

Transboundary climate risks and adaptation in mountain areas: shaping the global agenda in 2024 and beyond

A brief for Parties and Observers to the UN Framework Convention on Climate Change

Global Stocktake

Consider findings on transboundary climate risks and adaptation in mountain areas during implementation of the outcomes of the first GST, laying the ground for stronger consideration in the second.



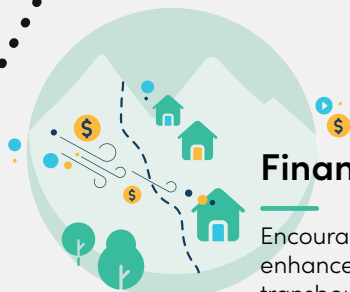
Global Goal on Adaptation

Account for and measure progress towards adaptation in mountain ecosystems and adaptation to transboundary climate risks in the design of indicators and metrics.



Finance

Encourage and enable the provision of enhanced climate finance for transboundary adaptation to build resilience to both teleconnected and regional risks that affect mountain communities.



Planning and reporting

Strengthen the integration of transboundary climate risks and recognise the global importance of adaptation in mountain ecosystems in NAP processes through updated technical guidelines. Account for transboundary climate risks in NDCs, ACs and BTRs.



Loss and Damage

Draw attention to transboundary climate risks that both create and arise from loss and damage in the criteria for funding recipients and the design of needs assessments, while strengthening the evidence base of socio-economic loss and damage in mountain regions.



Why this brief?

Transboundary climate impacts, and the risks they generate within and beyond mountain areas, are of rising concern in international climate change negotiations. These risks are highly relevant to the adaptation needs of all countries.

This brief is intended for Parties and Observers to the UN Framework Convention on Climate Change (UNFCCC). It articulates what transboundary climate risks are, why they matter, and their relevance for different negotiation tracks – including proposed calls for action.

These negotiation tracks represent important and appropriate entry points for raising transboundary climate risks and advancing the mountain agenda at the upcoming United Nations Climate Change Conference (COP29) and beyond.

With many groups making transboundary climate risks a priority – even working towards the development of common positions – negotiators have an opportunity to raise the specific needs and concerns of their countries and take steps to assure their region’s future climate resilience.

What to know about transboundary climate risks . . .

Transboundary climate risks arise when the impacts of climate change in one country pose threats to people in another.¹ We traditionally think of such risks arising between neighbouring countries – such as those who share a river basin or mountain range and experience transboundary floods or landslides – but they can also cascade across oceans and continents. Countries can experience such risks if the impacts of climate change:

- disrupt their imports of food, energy supplies, critical raw materials or other commodities;
- lower the value of their foreign direct investments or the remittances they rely upon; or
- alter their population demographics (through international migration and displacement, for example).

The potential costs of transboundary climate risks could be vast. A recent study projected that climate disruption to global supply chains could lead to net losses of USD 25 trillion by mid-century, for example, with South Asia (and India, in particular) projected to be significantly affected.² Transboundary climate risks can therefore have significant socio-economic implications that make them relevant not only for environment departments, but also for ministries of trade, finance and foreign policy. Investing in adaptation to prevent and offset future losses catalysed by transboundary climate risks is important to safeguard long-term development plans.

Transboundary climate risks gained high prominence in the Sixth Assessment Report (AR6) of the Intergovernmental Panel on Climate Change (IPCC), which reached the following two conclusions:

1. *“Increasing transboundary risks are projected across the food, energy and water sectors as impacts from weather and climate extremes propagate through supply-chains, markets, and natural resource flows (high confidence) and may interact with impacts from other crises such as pandemics.”³*
2. *“Climate change impacts and risks are becoming increasingly complex and more difficult to manage. Multiple climate hazards will occur simultaneously, and multiple climatic and non-climatic risks will interact, resulting in compounding overall risk and risks cascading across sectors and regions. Some responses to climate change result in new impacts and risks (high confidence).”⁴*

With transboundary climate risks increasing and becoming more complex, international and regional cooperation is vital to strengthen the resilience of societies, economies, and ecosystems all around the world. Article 7.2 of the Paris Agreement recognizes that “adaptation is a global challenge faced by all with local, subnational, national, regional and international dimensions.”

. . . and their links to mountain communities

Mountain regions are home to more than 1.2 billion people. They cover approximately 25% of the Earth’s land surface, and they extend across more than 100 countries.⁵ Mountains are a source of cultural heritage and spiritual values. At the same time, they provide essential ecosystem services such as the supply of water, food and habitats. Mountains are seen as the “water towers of the world”, providing freshwater resources to nearly half of the global population.⁶

Mountains already show some of the clearest indications of climate change, which threatens these resources and the livelihoods that depend on them.⁷ Glaciers are vital for providing freshwater, generating hydropower and maintaining endemic species’ habitats in the mountains, but half of the world’s glaciers are predicted to disappear by the end of the century, yielding major implications for total water availability.⁸ In addition to these direct impacts of climate change, mountain communities face increasing transboundary climate risks from natural hazards (such as landslides, avalanches and floods), changing water flows, and biodiversity loss in their neighbouring countries. They also face less obvious socio-economic risks from the impacts of climate change globally, through disruptions to international trade, remittance flows and financial investments.

The IPCC AR6 underscores the significance of mountain regions in the context of climate change and sustainable

development. It finds that the current pace, depth and scope of adaptation is insufficient to address future risks and suggests regional cooperation and transboundary governance in mountain regions could enable long-term adaptation actions where risks transcend boundaries and jurisdictions.⁹

The rationale: raising transboundary climate risks and the adaptation needs of mountain communities at COP29 and beyond

There is a strong rationale for negotiators to raise transboundary climate risks and the adaptation needs of mountain communities at COP29 and beyond. We provide three compelling arguments.

1. Transboundary climate risks and adaptation in mountain areas are increasingly highlighted in Party submissions to the UNFCCC. Many countries are already a part of this growing and diverse coalition. But strengthening the world's resilience to transboundary climate risks will require bold and coordinated efforts.

- **The first Global Stocktake (2022–2023):** Negotiating groups and countries recognized the need to support efforts to strengthen global, regional and national management of transboundary climate risks (EIG, United States, Russian Federation, EU, AILAC, LMDC), including through efforts to enhance action on financial flows (New Zealand), minimize and address loss and damage (EIG, AILAC), and alleviate risks to water utilization, global supply chains and international food markets (AILAC). Parties also called for targeted adaptation efforts, dedicated discussion spaces, and stronger commitments to 1.5°C to address growing risks to mountains and the cryosphere (China, AILAC, Bhutan and Nepal, LMDC, EIG, Iceland, Nepal, Andorra and the LDC Group).
- **The Glasgow–Sharm el-Sheikh Work Programme on the Global Goal on Adaptation (2022–2023) and the UAE–Belém Work Programme (2024):** Most negotiating groups and some countries urged the consideration of transboundary climate risks in workshop discussions concerning the framework's remit and implementation (UK, AOSIS, AGN, ABU, Republic of Maldives, AILAC and ABU), metrics and indicators (LDC, AILAC and ABU, Russian Federation, AOSIS), case studies (AOSISa, AOSISb) and national adaptation planning processes (Canada, AILAC, EU). Parties are now starting to reflect on ways to assess adaptation to transboundary climate risks in the development of indicators and metrics through the use of existing key performance

“The 2023 UN Climate Change Conference was the first to adopt decisions that explicitly recognize both transboundary climate risks and adaptation in mountain areas.”

indicators (Japan) and multilateral targets and indicators such as the SDGs (AOSIS). Parties also highlighted mountains as a key thematic area (Canada, AGN), with some proposing ecosystem and mountain-specific indicators for topics such as water, food and agriculture, health, ecosystems and biodiversity, infrastructure, poverty, cultural heritage, and disaster prevention (Philippines, Bhutan, Uganda, Japan).

- **The formulation and implementation of National Adaptation Plans (NAPs) (2024):** Parties emphasized the importance of exchanging knowledge on adaptation solutions, including those that address transboundary climate risks (Canada, EU), to strengthen global efforts on adaptation.
- ### 2. Transboundary climate risks and adaptation in mountain areas are gaining increasing traction on the world stage. There is momentum to harness but also a risk of deepening long-held divides.

Regional adaptation plans and strategies are starting to recognize the need to manage transboundary climate risks:

- The African Union Climate Change and Resilient Development Strategy and Action Plan (2022–2032) proposes to “enhance coordination between the regional economic communities and Member States in addressing and managing transboundary and cascading climate risks.”
- The European Union Adaptation Strategy (2021) recognizes that “the impacts of climate change have knock-on effects across borders and continents. Even local climate impacts have regional or global repercussions, and such transboundary climate risk can reach Europe.”
- The Association of Southeast Asian Nations (ASEAN) State of Climate Change Report (2021) notes that “the region is rapidly integrating in terms of economy and culture. This provides immense economic and social opportunities for the region while also having implications for transboundary climate risks.” Indeed, the report places the assessment of transboundary climate risks and actions as one of the prioritized actions for enhancing adaptation by 2030.

Government teams working on NAPs are also recognizing the need to consider transboundary climate risks – as reflected in the UK’s National Adaptation Programme, Australia’s National Climate Risk Assessment, and the US National Climate Resilience Framework, for example.

While such developments are encouraging, there is a risk of exacerbating existing inequalities if only those countries with significant capacity and resources integrate transboundary climate risks into their climate risk assessments and NAPs. Teams across countries and regions also need to work together if we’re to avoid transboundary maladaptation. To equip and enable more countries to plan and implement adaptation to transboundary climate risks, and to strengthen cooperation on adaptation regionally and globally, there needs to be a supportive, enabling environment. This is why the UNFCCC negotiations are crucial.

Mountains are also rising on the global agenda. The UN General Assembly declared 2022 the “International Year of Sustainable Mountain Development” which led to a proclamation of “Five Years of Action for the Development of the Mountain Regions 2023–2027”. The 2023 UN Climate Change Conference (COP28) raised the profile of mountains higher than any previous such conference. UN Secretary-General António Guterres visited the Himalayas en route to COP28, the Prime Minister of Nepal convened a high-level event on mountains at the conference itself – drawing commitments and urgent calls for action¹⁰ – and the Kyrgyz Republic proposed the establishment of a mountain partnership negotiating group. The 16th Focal Point Forum of the UNFCCC Nairobi Work Programme (NWP) also focused on understanding and closing adaptation knowledge gaps in mountains, high-latitude areas and the cryosphere – now priority thematic areas for the NWP in 2024.¹¹ “Promoting successful adaptation cases and transboundary cooperation in mountainous regions” was one of four key areas put forward by countries, partners and experts for the NWP’s consideration.¹²

All these measures reflect the increased importance that mountain regions are being accorded on the world stage. Yet despite such promising initiatives, there is no roadmap for how the adaptation needs of mountain communities could be considered in the UNFCCC negotiations. There is a significant risk that their global value will continue to be overlooked.

3. Raising transboundary climate risks and adaptation in mountain areas in the negotiations could lead to breakthroughs on otherwise intractable negotiating issues.

A decade into the Paris Agreement, adaptation efforts are denounced as incremental, fragmented and too

Expert Dialogue on Mountains and Climate Change

At the 2023 UN Climate Change Conference (Decision 1/CMA.5, para 181), Parties requested the Chair of the Subsidiary Body for Scientific and Technological Advice (SBSTA) to hold an Expert Dialogue on Mountains and Climate Change at the June 2024 UN Climate Meetings (SB60).¹³ At the dialogue, Parties and Observers shared knowledge, experience and insights on the impacts of climate change on mountainous areas and solutions that contribute to strengthening their resilience. The dialogue emphasized the need for “accelerated collective and transformative climate action”, with a particular focus on creating and sharing tailored adaptation solutions, enhancing community and local engagement, initiating interregional exchanges of experience and data, and continuing to build political momentum. During the dialogue, the Chair of SBSTA proclaimed: “Climate change risks and impacts in mountainous ecosystems are transboundary in nature and impact downstream communities and countries. There is value in building synergy and efforts at [the] transboundary and regional level.”

small in scale. Negotiators have long debated what transformational adaptation is and how to scale up adaptation action. Transboundary climate risks present a concrete and compelling answer to these deliberations. Supporting efforts to manage transboundary climate risks helps to raise adaptation ambition across scales and make adaptation more transformational.¹⁴ Some transboundary climate risks require global attention, and the UNFCCC negotiations offer an opportunity to strengthen regional and international cooperation to address them.

Raising the lessons drawn from effective adaptation in mountain areas can also help ground otherwise abstract discussions on what systemic or effective adaptation constitutes, distilling useful guidance even for non-mountainous regions. Effective adaptation in mountain areas *is* systemic adaptation: mainstreamed in relevant sectoral policies (such as mining, energy, infrastructure and transport), embedded in binding regulatory frameworks (regarding land use for example), and reflected in relevant transboundary agreements (to leverage benefits such as joint monitoring, data sharing and coordinated response strategies).¹⁵

Negotiators have also long discussed how to raise levels of adaptation finance. Transboundary climate risks provide another rationale for increased climate finance and demonstrate how – in reducing systemic and global risk – this may be in the self-interest of donors. Funding adaptation to transboundary climate risks provides an opportunity to build resilience in many places at once, without additional cost. An investment that strengthens the resilience of rice producers in China, India and Pakistan, for example, can protect producers’ livelihoods and improve food security in rice-importing countries around the world.¹⁶ All three countries feature in the top 10 “exporters” of climate risk in the global rice sector.¹⁷ Transboundary adaptation also holds potential to partway address the current fragmentation of climate finance and enable a more programmatic approach. Finally, there are significant incentives for businesses to invest in reducing the transboundary climate risks that threaten their global value chains. Shining a spotlight on the transboundary nature of climate risk presents an opportunity to leverage private-sector finance for adaptation and should be raised and discussed as such in the negotiations.

Entry points in UNFCCC negotiation tracks at COP29 and beyond

We identify five negotiation tracks at COP29 and beyond that represent important and appropriate entry points for raising transboundary climate risks and advancing the mountain agenda. For each track, we propose concrete recommendations, describe relevant contextual developments, clarify the specific case and rationale, and point to further resources.

1. The Global Goal on Adaptation and UAE Framework for Global Climate Resilience

Recommendations for negotiators engaged in the UAE–Belém Work Programme:

- Call for the development of four bespoke indicators to assess the extent to which transboundary climate risks are explicitly accounted for in each stage of the iterative adaptation cycle and thereby incorporated when measuring progress achieved towards the four dimensional targets.¹⁸ Sample indicators in this regard have been proposed in the ‘Compilation of Illustrative Targets and Indicators for the Global Goal on Adaptation’ (UNF, 2023) and can be built upon (see Annex).

- Call for the design of metrics and methodologies that ensure indicators developed to measure progress achieved towards the seven thematic targets are “data ready” to account for the effects of transboundary climate risks on their outcomes;¹⁹ also invite Parties to consider the importance of developing one or more mountain indicators to accurately assess progress towards achieving the thematic target on ecosystems and biodiversity specifically.²⁰
- Emphasize the important ability of indicators to measure progress achieved at regional and international scales (in addition to national and local) and levels of cooperation in adaptation towards “just resilience” accordingly.
- Raise the role that transformational adaptation could play in managing transboundary climate risks and strengthening just resilience at the global scale. This could draw on the 2023 SBSTA Research Dialogue, which introduced the link between transboundary climate risks and transformational adaptation.²¹
- Invite the Adaptation Committee, in collaboration with the Consultative Group of Experts and the Least Developed Countries Expert Group, to support the implementation of the UAE Framework for Global Climate Resilience with specific technical guidance and training materials on effective adaptation in mountain ecosystems and resilience building for transboundary climate risks. This would mitigate the risk that the framework is used to advance, monitor and evaluate adaptation solely at the national level: the Global Goal on Adaptation must maintain its global focus and cultivate shared responsibility, making it a viable tool for addressing transboundary climate risks.

Relevant context:

The 2023 UN Climate Change Conference (COP28) concluded the Glasgow–Sharm el-Sheikh Work Programme on the Global Goal on Adaptation. It also marked the adoption of the UAE Framework for Global Climate Resilience as part of the UAE Consensus. The framework includes seven thematic targets and four dimensional targets for climate adaptation and resilience. The Conference also established the two-year UAE–Belém Work Programme to develop indicators for measuring progress achieved towards those targets. Parties discussed these indicators at SB60 – including the engagement of experts in indicator mapping and criteria for indicator identification – in addition to strengthening the operationalization of

“Indicators for measuring progress achieved towards the targets of the UAE Framework for Global Climate Resilience should extend beyond national markers of progress to also assess cooperation and resilience-building efforts between countries.”

the work programme, through discussion of its structure and modalities.

The UAE Framework for Global Climate Resilience contains a thematic target that explicitly recognizes the role of mountain areas in global adaptation efforts. The target aims to reduce climate impacts on ecosystems and biodiversity and accelerate the use of ecosystem-based adaptation and nature-based solutions, including through their management, enhancement, restoration and conservation and the protection of terrestrial, inland water, **mountain**, marine and coastal ecosystems.

In Decision 2/CMA.5 (paras 18–19), Parties recognize that “climate change impacts are often **transboundary** in nature and may involve complex, cascading risks that can benefit from collective consideration and knowledge-sharing, climate-informed transboundary management and cooperation on global adaptation solutions”, and emphasize that “the United Arab Emirates Framework for Global Climate Resilience should catalyse and strengthen **regional and international cooperation** on the scaling up of adaptation action and support among Parties, international organizations and nongovernmental organizations”. Paragraph 13 encourages the consideration of vulnerable ecosystems in the implementation of the framework.

Rationale for recommendations:

Indicators for measuring progress achieved towards the targets of the UAE Framework for Global Climate Resilience should extend beyond national markers of progress to also assess cooperation and resilience-building efforts between countries. Indicators should also capture progress towards protecting global public goods, such as mountain ecosystems, recognizing the global implications of localized climatic effects: this will require a structured approach. If the UAE–Belém Work Programme fails to account for transboundary climate risks, future assessments based on the UAE Framework for Global Climate Resilience will create an incomplete and misleading impression of the scale and nature of the adaptation chal-

lenge. They will significantly underestimate the total risk faced by countries, and fail to capture the clear and present dangers to equity and justice created by transboundary climate risks. They will also fail to capture the positive contribution of local and national adaptation efforts to global resilience.

Most existing indicators are designed to track progress made towards the three pillars of the Global Goal on Adaptation: enhancing adaptive capacity, strengthening resilience, and reducing vulnerability to climate change. Less attention has been given to assessing *how* such progress might have been achieved. Actions to adapt to climate change can have impacts far beyond the jurisdictions where they are implemented – building the resilience of some at the expense of the resilience of others. This unintended outcome of adaptation can affect people and places with the lowest levels of wealth and resilience and little capacity to cope with the additional burden of redistributed vulnerability. Developing indicators to measure “just resilience” should be integral to the UAE–Belém Work Programme, helping ensure adaptation investments are more equitable and ultimately effective.

Key resources:

The Global Transboundary Climate Risk Report (2023): “Knowledge for better governance: the assessment and tracking of transboundary climate risks” (Section 3.2, pp. 103–111) explores the design of indicators to track transboundary climate risks.

Just resilience for Europe: towards measuring justice in climate change adaptation (2023): A case-study illustration of how to make just resilience operational – including stocktaking and structuring knowledge on just resilience in climate adaptation, and the identification of potential indicators.

Compilation and synthesis of indicators, approaches, targets and metrics for reviewing overall progress in achieving the Global Goal on adaptation (2022): This UNFCCC report emphasizes the need to “consider transboundary climate risks and adaptation, both in terms of impacts and the broader benefits, as the world becomes more interconnected”. The report notes that “the transboundary nature of climate risks, impacts, adaptation and vulnerabilities is an additional consideration that has direct significance for the [Global Goal on Adaptation], its conceptualization and associated indicators, approaches, targets and metrics.”

SBSTA Research Dialogue Transformational Adaptation (2023): This slide deck articulates three dimensions of transformational adaptation, accounting for transboundary climate risks and cascading climate impacts.

Entry points for integrating transboundary climate risks in the global goal on adaptation (2023): This brief (written prior to the adoption of the UAE Framework for Global Climate Resilience) identifies entry points for integrating transboundary climate risks in the GGA framework.

2. The Global Stocktake

Recommendations for negotiators engaged in modalities of the dialogue on implementing the Global Stocktake outcomes:

- Closely follow agreed modalities of the dialogue on implementing the Global Stocktake outcomes to identify future opportunities to raise transboundary climate risks and adaptation in mountain areas within the dialogue.

Relevant context:

The 2023 UN Climate Change Conference (COP28) concluded the Paris Agreement's first Global Stocktake via a landmark decision. The decision was instrumental in two respects. It recognized that "climate change impacts are often **transboundary** in nature and may involve complex, cascading risks that require knowledge-sharing and international cooperation for addressing them" (Decision 1/CMA.5 para 52). It also urged Parties and invited non-Party stakeholders to "increase ambition and enhance adaptation action and support . . . towards the achievement of . . . d) 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 water, **mountain**, marine and coastal ecosystems. . ." (Decision 1/CMA.5 para 63). It furthermore requested the Chair of the Subsidiary Body for Scientific and Technological Advice (SBSTA) to hold the expert dialogue on mountains and climate change (Decision 1/CMA.5 para 181) referred to above.

This decision gave a clear signal to countries not only to account for the transboundary climate risks they face in their climate risk assessments and adaptation plans but also to strengthen their coordination and cooperation with others. This acknowledgement was reflected in interventions from some Parties during the First Annual Dialogue on the Global Stocktake at SB60, which aimed to inform the preparation of Nationally Determined Contributions (NDCs) and facilitate the sharing of good practices. At SB60, Parties also discussed procedural and logistical elements of the overall Global Stocktake process, and modalities of the dialogue on implementing the Global Stocktake outcomes. At COP29, discussions will continue on both fronts. If Parties agree that the dialogue will address all aspects of the outcome – not just finance and means of implementation – there may be an opportunity to discuss the implications of the findings of the Global Stocktake on transboundary climate risks and their effects in mountain areas.

Rationale for recommendations:

The second Global Stocktake must go further than the first – not only acknowledge transboundary climate risks and the impacts of climate change in mountain areas but also assess levels of progress in adapting to them. Such assessments do not yet exist. But to incentivise their development, Parties need to start identifying and communicating their needs for support to assess and manage transboundary climate risks now – at COP29 and COP30. Implementation of the first Global Stocktake decision presents a concrete opportunity to strengthen international cooperation and regional institutional mechanisms on adaptation. These have the potential to yield multiple co-benefits, including reduced climate risk, lower costs and fewer resource constraints, as well as enhanced knowledge and data exchange.²²

Key resources:

Assessing transboundary climate risks under the UNFCCC Global Stocktake (2023): This brief sets out the scientific, technical, political and procedural barriers to assessing transboundary climate risks under the GST. It presents proposals to overcome these barriers and lay the foundations for redressing the "transboundary gap" in the second GST, as well as enhancing international and regional cooperation for climate action in the crucial intervening years.

3. Planning and reporting

Recommendations for negotiators engaged in the NAP assessment:

- Call for the NAP assessment's recommendations to include an explicit proposal for the stronger integration of transboundary climate risks and stronger recognition of global dependencies on adaptation in mountain areas in NAP processes, reflecting the findings of two 2023 systematic reviews (see key resources below).
- Raise the challenges associated with the integration of transboundary climate risks in NAPs (as articulated in the 'Rationale for recommendations' below) in discussions related to the outcomes of the assessment. Call for increased support to Parties to strengthen their capacities to integrate transboundary climate risks in both the formulation and implementation of NAPs. The updated technical guidelines for the NAP process will present an important (but insufficient) opportunity towards this end as countries are supported to consider the implications of 'interlinked components' between thematic targets in their NAPs.

“NAP processes could serve as a critical mechanism to identify the transboundary climate risks that countries face and articulate actions to address them.”

- Encourage Parties to ensure the outcomes of the assessment reflect key lessons drawn from national adaptation planning processes in mountain areas to date, such as the need for cross-sectoral and cross-jurisdictional collaboration to promote systemic adaptation, and the need for cohesion and alignment with domestic regulatory frameworks and sectoral policies.

Recommendations for negotiators engaged in ad-hoc discussions related to NDCs:

- Encourage Parties to consider adaptation to transboundary climate risks in their updated NDCs, raising levels of ambition in adaptation in accordance with the new UAE Framework for Global Climate Resilience.

Recommendations for negotiators engaged in the Enhanced Transparency Framework:

- Encourage Parties to account for transboundary climate risks in their BTRs (and/or national inventory reports) and argue for the inclusion of transboundary climate risks during the review of the guidelines for the Enhanced Transparency Framework in 2028.

Relevant context:

At COP26 (Decision 3/CP.26, para 2), Parties requested the Subsidiary Body for Implementation (SBI) to initiate an assessment of progress in the process to formulate and implement NAPs at SB60, and to make recommendations for consideration and adoption at COP29. At SB60, Parties reflected on a synthesis report by the Secretariat and discussed the extent to which the NAP process has contributed to advancing the three pillars of the Global Goal on Adaptation. Discussions will continue at COP29.

At the 2023 UN Climate Change Conference (Decision 2/CMA.5, para 47), Parties requested the Least Developed Countries Expert Group (LEG) to update their 2012 technical guidelines for the NAP process in line with the content and direction the UAE Framework for Global

Climate Resilience provides. The outcome of the first Global Stocktake called on all countries to have in place their national adaptation plans, policies and planning processes by 2025 and to have progressed in implementing them by 2030 (Decision 1/CMA.5, para 59). Meanwhile, COP29 marks the start of the submission window for updated NDCs, what UNFCCC Executive Secretary Simon Stiell has referred to as perhaps “the most important documents to be produced in a multilateral context so far this century”.

Rationale for recommendations:

The NAP assessment provides an opportunity to consider the alignment of NAPs, and respective national monitoring, evaluation and learning systems, with the priorities established through the UAE Framework for Global Climate Resilience and identify both gaps and needs.²³ Those priorities, gaps and needs should account for transboundary climate risks and mountain areas, given their reference in the framework.

NAP processes could serve as a critical mechanism to identify the transboundary climate risks that countries face and articulate actions to address them. Many countries are already doing so, although a recent assessment suggests that most countries stop short of considering more complex risks and fail to identify concrete and assigned measures to address them.²⁴ Several countries identify risks related to shared ecosystems and natural resources, for example, but transboundary climate risks transmitted through supply chains and financial systems are often overlooked. Similarly, a recent systematic review of NAPs of non-Annex I countries (submitted as of July 2023) found that although most countries recognize climate change impacts in mountains, one in three countries fails to match identified risks with either specific or defined adaptation responses.²⁵ Updates to the LEG technical guidelines present an opportunity to guide countries on *how* to integrate both transboundary climate risks and climate risks to mountain areas into climate risk assessments and national adaptation planning processes.

Signalling collective recognition of the importance of transboundary climate risks and adaptation in mountain areas at COP29 could also encourage countries to reflect their resulting needs and circumstances in the adaptation sections of their BTRs – due at the end of 2024 – and updated NDCs – due early 2025. They could also incentivize countries to use their adaptation communications and national communications to highlight how they are responding to transboundary climate risks, and considering vulnerable ecosystems, in their adaptation efforts. These represent important vehicles to capture the full range and scale of climate risks, plan responses to such risks, and report on the results, helping countries to assess whether their national adaptation programmes are sufficient and effective at managing them. This will help

ensure that efforts to address transboundary climate risk are recognized and accounted for in the second Global Stocktake starting in 2026.

Key resources:

Transboundary Climate Risks and the National Adaptation Planning Process (2023): Through a systematic review of NAP documents, this brief provides new insights into how transboundary climate risks are currently being featured in countries' NAP documents and reveals opportunities for stronger future integration.

Leave No Mountain Behind – Mountains in National Adaptation Plans: A short analysis (2023): Through a systematic review of NAP documents, this report provides an overview of adaptation priorities specific to mountain areas and highlights examples of related actions.

4. Finance

Recommendations for negotiators engaged in the New Collective Quantified Goal (NCQG):

- Raise transboundary climate risks and emphasize the need for financial support for adaptation to these risks, including for international cooperation, under discussions on adaptation effectiveness. In doing so, underscore that such steps reflect findings from the first Global Stocktake and the UAE Framework for Global Climate Resilience, that “climate change impacts are often transboundary in nature and may involve complex, cascading risks” and support will be required to enable the “climate-informed transboundary management and cooperation on global adaptation solutions” that befits them.

Recommendations for negotiators engaged in long-term climate finance:

- Raise the management of transboundary climate risks as an important element of climate-resilience development pathways – potentially as a topic at the 2026 high-level ministerial dialogue.
- Propose a request to the Standing Committee on Finance to prepare a report on financing for transboundary climate risks or include it as a topic under the existing Biennial Assessment and Overview of Climate Finance Flows.

Recommendations for negotiators engaged in matters relating to the operating entities of the financial mechanism:

- Provide guidance to the Green Climate Fund and Global Environment Facility to include programming for adaptation to transboundary

climate risks in their portfolios; recognize transboundary initiatives that the Adaptation Fund supports and call for their expansion, potentially via a specific window for pilot projects that build resilience to tele-connected risks propagating between non-neighbouring countries.

Relevant context:

At the 2023 UN Climate Change Conference (COP28), decisions regarding the NCQG were primarily procedural rather than substantive, focusing on the preparation of a substantive framework for a draft negotiating text and the three technical expert dialogues to be conducted in 2024 (Decision 8/CMA.5). Parties did, however, decide to take into consideration and build on the outcome of the first Global Stocktake and the United Arab Emirates Framework for Global Climate Resilience in its deliberations on the new goal (Decision 8/CMA.5, para 24). At SB60, Parties produced a new iteration of the draft substantive framework. The 10th Technical Expert Dialogue was also held, focusing on the goal's level of ambition, qualitative elements, structure and transparency arrangements, but no agreement was reached ahead of the goal's anticipated adoption at COP29.

Rationale for recommendations:

With transboundary climate risks and mountain ecosystems cited in the Global Stocktake and the UAE Framework for Global Climate Resilience, their inclusion in decisions related to climate finance represents a natural progression. Their expected vast economic cost (illustrated earlier) also provides ample justification.

To date, only a small proportion of multilateral adaptation finance has been allocated to address transboundary climate risks. Most funded projects classified as regional or transboundary tackle shared or common risks, rather than risks that transcend borders and/or flow between tele-connected countries or regions.²⁶ Research also suggests that only a small portion of funding for mountain adaptation flows to the most vulnerable countries.²⁷ COP29 represents an opportunity to raise the profile of these dynamics in the negotiations and start to shift international finance towards building “systemic resilience” that supports long-term international cooperation. While such efforts may seem daunting, researchers are already articulating practical steps to pave the way.

Key resources:

Multilateral adaptation finance for systemic resilience (2022):

An analysis of the portfolios of three major multilateral climate funds on the extent to which they support projects addressing climate risks in more than one country; the analysis identifies regional and multi-country adaptation projects approved between 2010 and 2020.

“While there is no universally agreed upon definition of loss and damage due to its highly political and contested nature, studies have categorized the different types of losses and damages that countries and communities face, many of which have transboundary implications.”

5. Loss and damage

Recommendations for negotiators engaged in the Santiago Network:

- Raise the links between transboundary climate risks and loss and damage (as articulated in the ‘Rationale for recommendations’ below). Call for technical assistance for developing countries to better understand and assess transboundary climate risks that result in loss and damage and the implementation of relevant approaches for responding to them.
- Call for financial and technical assistance to strengthen the evidence base regarding the capacities of mountain communities to identify and quantify the socio-economic costs of the losses and damages they experience, as well as needs and activities to recover from them.

Recommendations for negotiators engaged in the loss and damage fund:

- Draw attention to transboundary climate risks that create loss and damage. Encourage Parties to consider vulnerability to transboundary climate risks in the criteria developed to select loss and damage recipients and in the design of local loss and damage needs assessments.
- Draw attention to transboundary climate risks that arise from loss and damage (including non-economic loss and damage) and corresponding transboundary opportunities that can arise from the provision of loss and damage funds.
- Call for a programmatic approach to the provision of loss and damage finance to allow for flexibility in the use of funds, enabling countries to better account for transboundary implications in finance implementation.

Relevant context:

COP28 began with a historic decision to operationalize funding arrangements for addressing loss and damage, including a dedicated fund under the UNFCCC (Decision 1/CP.28). The fund, which has received over USD 600 million in pledges so far, is a critical step forward in supporting vulnerable countries and communities to recover from climate impacts they already face. The decision stipulated that the fund would have a Board, which has so far met twice to discuss the fund’s governance arrangements and funding modalities. Recommendations are expected to be adopted at COP29, after which the fund would be fully operational. At COP28, agreement was also reached for the UN Office for Disaster Risk Reduction and the UN Office for Project Services to host the Secretariat of the Santiago Network for loss and damage (Decision 2/CP.28), a platform aiming to catalyse technical assistance for developing countries facing losses and damages. At SB60, the 3rd Glasgow Dialogue focused on collaboration and coordination between the different loss and damage institutions and hosted discussions on an upcoming high-level event on loss and damage finance. Loss and damage was also raised under discussions on the NCQG, with some Parties calling for a specific target or sub-goal.

Rationale for recommendations:

As the structure and funding modalities of the new loss and damage fund are in the process of being negotiated, there is an opportunity to ensure that loss and damage funding considers and accounts for transboundary climate risks, including in mountainous regions.

While there is no universally agreed upon definition of loss and damage due to its highly political and contested nature, studies have categorized the different types of losses and damages that countries and communities face, many of which have transboundary implications. Transboundary climate risks could *cause* loss and damage if adaptation limits are reached; transboundary climate risks could also be a *consequence* of loss and damage if the effects ripple out to others. Economic losses and damages could equal vast sums. It has been estimated that by 2030, losses and damages will cost developing countries between USD 290 billion and USD 580 billion annually.²⁸ Non-economic losses and damages, such as the loss of cultural heritage or biodiversity, are also particularly important in mountain contexts and further impede the adaptive capacity of communities.²⁹

One contentious topic within loss and damage negotiations is which countries and communities should be eligible for funding support. While there is general agreement that funding should prioritize the most vulnerable, there are no defined criteria for determining who counts as “particularly vulnerable”. Traditional measures of vulner-

ability only account for a country's direct exposure to domestic climate change impacts. But we dramatically underestimate vulnerability unless we also account for a country's exposure to transboundary climate impacts.³⁰ This is an important point to raise in conversations on eligibility. But it also implies the converse may be true – that it may be possible to benefit from loss and damage recovery measures even if a country is not the direct recipient. This theory – transboundary or systemic resilience – augments the argument for a more programmatic approach to determining the distribution of loss and damage finance. Programmatic finance – as opposed to project-base finance – is also likely to be more practically suited to the task of responding to the loss and damages associated with transboundary climate risks.

Key resources:

Locally-Led Assessment of loss and damage finance in Nepal (2024): The report presents the findings of a study quantifying and assessing the economic and non-economic loss and damage resulting from the 2021 Melamchi flood in Nepal, developing a methodology for participatory and locally led approaches to loss and damage assessments.

Operationalizing the Loss and Damage Fund: learning from the perspectives of funders and potential recipients (2023): This brief summarizes key points from recent research conducted to examine ways for the new Loss and Damage Fund to best achieve its aim of helping vulnerable countries respond to and recover from climate impacts.

Recommendations for Observer Organizations

There were 3,804 organizations (3,631 NGOs and 173 IGOs) admitted as observers to COP28. As representatives from business and industry, environmental groups, farming and agriculture, Indigenous Peoples, local governments and municipal authorities, research and academic institutes, labour unions, women and gender and youth groups, their actions are critical to raising issues on the agendas of the United Nations Climate Change Conferences.³¹

Here we outline 9 recommendations for observers to directly support negotiators to implement the recommendations in this brief and create a strong enabling environment to strengthen their uptake and amplify their impact. There are countless opportunities on the road to COP29 and COP30 to advance the mountain agenda and strengthen international cooperation on adaptation to transboundary climate risk. All it requires of us is to harness them.

1. Encourage and support negotiators to incorporate transboundary climate risks and the need for adaptation to these risks in their negotiation positions ahead of COP30.

2. Support implementation of the outcomes of the first Global Stocktake and preparations for the second by building evidence of transboundary climate risks, strengthening knowledge of how to reduce and manage them in mountain areas, and supporting countries to integrate such risks and measures into their monitoring, evaluation and learning systems and build joint, transboundary systems where feasible.
3. Provide technical assistance and expertise to the UAE–Belém Work Programme to support the integration of transboundary climate risks and mountain ecosystems in the implementation of the UAE Framework for Global Climate Resilience – proactively elaborating relevant indicators, metrics and methodologies, and responding to calls to develop technical guidance and training materials.
4. Participate in relevant expert meetings of the Nairobi Work Programme on mountains to raise region- and country-specific needs and concerns. Encourage integration of transboundary approaches and actions.
5. Engage with the LEG to consolidate the approach for integrating transboundary climate risks and vulnerable ecosystems into the update of the NAP technical guidelines, and engage government teams working on NAPs to overcome the challenges and build the necessary capacities in practice.
6. Raise the visibility of transboundary climate risks and the importance of accounting for such risks in the adaptation sections of countries' updated NDCs in 2025 through public communication campaigns.
7. Echo calls from Parties for the provision of climate finance to adapt to transboundary climate risks in mountain regions. Encourage accredited entities to cooperate in the design and proposal of innovative pilot projects.
8. Champion the efforts of intergovernmental bodies to drive adaptation at regional scales, and push for the inclusion of mountain communities and Indigenous Peoples in multilateral decision-making processes at global scales.
9. Contribute to the development of an effective, enabling environment for the management of transboundary climate risks in mountain areas by strengthening their uptake in climate policy, practice and finance more broadly.

Annex


Sample indicators

Target: Risk and vulnerability assessments that account for transboundary climate risks

- The existence of one or more robust and well-established methodologies/assessment frameworks



Scenic mountain valley with a winding river and snow-capped peaks in the Parvati Valley, Himachal Pradesh, India.
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“Transboundary climate impacts, and the risks they generate within and beyond mountain areas, are of rising concern in international climate change negotiations.”

that allow transboundary climate impacts (including the pathways through which they propagate) to be identified, measured and monitored

- Percentage of national and regional climate risk assessments that describe how transboundary climate impacts present risks to vulnerable sectors and groups
- The existence of a global transboundary climate risk assessment and/or the # of assessments for global systems and sectors in place
- Percentage of risk assessments that identify groups with highest vulnerability and exposure to transboundary climate risk and/or the least likely to benefit or be considered/ included in the risk assessment
- Percentage of risk assessments that evaluate the key structural dynamics that drive system inequities and power asymmetries in transboundary climate risk

Target: Policy and planning instruments that address climate change adaptation include measures that aim to strengthen resilience to transboundary climate risks

- Percentage of national and regional adaptation and/or development plans that identify response options to transboundary climate risks and assign ownership (responsibility, accountability) for implementing them
- Number of mentions of transboundary climate risks in outcome texts from global conventions, platforms and policies
- Percentage of national and regional climate risk assessments that account for the transboundary impacts of the policy or planning actions and instruments they present (to strengthen just resilience / avoid transboundary maladaptation, including redistribution of risk to other regions)

Target: Public and private stakeholders act to demonstrably enhance resilience to transboundary climate risks and strengthen regional and global cooperation on adaptation

- Percent of national and regional adaptation and/or development plans (that identify options to adapt to transboundary climate risks) implemented or operationalized
- Number or percentage of adaptation projects run in cooperation between two or more countries to manage transboundary climate risks (including tele-connected risks – i.e. between non-neighbouring countries)
- Number of inter- or intra-regional dialogues on adaptation to transboundary climate risks
- Number of regional cooperation mechanisms established to strengthen cooperation on managing transboundary climate risks

- Evidence of effective and efficient mechanisms to implement and monitor transboundary cooperation agreements

Target: Adaptation monitoring, evaluation and learning frameworks assess the efficacy of actions to adapt to transboundary climate risks

- Percentage or number of national and regional adaptation monitoring, evaluation and learning frameworks that assess the efficacy of actions to adapt to transboundary climate risks and/or conduct ex-ante impact assessments and generate recommendations and lessons
- The UNFCCC Global Stocktake monitors and evaluates adaptation efforts for their effectiveness in reducing transboundary climate risks

Target: International funding promotes transboundary management through regional and multi-country cooperation and dialogue and builds local resilience to transboundary risks

- Number or percentage of internationally financed projects awarded to multiple countries that promote transboundary management and build local resilience to transboundary risks

Target: Institutional capacity to manage complex, compound and cascading risks is strengthened at national, regional and global levels

- Percentage or numbers of adaptation planners at national or regional levels that report engagement in capacity-building activities to better identify, assess and manage transboundary climate risks
- Percentage or number of capacity-building activities (to better identify, assess and manage transboundary climate risks) that build on south-south knowledge and engagement

Endnotes

1. Anisimov, A., & Magnan, A. K. (Eds.). (2023). *The Global Transboundary Climate Risk Report*. The Institute for Sustainable Development and International Relations and Adaptation Without Borders. <https://adaptationwithoutborders.org/knowledge-base/adaptation-without-borders/the-global-transboundary-climate-risk-report>
2. Sun, Y., Zhu, S., Wang, D., et al. (2024). Global supply chains amplify economic costs of future extreme heat risk. *Nature*, 627(1), 797–804. <https://doi.org/10.1038/s41586-024-07147-z>
3. Intergovernmental Panel on Climate Change (IPCC). (2023). *Climate Change 2023: Synthesis Report*. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, H. Lee & J. Romero (Eds.)]. IPCC. <https://doi.org/10.59327/IPCC/AR6-9789291691647>

4. Intergovernmental Panel on Climate Change (IPCC). (2022). Summary for Policymakers [H.-O. Pörtner, D. C. Roberts, E. S. Poloczanska, K. Mintenbeck, M. Tignor, A. Alegría, M. Craig, S. Langsdorf, S. Lösschke, V. Möller, & A. Okem (Eds.)]. In *Climate Change 2022: Impacts, Adaptation, and Vulnerability*. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H.-O. Pörtner, D. C. Roberts, M. Tignor, E. S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Lösschke, V. Möller, A. Okem, & B. Rama (Eds.)]. Cambridge University Press. <https://doi.org/10.1017/9781009325844.001>
5. Mackey, A., & Hughes, G. (2023). *Responding to climate change in the mountains: Opportunities for parliamentarians to act*. Inter-Parliamentary Union and the Adaptation at Altitude Programme Issues Brief. <https://www.ipu.org/resources/publications/issue-briefs/2023-11/responding-climate-change-in-mountains-opportunities-parliamentarians-act>
6. Mountain Partnership (2014). Mountains as the water towers of the world; a call for action on the Sustainable Development Goals (SDGs). Rome: FAO. https://www.fao.org/file-admin/templates/mountain_partnership/doc/POLICY_BRIEFS/SDGs_and_mountains_water_EN.pdf
7. Adler, C., Wester, P., Bhatt, I., Huggel, C., Insarov, G. E., Morecroft, M. D., Muccione, V., & Prakash, A. (2022). Cross-Chapter Paper 5: Mountains. In H.-O. Pörtner, D. C. Roberts, M. Tignor, E. S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Lösschke, V. Möller, A. Okem, & B. Rama (Eds.), *Climate Change 2022: Impacts, Adaptation, and Vulnerability*. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (pp. 2273–2318). Cambridge University Press. <https://doi.org/10.1017/9781009325844.022>
8. Adler, C., Wester, P., Bhatt, I., Huggel, C., Insarov, G. E., Morecroft, M. D., Muccione, V., & Prakash, A. (2022). Cross-Chapter Paper 5: Mountains. In H.-O. Pörtner, D. C. Roberts, M. Tignor, E. S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Lösschke, V. Möller, A. Okem, & B. Rama (Eds.), *Climate Change 2022: Impacts, Adaptation, and Vulnerability*. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (pp. 2273–2318). Cambridge University Press. <https://doi.org/10.1017/9781009325844.022>
9. Adler, C., Wester, P., Bhatt, I., Huggel, C., Insarov, G. E., Morecroft, M. D., Muccione, V., & Prakash, A. (2022). Cross-Chapter Paper 5: Mountains. In H.-O. Pörtner, D. C. Roberts, M. Tignor, E. S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Lösschke, V. Möller, A. Okem, & B. Rama (Eds.), *Climate Change 2022: Impacts, Adaptation, and Vulnerability*. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (pp. 2273–2318). Cambridge University Press. <https://doi.org/10.1017/9781009325844.022>
10. Climate Analytics. (2023, August 27). COP28 made strong progress on mountains—Here’s what to expect in 2024. Retrieved August 27, 2024, from <https://climateanalytics.org/comment/cop28-made-strong-progress-on-mountains-heres-what-to-expect-in-2024>
11. United Nations Framework Convention on Climate Change (UNFCCC). (n.d.). Overview of the Nairobi Work Programme. Retrieved August 27, 2024, from <https://unfccc.int/topics/adaptation-and-resilience/workstreams/nairobi-work-programme-nwp/overview-of-the-nairobi-work-programme>
12. United Nations Framework Convention on Climate Change (UNFCCC). (2023). Understanding and closing adaptation knowledge gaps in mountains and high-latitude areas. Retrieved September 23, 2024, from <https://unfccc.int/news/understanding-and-closing-adaptation-knowledge-gaps-in-mountains-and-high-latitude-areas>
13. United Nations Framework Convention on Climate Change (UNFCCC). (2024, August 27). Expert dialogue on mountains and climate change. Retrieved August 27, 2024, from <https://unfccc.int/event/expert-dialogue-on-mountains-and-climate-change>
14. Stockholm Environment Institute (SEI). (2023, August 27). Decoding buzzwords at SB58: What is transformational adaptation? Retrieved August 27, 2024, from <https://www.sei.org/perspectives/decoding-buzzwords-at-sb58-what-is-transformational-adaptation/>
15. Zwahlen, J. (2023). *Leave No Mountain Behind – Mountains in National Adaptation Plans: A short analysis*. Adaptation at Altitude Report. <https://adaptationataltitude.org/wp-content/uploads/2023/12/aaa-brochure-nap-final.pdf>
16. Stockholm Environment Institute (SEI). (2023, August 27). The case for global climate adaptation. Retrieved August 27, 2024, from <https://www.sei.org/perspectives/the-case-for-global-climate-adaptation/>
17. Talebian, S., Sharma, D., Harris, K., & Rana, P. (2023). *Enhancing cooperation to address cascading climate risks in the Hindu Kush Himalaya*. Adaptation Without Borders Discussion Brief. https://adaptationwithoutborders.org/wp-content/uploads/2023/12/enhancing_cooperation_to_address_cascading_climate_risks_in_the_hindu_kush_himalaya-1.pdf
18. The four dimensions are: impact, vulnerability and risk assessment; planning; implementation; monitoring, evaluation and learning. The Adaptation Committee’s information note (published 5 September 2024) on “Information on adaptation indicators reported by Parties in their national reports and communications” suggests the consideration of transboundary climate risks across both dimensional and thematic targets is thus far limited.
19. The serious threat posed by transboundary climate risks to the majority of these thematic areas is elucidated in *The Global Transboundary Climate Risk Report*. The seven themes are (in short): water security; food security; human health; ecosystems and biodiversity; infrastructure and human settlement; poverty eradication and livelihoods; and cultural heritage.
20. The new indicators proposed in the first and second recommendation should be included in the technical reports for consideration by SB62 (in June 2025).
21. The Secretariat was requested to examine how transformational adaptation is defined and understood at different spatial scales and sectors, and how progress in planning and implementing transformational adaptation approaches might be assessed at the global level, in Decision 7/CMA.3.
22. Talebian, S., Sharma, D., Harris, K., & Rana, P. (2023). *Enhancing cooperation to address cascading climate risks in the Hindu Kush Himalaya*. Adaptation Without Borders Discussion Brief. https://adaptationwithoutborders.org/wp-content/uploads/2023/12/enhancing_cooperation_to_address_cascading_climate_risks_in_the_hindu_kush_himalaya-1.pdf
23. National Adaptation Plan (NAP) Global Network. (2024, June 27). NAP assessment Bonn importance. Retrieved

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The negotiator brief is being supported by the International Centre for Integrated Mountain Development (ICIMOD) and United Kingdom International Development through its Foreign Commonwealth and Development Office (FCDO).



August 27, 2024, from <https://napglobalnetwork.org/2024/06/nap-assessment-bonn-importance/>

24. Terton, A., Qi, J., & Tadgell, A. (2023). *Transboundary Climate Risks and the National Adaptation Planning Process*. NAP Global Network Briefing Note. <https://napglobalnetwork.org/wp-content/uploads/2023/09/napgn-en-2023-transboundary-climate-risks-and-nap-processe.pdf>
25. Zwahlen, J. (2023). *Leave No Mountain Behind – Mountains in National Adaptation Plans: A short analysis*. Adaptation at Altitude Report. <https://adaptationataltitude.org/wp-content/uploads/2023/12/aaa-brochure-nap-final.pdf>
26. Browne, K., Beaussart, R., Benzie, M., Canales, N., Klein, R., Harris, K., Haque, N., Lager, F., Lindblom, A., Marbuah, G., & McAuley, S. (2022). *Multilateral Adaptation Finance for Systemic Resilience*. SEI Brief. Stockholm Environment Institute. <https://doi.org/10.51414/sei2022.047>
27. Williamson, K., Witton, R., & Lorang, E. (2024). *Leave No Mountain Behind: The Synthesis Series – Adapting to transboundary risks in mountain regions*. <https://weadapt.org/knowledge-base/adaptation-in-mountains/adapting-to-transboundary-risks-in-mountain-regions/>
28. Markandya, A., González-Eguino, M. (2019). *Integrated Assessment for Identifying Climate Finance Needs for Loss and Damage: A Critical Review*. In: Mechler, R., Bouwer, L., Schinko, T., Surminski, S., Linnerooth-Bayer, J. (eds) *Loss and Damage from Climate Change. Climate Risk Management, Policy and Governance*. Springer, Cham. https://doi.org/10.1007/978-3-319-72026-5_14
29. United Nations Environment Programme (UNEP). (2023). *Mountains in silent thaw: Losses and damages from the disappearing “frozen heartbeat” of Earth*. An online resource of Adaptation Gap Report 2023: Underfinanced. Nairobi, Kenya: UNEP. <https://doi.org/10.59117/20.500.11822/43796>
30. Stockholm Environment Institute (SEI). (2023, August 27). Key insights: Climate risks. Retrieved August 27, 2024, from <https://www.sei.org/perspectives/key-insights-climate-risks/>
31. United Nations Framework Convention on Climate Change (UNFCCC). (2024, August 27). Observer organizations. Retrieved August 27, 2024, from <https://unfccc.int/process-and-meetings/parties-non-party-stakeholders/non-party-stakeholders/overview/observer-organizations>

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We are grateful for the ideas and contributions of María del Pilar Bueno Rubial towards this brief, and the helpful and constructive reviews by Cristina Rumbaitis del Rio (UNF), Emilie Beauchamp (IISD) and Adèle Tanguy (IDDRI) as well as staff at ICIMOD who commissioned SEI to produce this brief. The brief is a reflection of their expertise and collective strengths.

First published by the Stockholm Environment Institute in October 2024 on behalf of the Adaptation Without Borders and Adaptation at Altitude partnerships. Adaptation Without Borders is directed and managed by three founding members – IDDRI, ODI and SEI – and supported by the contributions of a growing number of partners. The views presented in this brief are those of the authors and do not necessarily represent the views of the Adaptation Without Borders partnership or any of its funders, members, partners, advisors or ambassadors. Readers are encouraged to quote or reproduce material from this publication (in whole or in part and in any form) for educational or non-profit purposes without special permission from the copyright holders, provided acknowledgement of the source is made. No use of this publication may be made for resale or other commercial purposes without the written permission of the copyright holders.

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Suggested citation: Harris, K., Williamson, K., Klein, R. J.T., Shawoo, Z., Browne, K., Mackey, A. and Zwahlen, J. (2024). *Transboundary climate risks and adaptation in mountain areas: shaping the global agenda in 2024 and beyond*. Adaptation Without Borders Policy Brief 3. Stockholm Environment Institute.