, disaster risk management bodies, sector ministries, statistical offices, and civil society organizations, and establishing clear processes for how that data flows into BTR preparation, including through multi-stakeholder consultations.

Box 16
Institutional coordination and data governance

Strong data collection matched by robust data management and institutional coordination: South Africa's experience shows how legal and policy frameworks, such as the National Climate Change Adaptation Strategy and the Disaster Management Act, can mandate data generation and ensure its use for policy development and transparency. Systems such as the Severe Weather Impact Database, attribution studies, and PDNAs are coordinated across agencies

A national loss and damage working group as a coordination mechanism: Vanuatu's loss and damage data ecosystem links PDNAs, qualitative community-based information, ecosystem valuation, and gender and vulnerability disaggregated data under the oversight of a national advisory board and a dedicated Loss and Damage Working Group. Embedding loss and damage in national policy frameworks and statistical development plans institutionalizes data production. Vanuatu's BTR demonstrates how institutionalizing loss and damage data production within national policy and statistical frameworks, rather than relying on ad hoc assessments, enables more structured and evidence-based reporting across successive BTR cycles.

Connecting documented data gaps to targeted support: Kenya illustrates how explicitly documenting data gaps in national reporting processes can translate into targeted, institutionally anchored capacity-building. Kenya engaged the Santiago network to support a comprehensive assessment of economic and non-economic loss and damage across sectors, including the development of climate-related loss and damage scenarios to 2035, coordinated through a national Loss and Damage Technical Working Group. The assessment is designed to inform national policies, planning processes, and future reporting cycles, illustrating how well-documented data gaps in national reporting can be translated into targeted support that strengthens the data systems underpinning subsequent BTR submissions.

57. Taken together, these good practices demonstrate that effective loss and damage data systems are integrated, inclusive, multi-stakeholder, and action oriented. By combining quantitative and qualitative methods, leveraging existing national systems, engaging stakeholders, and aligning data management with policy frameworks, countries can ensure that their BTRs capture the full reality of climate impacts – making loss and damage visible in a disaggregated manner where possible, and usable for both national decision-making and international processes.

VI. Processes and support for preparing biennial transparency reports

A. Existing sources of support for preparing biennial transparency reports

58. Developing countries can draw upon a growing range of financial and institutional support to strengthen national transparency systems and prepare BTRs.[33] Complementary technical assistance and capacity-building support are increasingly made available to foster the development of skills, methodologies, and institutional capacities needed to gather, review, and relay information relevant to loss and damage, including in the areas of vulnerability and adaptation assessments. Providers of these supports include GEF and GEF implementation agencies, Parties, UNFCCC constituted bodies, UNFCCC secretariat, and other agencies, programmes, initiatives, including those who support and host countries in the collection, analyses and management of data as outlined in appendix I.

59. Initiatives that are broadly designed to support reporting on climate impacts, vulnerabilities, risks, and adaptation responses provide useful support for reporting on loss and damage sub-section of the adaptation component of the MPGs. These efforts are often delivered through training programmes, guidance materials, and knowledge sharing opportunities that contribute to the improvement of the quality and complementarity of reported information, which can further facilitate the integration of loss and damage considerations into broader transparency, adaptation, and development planning processes. Regional initiatives, networks, and knowledge sharing platforms can strengthen these efforts by providing opportunities for knowledge exchange, cooperation, and targeted support for specific national contexts and priorities.

60. Furthermore, the UNFCCC website houses current information on a broad range of support available to developing countries for preparing their BTRs and enhancing sustainable institutional capacity and national reporting systems within their governments for implementing the enhanced transparency framework, and in the context of providing guidance on the application process for transparency-related projects.[34] The overview information is updated twice a year. For each support provider/opportunity listed, the information is provided on the profile of the support provider, the overview of support initiatives/activities, and tools and technical guidance documents.

B. Review of biennial transparency reports

61. Once submitted, BTRs undergo a technical expert review (TER) by a technical expert review team (TERT) drawn from the roster of experts. The review is conducted in a facilitative, non-intrusive and non-punitive manner, respecting national sovereignty and paying particular attention to the capacities and circumstances of developing country Parties. It results in a TER report identifying areas for improvement and, where applicable, capacity-building needs.

62. Under decision 9/CMA.4, a Party may voluntarily request the secretariat to include a review of information reported under chapter IV of the MPGs on climate change impacts and adaptation, including loss and damage, as part of the TER. The review seeks to facilitate improved reporting by identifying, in consultation with the Party, areas for improvement and capacity-building needs. The Party may also identify specific sections for particular attention.

63. Where such a review is requested, the secretariat includes in the TERT at least one expert with relevant expertise who has completed the training and examination provided for

[33] Article 13, para. 14, of the Paris Agreement provides that support shall be provided to developing countries for the implementation of Article 13; para. 15, that support shall also be provided for building transparency-related capacity on a continuous basis.

[34] See https://unfccc.int/process-and-meetings/transparency-and-reporting/support-for-developing-countries/support-to-developing-countries#Financial-and-Technical-Support. For a compilation of an overview of available support as of May 2026, see https://unfccc.int/sites/default/files/resource/Background%20information%20on%20available%20transparency%20support_May%202026.pdf.

this purpose.[35] The outcomes of the voluntary review form part of the TER report and are made publicly available on the UNFCCC website.[36] Early experience indicates that the process has helped Parties clarify reporting against the MPGs, identify institutional and technical capacity gaps, and inform capacity-building priorities.

[35] For the dedicated training course for experts conducting the voluntary review of climate change impacts and adaptation reported under Article 7 of the Paris Agreement (course E), see https://unfccc.int/process-and-meetings/transparency-and-reporting/training-programmes-for-expert-reviewers/training-programmes-under-the-paris-agreement/course-e-voluntary-review-of-the-information-on-climate-change-impacts-and-adaptation-reported-under. The first examination period under Course E was conducted in February 2025.

[36] See https://unfccc.int/first-biennial-transparency-reports.

Appendix I

Non-exhaustive list of potential data sources

	Data source	*Brief Description*	*Managed by*	*Potential application for loss and damage assessment*	*Weblink*
	Nationally owned data				
1	Disaster tracking systems	National and sub-national databases mostly owned and maintained by governments collecting geographically disaggregated events and their impacts Being updated to DELTA Resilience (fully-government owned) that will include slow onset events and non-economic losses	National governments (with support from UNDRR)	Extreme events; economic losses	www.desinventar.net www.deltaresilience.org; www.undrr.org/DELTA
2	Post-Disaster Needs Assessments (PDNA)	Standardized assessments quantifying damage, losses and recovery needs across sectors after major disasters	EU, UN, World Bank (joint methodology)	Extreme events; economic losses	https://www.gfdrr.org/en/post-disaster-needs-assessment-pdna https://recovery.preventionweb.net/build-back-better/post-disaster-needs-assessments
3	Sendai Framework Monitor	Official data reported by national governments against selected targets of Sustainable Development Goals 1, 11 and 13, and 38 indicators of Sendai Framework	UNDRR	Extreme events; economic losses; non-economic losses	www.sendaimonitor.undrr.org
	Global datasets incorporating national data				
4	Displacement Tracking Matrix (DTM)	DTM gathers and analyses data to disseminate multilayered information on the mobility, vulnerabilities, and needs of displaced and mobile populations	IOM	Slow onset processes; extreme events	https://dtm.iom.int

	Data source	*Brief Description*	*Managed by*	*Potential application for loss and damage assessment*	*Weblink*
5	EM-DAT	International disaster databases sources from international organizations and media	CRED	Extreme events; economic losses	www.emdat.be
6	Global Health Observatory (GHO)	The GHO data repository is WHO's gateway to health-related statistics for its 194 member States. It provides access to over 1000 indicators on priority health topics including mortality and burden of diseases, non-communicable diseases and risk factors, epidemic-prone diseases, health systems, environmental health, violence and injuries, equity among others	World Health Observatory	Slow onset processes; non-economic losses	https://www.who.int/data/gho
7	Global Internal Displacement Database	Data on internal displacement across countries and territories for which IDMC has obtained data on situations of internal displacement	IDMC	Slow onset processes; extreme events	www.internal-displacement.org/database
8	Global Ocean Acidification Observing Network (GOA-ON)	Tracks ocean acidification, a slow-onset climate stressor degrading marine ecosystems (reefs, shellfish)	NOAA/IOC-UNESCO network	Slow onset processes	portal.goa-on.org/Explorer
9	NatCatSERVICE	Proprietary global database on natural catastrophe losses (economic and insured)	Munich Re	Extreme events; economic losses	https://www.munichre.com
10	Ramsar Sites Information Service ES Catalogue	Tracks ecosystem services at 170+ countries' wetland sites useful for detecting service loss after floods, drought or degradation	Ramsar Secretariat	Slow onset processes; non-economic losses	https://rsis.ramsar.org/
11	Sigma Database	Global dataset on catastrophe losses and insurance trends	Swiss Re	Extreme events; economic losses	https://www.swissre.com

Global reference datasets and analytical tools

	Data source	Brief Description	Managed by	Potential application for loss and damage assessment	Weblink
12	Climate projections and impacts	Global scientific assessments and datasets on observed and projected climate change impacts, including risks across sectors and regions	IPCC	Slow onset processes; projected risk analysis	https://interactive-atlas.ipcc.ch/ WG-I: www.ipcc.ch/report/ar4/wg1/global-climate-projections WG-II: https://www.ipcc.ch/report/ar6/wg2/figures/
13	Climate Risk Country Profiles	High-level assessment of physical climate risks for a country, derived from the Coupled Model Intercomparison Project, Phase 5 (CMIP5)	World Bank	Slow onset processes; projected risk analysis	https://climateknowledgeportal.worldbank.org/country-profiles
14	Climdex	Climdex allows user to explore, download and analyse indices of global observed climate extremes derived from daily temperature and precipitation data	University of New South Wales	Slow onset processes; extreme events	https://www.climdex.org/
15	Copernicus Climate Change Service (C3S)	Provides climate reanalysis, seasonal forecasts and climate projections (e.g. ERA5), supporting analysis of trends and extremes	European Centre for Medium-Range Weather Forecasts (ECMWF)	Slow onset processes; projected risk analysis	https://climate.copernicus.eu/
16	Country Risk Profiles	National level risk profiles for selected countries in sub-Saharan Africa	UNDRR	Projected risk analysis; extreme events	http://riskprofilesundrr.org
17	Disaster risk profiles	National-level analysis of exposure and risk across hazards, sectors and geographic areas	World Bank	Slow onset processes; extreme events; projected risk analysis	www.gfdrr.org/en/disaster-risk-profiles
18	Ecosystem Services Valuation Database (ESVD)	Monetary valuation records enabling estimation of economic loss when ecosystem services are degraded or destroyed	Foundation for Sustainable Development	Extreme events; non-economic losses	https://www.esvd.info/
19	FRAME-ECO Framework	Standardized methodology and curated dataset directory specifically designed to assess climate change and disaster-	UNU-EHS, UNEP and UNDRR	Non-economic losses; extreme events; slow onset processes	https://unu.edu/publication/framework-assessing-climate-change-and-disaster-related-losses-biodiversity-and

	Data source	*Brief Description*	*Managed by*	*Potential application for loss and damage assessment*	*Weblink*
		related losses of biodiversity and ecosystem services			
20	Glide Number	A global system that assigns a unique identifier to each disaster event, enabling consistent tracking and linking of information across different data sources	Asia Disaster Reduction Center (ADRC)	Extreme events	https://www.glidenumber.net/glide/public/search/search.jsp
21	Global Drought Information System	International database on drought information from local to national providers	NOAA	Slow onset processes	https://gdis-noaa.hub.arcgis.com
22	Global Flood Awareness System (GloFAS)	Provides global flood forecasts and risk information based on hydrological modelling	European Commission & ECMWF	Extreme events; projected risk analysis	https://www.globalfloods.eu
23	Global Wildfire Information System (GWIS)	Harmonized data on wildfire occurrence, emissions and impacts at global scale	European Commission	Extreme events	https://gwis.jrc.ec.europa.eu
24	Global Forest Watch	Near-real-time forest loss, degradation and fire alerts, directly captures disaster- and climate-driven ecosystem loss	World Resources Institute	Extreme events; slow onset processes	data.globalforestwatch.org
25	Global Mangrove Watch	Mangrove extent and loss, a coastal ecosystem highly exposed to storms, sea level rise and climate stress	JAXA/Aberystwyth Univ./Wetlands International	Extreme events; slow onset processes	globalmangrovewatch.org
26	INFORM Risk Index	Composite index assessing risk of humanitarian crises and disasters based on hazard, exposure, vulnerability and coping capacity	UNDP & European Commission	Projected risk analysis	https://drmkc.jrc.ec.europa.eu/inform-index/INFORM-Risk
27	IUCN Red List of Ecosystems (RLE)	Standardized risk assessment of ecosystem collapse, including climate change as a driver of decline	IUCN	Extreme events; non-economic losses	https://iucnrle.org/

	Data source	Brief Description	Managed by	Potential application for loss and damage assessment	Weblink
28	Probabilistic Risk Assessment (CAPRA)	An open-source platform that combines hazard, exposure and vulnerability data for probabilistic risk assessment and cost-benefit analysis of risk management measures	Universidad de los Andes	Extreme events; projected risk analysis; risk-financing analysis	https://ecapra.org/
29	Risk Data Library	This collection contains data on disaster and climate risk assessments curated by the Global Facility for Disaster Reduction and Recovery (GFDRR)	Global Facility for Disaster Reduction and Recovery (World Bank)	Extreme events; projected risk analysis	https://datacatalog.worldbank.org/search/collections/RDL
30	Sea Level Projection Tool	The NASA Sea Level Projection Tool allows users to visualize and download global and local sea level projection data from the IPCC 6th Assessment Report. The goal of this tool is to provide an easy and improved access and visualization to the consensus projections found in the report	National Aeronautics and Space Administration (NASA)	Slow onset processes; projected risk analysis	https://sealevel.nasa.gov/ipcc-ar6-sea-level-projection-tool
31	World Environment Situation Room (WESR): Risk data Viewer; Global risk data platform	This platform provides access to global datasets regarding hazards (floods, droughts, forest fires, tropical cyclones, earthquakes, tsunamis, landslides, volcanoes), the exposure (economic or population) as well as risk of losses (mortality and economic risk)	UNEP Global Resource Information Database (GRID)	Extreme events; projected risk analysis	https://wesr.unep.org/

Appendix II

Examples of types of loss and damage included in of biennial transparency reports[1]

Loss type	*Examples of reported impacts*	*Associated hazards*	*Countries that reported on this type of loss*
Economic and GDP	• Significant percentage loss of national GDP • Damages to material assets • Annual economic burdens • Monetary value of single-event damages	Droughts, floods, storm surges, wildfires, tsunamis, heavy rainfall, storms, cyclones, hurricanes, heatwaves, landslides, coastal erosion, changing weather patterns, changing water levels, frost, avalanches, salinization	Argentina, Armenia, Austria, Azerbaijan, Bangladesh, Bolivia, Bosnia and Herzegovina, Brazil, Burundi, Chile, China, Costa Rica, Dominica, Dominican Republic, France, Ghana, Guyana, Honduras, India, Indonesia, Jordan, Kazakhstan, Kenya, Lao People's Democratic Republic, Luxembourg, Madagascar, Malawi, Maldives, Mexico, Moldova, Morocco, Nepal, Niger, Oman, Pakistan, Panama, Paraguay, Poland, Slovenia, Solomon Islands, South Africa, Sweden, Tuvalu, Ukraine, Uruguay, Uzbekistan, Vanuatu, Zambia
Livelihoods and jobs	• Displacement of communities • Loss of jobs (especially in tourism) • Closure of businesses and service sectors • Mass injury and illness following disaster events	Storm surges, sea level rise, floods, rising water levels, droughts, landslides, heat, storms, cyclones, hurricanes, heatwaves, heavy rainfall, tidal surges, tsunamis, wildfires, coastal erosion, changing weather patterns, changing water levels, ocean acidification	Argentina, Armenia, Bangladesh, Bolivia, Brazil, Burundi, Costa Rica, Dominica, Dominican Republic, Ghana, Honduras, India, Indonesia, Kazakhstan, Kenya, Kyrgyzstan, Lao People's Democratic Republic, Liberia, Luxembourg, Madagascar, Malawi, Maldives, Oman, Pakistan, Paraguay, Solomon Islands, South Africa, Uruguay, Vanuatu, Zambia
Agriculture and production	• Crop yield reductions (soybean, corn, rice, quinoa) • Loss of agrifood harvests • Destruction of granaries and equipment • Saltwater intrusion compromising subsistence crops • Large-scale inundation of agricultural land	Droughts, floods, frost, deficient soil moisture, changing weather patterns, storms, cyclones, heatwaves, heavy rainfall, landslides, salinization, sea level rise, coastal erosion, tidal surges, tsunamis, changing water levels, ocean acidification	Argentina, Azerbaijan, Bangladesh, Bhutan, Bolivia, Bosnia and Herzegovina, Brazil, Burundi, Cambodia, China, Costa Rica, Dominica, Ecuador, Egypt, Ghana, Guyana, Honduras, India, Kazakhstan, Kenya, Kyrgyzstan, Lao People's Democratic Republic, Liberia, Madagascar, Malawi, Maldives, Moldova, Morocco, Nepal, Niger, Oman, Pakistan, Paraguay, Poland, Solomon Islands, South Africa, Sweden, Tuvalu, Ukraine, Uruguay, Vanuatu, Zambia

[1] The listing may not necessarily imply that the impacts reported were characterized as loss and damage.

Loss type	*Examples of reported impacts*	*Associated hazards*	*Countries that reported on this type of loss*
Livestock and fisheries	• Livestock deaths (broadly or specific number killed in single event) • Significant decline in fish stocks and aquatic populations	Droughts, floods, storm surges, heat, storms, heatwaves, heavy rainfall, landslides, coastal erosion, changing weather patterns	Argentina, Bangladesh, Bolivia, Cambodia, Honduras, India, Kazakhstan, Kenya, Madagascar, Nepal, Niger, Pakistan, Paraguay, Poland, Tuvalu, Vanuatu, Zambia
Infrastructure and property	• Homes destroyed/collapsed • Damage to bridges, roads, schools, and hospitals • Submergence of hotels • Damage to hydropower and energy infrastructure	Floods, landslides, storm surges, sea level rise, heavy rainfall, tsunamis, coastal erosion, storms, cyclones, hurricanes, heatwaves, droughts, wildfires, tidal surges, cold, changing water levels	Argentina, Azerbaijan, Bangladesh, Bolivia, Bosnia and Herzegovina, Brazil, Burundi, Cambodia, Chile, China, Costa Rica, Dominica, Dominican Republic, Ecuador, Ghana, Honduras, India, Indonesia, Kazakhstan, Kenya, Lao People's Democratic Republic, Luxembourg, Madagascar, Malawi, Maldives, Mexico, Moldova, Morocco, Nepal, Niger, Oman, Pakistan, Paraguay, Poland, Slovenia, Solomon Islands, South Africa, Sweden, Tuvalu, Ukraine, Vanuatu, Zambia
Life and health	• Direct casualties from extreme weather • Heat-related mortality • Indirect deaths from starvation and disease •Disability caused by disasters	Floods, heatwaves, landslides, storm surges, droughts, wildfires, storms, cyclones, heat, heavy rainfall, tidal surges, tsunamis, coastal erosion, changing weather patterns, changing water levels, changing water temperatures, ocean acidification	Argentina, Bangladesh, Bolivia, Bosnia and Herzegovina, Brazil, Burundi, Cambodia, Chile, China, Costa Rica, Dominica, Ecuador, Ghana, Honduras, India, Indonesia, Jordan, Kenya, Lao People's Democratic Republic, Malawi, Maldives, Mexico, Morocco, Nepal, Niger, Oman, Pakistan, Panama, Paraguay, Romania, Solomon Islands, South Africa, Sweden, Tuvalu, Ukraine, Vanuatu, Zambia
Biodiversity and ecosystems	• Coral bleaching • Mortality of wildlife species • Loss of large trees supplying food and shelter • General ecosystem service depletion • Large-scale forest area burned • Area loss due to insect and invasive species	Heat, floods, storm surges, wildfires, coastal encroachment, sea level rise, storms, droughts, heatwaves, landslides, invasive species, tidal surges, coastal erosion, changing weather patterns, changing water levels, ocean acidification	Azerbaijan, Bangladesh, Bolivia, Bosnia and Herzegovina, Brazil, Chile, Costa Rica, European Union, Ghana, Honduras, India, Indonesia, Kenya, Latvia, Madagascar, Maldives, Mexico, Pakistan, Solomon Islands, South Africa, Tuvalu, Ukraine, Vanuatu
Land and water resources	• Permanent land loss due to sea level rise, rising lake levels and erosion	Sea level rise, floods, coastal erosion, changing water levels, heat, droughts, storms, dust and sandstorms, heatwaves, heavy rainfall, landslides, salinization,	Bangladesh, Bhutan, Bolivia, Bosnia and Herzegovina, Brazil, China, Costa Rica, Dominica, Ecuador, Egypt, Ghana, Guyana, Honduras, Kazakhstan, Kenya, Maldives, Mexico, Morocco, Pakistan, Paraguay,

Loss type	*Examples of reported impacts*	*Associated hazards*	*Countries that reported on this type of loss*
	• Declining lake levels and severe water shortages • Loss of irrigation capacity • Groundwater salinization • Desertification and soil degradation	tidal surges, tsunamis, wildfires, changing weather patterns	Saudi Arabia, Solomon Islands, South Africa, Sweden, Tuvalu, Ukraine, Uruguay, Vanuatu, Zambia
Social cohesion and culture	• Loss of cultural sites, traditional medicines, and farming practices • Loss of Indigenous languages and community cohesion due to relocation	Landslides, cyclones, sea level rise, temperature increase, droughts, heavy rainfall, storms, floods, tsunamis, changing weather patterns, changing water levels	Ecuador, Ghana, Lao People's Democratic Republic, Maldives, Pakistan, Paraguay, Solomon Islands, Vanuatu, Zambia