DISCUSSION BRIEF
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Adaptation Without Borders

Assessing transboundary climate risks under the UNFCCC Global Stocktake

KEY MESSAGES

- Overlooking the importance of Transboundary Climate Risks under the UNFCCC Global Stocktake will lead to an **incomplete and inaccurate assessment of global progress** towards the goals of the Paris Agreement. The nationally driven nature of the first GST, which will come to an end at COP 28, does not reflect the **truly global nature of the adaptation challenge**.
- Building on interviews with policy and scientific experts, this Brief discusses the scientific, technical, political and procedural barriers to including Transboundary Climate Risks (i.e. climate impacts and maladaptation effects cascading across national borders) into the Global Stocktake, and advances proposals to overcome these barriers.
- Four overarching recommendations are presented: a call for the development of an **evidence base** on observed and projected Transboundary Climate Risks; identification of the most relevant instrument(s) under the UNFCCC to **report on progress towards addressing these risks**; preparation of **guidelines** to support countries in such reporting; and calls for **greater bilateral to international cooperation** on Transboundary Climate Risks to ensure that global adaptation is just.

1. Introduction

Transboundary climate risks manifest when the impacts of climate change generate cascading effects across national borders or jurisdictions. They also occur when actions to adapt to climate change have consequences in other countries, whether neighbouring or distant (Carter et al. 2021; Benzie and Harris 2022; Anisimov and Magnan 2023).

These risks are quickly getting more attention in the international climate agenda. They have been acknowledged by the Intergovernmental Panel on Climate Change (IPCC) in its Synthesis Report of the Sixth Assessment Report and referred to in flagship reports and strategies of regional organizations from the European Union and African Union to ASEAN (the Association of Southeast Asian Nations). National-level policymakers are also taking proactive steps to better account for their implications in their adaptation plans. However, transboundary climate risks remain lacking from the UNFCCC Global Stocktake (GST); actions must be taken now and for the next GST to address this gap.

The GST is the primary international mechanism to systematically track global progress towards the goals of the Paris Agreement, including the goal on adaptation. The process should enable countries and stakeholders to understand collective progress and gaps. The synthesis report by the co-facilitators on the technical dialogue of the first GST acknowledged compounding and cascading climate risks across systems; they also noted the potential for early warning systems to help decision makers understand transboundary risks more clearly.

However, the first GST has not accounted for transboundary climate risks either comprehensively, across the entire risk cascade or systematically, across sectors and regions. If the GST continues to overlook the importance of transboundary climate risks and fails to evaluate collective efforts in building resilience to them, it will provide

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an incomplete and inaccurate assessment of global progress towards the goals of the Paris Agreement. In other words, if the GST does nothing more than synthesize climate risks to and adaptation responses from the national level, it will have failed to take stock of the actual *global* nature of the adaptation challenge.

As the first GST concludes at COP28, the outputs of the process should explicitly recognize that an important part of the picture is missing. This moment also represents an opportunity to assess the barriers to systematically track global progress in building resilience to transboundary risks. Here, we distil relevant insights from this year's assessment, *The Global Transboundary Climate Risk Report* (Anisimov and Magnan 2023) and complement them with perceptions from expert interviews with international scientific and climate policy experts, to reveal the scientific, technical, political and procedural barriers to including transboundary climate risks into the GST. We also present proposals to overcome these barriers and lay the foundations for redressing the "transboundary gap" in the second GST in five years' time, as well as to enhance international cooperation for climate action in the crucial intervening years.

2. Why do transboundary climate risks matter for the Global Stocktake?

Transboundary climate risks are arising with increasing frequency. The IPCC warns that cascading risks will combine to substantially influence the magnitude, lifespan, rate of emergence, and spatial distribution of risks across economies, societies and natural systems (Bednar-Friedl et al. 2022). In the end, severe climate risks will likely be higher, last longer, and occur both sooner and at larger scales, and they will therefore be more complex to anticipate and manage (O'Neill et al. 2022, Magnan et al. 2022).

The Global Transboundary Climate Risk Report (Anisimov and Magnan 2023) highlighted 10 globally significant transboundary risks that need attention, related to shared ecosystems (terrestrial and ocean-based natural resources), shared economic activities (agricultural commodity trade, financial flows, energy systems and industrial supply chains) and increasingly mobile societies (health, mobility and livelihoods). The report also reflects on the implications of transboundary climate risks for overall well-being and equity. Climate adaptation efforts will fall short in critical ways at local, national, regional and global scales if climate policies, plans and investments do not address these risks.

In conjunction with the Glasgow–Sharm el-Sheikh Work Programme on the Global Goal on Adaptation (2021–2023), the GST is the **most relevant international mechanism in place to track efforts to adapt to transboundary risks, globally and across sectors**. Assessing these efforts for adequacy and effectiveness in addressing transboundary risks will be critical for overall success – and despite its relevance on this count, so far, the GST has missed that chance. The technical dialogue of the first GST, which concluded with the publication of the synthesis report by its co-facilitators (UNFCCC 2023), acknowledged transboundary climate risks, but did not fully account for them. This information should have fed into the overall conclusion of the first GST at COP28 in the United Arab Emirates.

Without this assessment, the Parties are left with an unclear picture of the significance of transboundary climate risks that countries and regions face, both today and under future warming scenarios. They therefore lack the means to evaluate collective efforts in building resilience to them.

3. What should happen now?

With so little time left and so much for Parties to do before COP28, it would be challenging to fill in this gap for the first GST. However, two important actions can and must take place in the short term, either at COP28 or immediately after in the conclusion of the first GST:

- Explicitly recognize that a complete understanding of the transboundary and cascading nature of climate risk is lacking, and that without this, the GST is likely to overestimate resilience to climate change and overstate progress towards meeting the global goal on adaptation.
- Acknowledge and assess the scientific and technical, political and procedural barriers to systematically tracking global progress in building resilience to transboundary climate risks. Adopt recommendations to address them, to close the "transboundary gap" for the second GST and so lay the foundation for a more complete and accurate stocktake five years from now.

4. What needs to happen for the next Global Stocktake?

The next GST needs to provide continued support for both policymakers and scientists in their effort to tackle transboundary climate risks. Interviews with a series of policy and scientific experts (see acknowledgements) could help move forward this remit, by identifying important

enablers that are required to harness this opportunity for making the GST process have greater impact.

4.1 Policymakers' needs

The Adaptation Without Borders global partnership has demonstrated two critical points: regional and international cooperation is critical for managing transboundary climate risks and for ensuring that adaptation does not shift impacts elsewhere, while policy mechanisms currently in place are not yet equipped to drive such global perspectives. While strong regional mechanisms have taken shape in many contexts, these are often focused on the transboundary climate risks generated through shared natural resources and ecosystems. In addition to harnessing the lessons from such initiatives, there is a need to explore climate risks propagating through other pathways, such as trade and the movement of people, and move towards a more global perspective beyond regional arrangements. Policymakers need the GST to guide their work to these other pathways.

Interviews with policy experts highlighted four main needs for policymakers, which the GST can provide: strengthen the evidence base, develop guidance for countries and stakeholders, manage diplomatic challenges, and develop or identify policy instruments.

Strengthen the evidence base

Policymakers need a grounded body of evidence on transboundary climate risks. Highlighting this policy demand should initially serve to raise awareness among negotiating teams from all countries, with the ultimate aim of equipping Parties with a detailed understanding of the most prominent transboundary climate risks requiring their attention (i.e. those of high magnitude for a particular country, across sectors and scales).

While *The Global Transboundary Climate Risk Report* showcased illustrative examples in various sectors and world regions (Anisimov and Magnan 2023), more detailed analyses will be needed in the years after the first GST. To inform the second GST, new research and evidence needs to be developed rapidly from 2024 onwards. The structuring of a "bank of evidence" should also be clarified based on country needs. A discussion on who is best placed to develop this evidence is needed. While the IPCC could play a role under its Seventh Cycle, other partners such as the World Adaptation Science Programme could also be given this mandate.

Develop guidance

Regardless of the collection and reporting process adopted, policymakers need guidance on how to further consider and assess transboundary climate risks within the GST process, especially in relation to the following questions:

- Which risk cascades should be explored and assessed as priorities, and under what time frames?
- What conceptual frameworks and assessment methodologies exist that can robustly identify, measure and monitor risk cascades?
- What sources of information do national adaptation planners, policymakers and negotiators need (particularly from beyond their jurisdictions)?
- What might be effective responses to risk cascades, and how should adaptation options be assessed to determine their appropriateness and effectiveness?
- Whether the reporting is handled by Parties or external stakeholders (see section below "Develop policy instruments"), how should the implications of national action in terms of transboundary maladaptation across Parties and non-Party actors be accounted for?

To align with negotiations on the framework for the global goal on adaptation, interviewees emphasized that such guidance should include the identification of concrete targets and indicators to track transboundary climate risks and related responses in building resilience to them. Scientific information on the emergence, spread and significance of transboundary climate risks remains nascent. In the meantime, creating an "enabling environment" in the policy landscape, with clear goals and targets associated with such risks, will be critical to accelerate this important scientific endeavour. Developing guidance is therefore a two-way process where policymakers also have to express their needs.

Manage diplomatic challenges

In view of the second GST, focused discussions should take place between Parties on the important diplomatic issues to which transboundary climate risks give rise:

- What mechanisms are required to ensure that adaptation is "just" and does not enhance the resilience of some at the expense of others in other countries? Is there a role for the UNFCCC in providing a diplomatic space for Parties to raise or discuss such issues? Are there other international bodies that are better placed to arbitrate potential disputes?
- Some of the most politically sensitive transboundary climate risks will require high-level diplomacy: does the UNFCCC have a role to play in bringing such risks to the attention of high-level decision-makers, or should efforts focus on less politically contentious issues where the prospect of multilateral cooperation and effective adaptation are higher, even if the risks are deemed less significant?
- If international cooperation is recognized as an important response to transboundary climate risks, what mechanisms and approaches are required to enable and encourage such cooperation, through and beyond the national adaptation planning process? How might

the GST monitor and assess levels of international cooperation to manage transboundary climate risks, and coordination between countries in adaptation planning? And how can equitable power dynamics be ensured if some actors have fewer resources and (arguably) less leverage in multilateral negotiations?

- Is there a role for the GST cycle as a whole in assessing how climate finance directed towards adaptation to transboundary climate risks builds the resilience of multiple communities – regionally and globally (i.e. in places beyond where the finance recipient is located) – and in assessing the fair distribution of those resources?

Develop policy instruments

The most appropriate policy instruments should be defined for collecting, reporting, and synthesizing information about transboundary climate risks (including transboundary maladaptation). Interviews conducted for this study point to three options, which will need to be discussed and agreed:

1. Explore how transboundary climate risks could be considered and assessed in the existing policy instruments and reporting documents of the UNFCCC, such as nationally determined contributions (NDCs), national adaptation plans (NAPs), and adaptation communications. This would help to avoid the over-burdening of adaptation planners, policymakers and negotiators. However, interviews raised concerns that a national-level entry point is not sufficient to address transboundary risks, meaning that engagement beyond national planning will be necessary.
2. Explore the extent to which transboundary climate risks call for a new and specific stream of discussion and dedicated reporting under the UNFCCC. The latter could take the form of multi-country adaptation plans (regional and/or sectoral), developed by several countries that are linked through a specific set of transboundary risks. Such documents would describe the transboundary nature of the risk(s), their cascading consequences across a set of countries, and the suite

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of actual and potential collaborative responses to these risks. This option has the benefit of achieving complementarity with existing instruments that focus on climate risk within national boundaries, while sharpening the focus on transboundary risks. However, it would require the addition of a new negotiation stream to an already complex landscape, and it could place additional burdens on national adaptation planners, policymakers and negotiators.

3. Harness the possibility of reporting on transboundary climate risks by a non-Party organization such as Adaptation Without Borders. While the above two options point to the role of Parties in assessing, managing and reporting on transboundary climate risks, one interviewee suggested that given the diplomatic issues and sensitivities outlined above, and the risk of further burdening overstretched country teams, the assessment and reporting of transboundary climate risks should be undertaken not by Parties or groups of Parties, but by an institution that is closely connected to but independent of the UNFCCC. The UNEP Adaptation Gap Report follows such a format and could be an example of such a synthesis process: a transboundary climate risk dimension could be included in its regular core chapters on planning, financing and implementation. This would, however, require that information on transboundary climate risks is available, as the UNEP Adaptation Gap Report is not mandated to create new information, which points to the need for county-level reporting as well as for insights from the scientific community (through the IPCC or others).

The Global Transboundary Climate Risk Report (Anisimov and Magnan 2023), as well as other sources of information (see recent EU-funded projects RECEIPT: https://climatestorylines.eu/ and CASCADES: https://www.cascades.eu/) and interviews conducted for this study, suggested that the potential is significant to strengthen scientific research on transboundary climate risks and associated adaptation pathways. So far, few assessments are available on the potential cross-border and cascading effects of both climate impacts and adaptation responses for countries and regions to draw from in their planning and reporting.

4.2 Needs from the scientific community

What do scientists need to create and collect information suitable for the global assessment of transboundary climate risks and tracking over time? And how can the GST be guaranteed to build on and further spur such a scientific endeavour? Interviews with scientists working in the adaptation field articulate three promising and complementary avenues: build sets of indicators, develop prospective scenarios based on expert judgement, and design "serious games" to reveal adaptation pathways.

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Build sets of indicators

Scientists need indicators to assess the current state of transboundary climate risks and track changing levels over time. Attempts to do so face significant conceptual and methodological challenges related to capturing the high degree of complexity and uncertainty associated with cross-border systems, as well as the attribution of changes to climate-related triggers of cascading and compounding processes. But the development of indicators is considered important if the GST is to provide a robust assessment of transboundary climate risks around the world and of the adequacy and effectiveness of efforts to adapt to them (Anisimov and Magnan 2023; Canales et al. 2023). A stepwise approach could be followed, starting with indicators for particular types of risks – such as those in shared ecosystems (e.g. changes in fish catch in neighbouring Exclusive Economic Zones), commodity markets (e.g. changes in cereal exports and imports), and international financial flows (e.g. climate-related financial risk metrics for economic value chains). These could be predominantly based on existing data pertaining to cross-border flows. Suites of national and system-level indicators could then be further developed and aggregated to create a global-scale picture of the transboundary climate risks we face.

Develop prospective scenarios based on expert judgement

In addition to the risks that are materializing now, future trends in transboundary climate risks need to be assessed under various warming scenarios. Moving towards a scientific, comprehensive and global understanding of future transboundary climate risks will be challenging – not least because it requires projecting comparable data across diverse types of risk. In such a context, the climate research community increasingly recognizes the high value of expert judgement methods (Morgan 2014, Mach et al. 2017, Mach et al. 2019, Magnan et al. 2023), for example in IPCC cycles (Zommers et al. 2020). This is especially the case where data is lacking or scattered, which is typically the case with transboundary climate risks.

Expert judgement approaches could, for example, rely on scoring systems that facilitate the creation of a common

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metric across diverse topics, indicators and sources of information, as well as make it possible to compare and aggregate transboundary climate risks of a different nature. Such efforts could benefit from methodological explorations in recent IPCC reports — the *Special Report on the Ocean and Cryosphere in a Changing Climate* and the *Special Report on Climate Change and Land* (both 2019) and the Working Group II contribution to the Sixth Assessment Report (2022) — and more focused research initiatives (e.g. on the assessment of climate risk to habitability; Duvat et al. 2021).

Interviewees agreed that using expert judgement to further analyse the 10 transboundary climate risks presented in *The Global Transboundary Climate Risk Report* (Anisimov and Magnan 2023) has significant potential to: highlight commonalities and heterogeneities in expected trends across transboundary climate risks; identify plausible timescales for specific sets of transboundary climate risks to gain insights into when they may become severe; and subsequently draw conclusions for priority areas for enhancing regional and international cooperation on adaptation. Such findings could be decisive in structuring UNFCCC discussions ahead of the second GST.

There are four main steps to structure such expert judgment assessments and ultimately develop prospective scenarios of transboundary climate risks. Steps two, three and four, in particular, require discussions among UNFCCC Parties to clarify policy needs and expectations and direct scientific inquiry. The four steps are listed here in no specific chronological order:

1. Define a robust methodological protocol, including the metrics to be considered, the scoring system to be adopted and the characteristics of the experts to be involved in the assessment.
2. Select a set of transboundary climate risks to be considered that covers a wide diversity of sectors, regions, and policy priorities.
3. Agree on the warming scenarios to be considered, to contrast different projections and demonstrate the range of potential risks requiring attention (for example, through contrasting +1.5/2°C and +4°C by the end of this century), as well as the socioeconomic scenarios to be used, e.g. based on the Shared Socioeconomic Pathways, or SSPs, adopted in IPCC reports.
4. Explore the potential for including adaptation scenarios in the assessment, to understand the extent to which implementing ambitious adaptation responses could help minimize and manage levels of transboundary climate risks, but also where certain types of adaptation may exacerbate or redistribute risks. This would help identify the solution space, but also the potential residual risks and associated adaptation limits, to inform climate negotiations on adaptation finance and on loss and damage. Deciding which scenarios to use requires science-policy dialogue to consider several options: for example, a "middle-of-the-road" adaptation scenario, or the contrasting of a "local" adaptation scenario (which neglects potential cross-border maladaptations) with a "systemic" adaptation scenario (which seeks to tackle the effects of climate change across systems and scales). The use of SSPs is also a critical variable, as the degree of international cooperation that may be needed to implement systemic adaptations may not be possible in some future socioeconomic contexts.

Rely on serious games to design adaptation pathways

The scientific community increasingly acknowledges that identifying adaptation strategies is not about defining the "right" option now (which will be effective over a long time frame) but rather understanding how to sequence various options over time. This is called the adaptation pathways approach, and it is instructive to apply this same logic in designing responses to transboundary climate risks. *The Global Transboundary Climate Risk Report* (Anisimov and Magnan 2023) provided initial insights, highlighting three methodological steps to design adaptation pathways to transboundary climate risks:

1. Identify the main drivers of transboundary climate risks (holistic and high-level, rather than exhaustive).
2. Identify the most relevant policy domains and instruments, at multiple scales, to address these drivers.
3. Design policy pathways, while defining the time frames for analysis, as well as the warming and socioeconomic scenarios to consider.

On the second and third steps, several interviewees highlighted the potential role of serious games to help bring scientists and decision-makers together to identify relevant policy domains and instruments and discuss potential ways to sequence adaptation options over time. Serious games are increasingly recognized as useful tools to help bridge: contrasting views and conflicting interests on climate risks and adaptation needs/priorities; short-term and long-term planning approaches; and incremental and transformational adaptation options.

5. Conclusion and overarching recommendations

Based on experts' opinions on the scientific feasibility and policy relevance of assessing transboundary climate risks as part of the GST, we present recommendations for the outputs for the first GST and concrete next steps that would help close the "transboundary gap" in the second GST by 2028.

- The outputs of the first GST should call for the creation of an **evidence base on transboundary climate risks**, ideally through existing platforms (e.g. weADAPT and Adaptation Without Borders), to collect case studies from different world regions and sectors. The research should distil transmission pathways, timescales and tipping points, as well as the most promising adaptation pathways to address the risks. Such empirical analysis should be complemented by the development of indicators to characterize the current state of these risks, scenarios of future trends, and methods to design politically viable adaptation solutions.
- The outputs of the first GST should encourage Parties to discuss **the most relevant instrument(s) to enhance reporting of transboundary risks to the GST**. Among them are these three main options: inclusion of transboundary climate risks in existing national reporting instruments; development of multi-country regional or sectoral adaptation plans by countries linked through a given risk; or reporting by an institution that is not a Party to the Convention. Deciding on the most relevant option will help define seats of authority for developing information on transboundary risks under the UNFCCC.
- The outputs of the first GST should call for **the preparation of guidelines** to drive the inclusion of transboundary climate risks in the second cycle. The guidelines should also clarify who should carry out this reporting. They should cover priorities for assessment, methodologies and sources of information, response options, and effectiveness criteria. Guidelines covering these topics do not currently exist. To reduce the bureaucratic load on national reporting agencies, updates could be made of existing guidelines, for example the supplementary guidance for adaptation communications (Decision 9/CMA.1), the Least Developed Country Expert Group guidance on NAPs (decision 5/CP.17, paragraphs 15–16), and the modalities, procedures and guidelines for the transparency framework for action and support referred to in Article 13 of the Paris Agreement (decision 18/CMA.1). Additionally, if the task of including transboundary climate risks in the second GST cycle were assigned to a non-Party actor, new guidelines would need to be prepared to steer this process.
- The outputs of the first GST should encourage **greater cooperation on transboundary climate risks and related adaptation** at bilateral, regional and international scales and call for mechanisms to **ensure that adaptation is just** and does not enhance the resilience of some at the expense of others. The UNFCCC has a role and a responsibility to provide a diplomatic space for Parties to raise and discuss such issues.

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Adaptation Without Borders is a global partnership working to strengthen systemic resilience to the cross-border impacts of climate change. We identify and assess transboundary climate risks, appraise the options to better manage those risks and support policymakers, planners and the private sector to develop climate-resilient and inclusive solutions. We catalyse new alliances and forms of cooperation on adaptation that pave the way towards a more sustainable and resilient world.

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