

Transboundary Climate Risks: A Cross-Regional Analysis

Prevailing approaches to climate adaptation still tend to focus on managing impacts within local or national borders. Yet climate change impacts do not stop at national boundaries: they propagate across countries and create cascading risks for societies, economies, and ecosystems. Drawing on research developed by the Adaptation Without Borders consortium, including work supported by AFD's AdaptAction program, this note presents an analytical framework, offers an initial application through selected regional case studies, and puts forward recommendations to advance action-oriented research, better reflect transboundary climate risks in climate policies, and design pilot multi-country adaptation projects that fully integrate these risks.

The challenge of transboundary climate risks

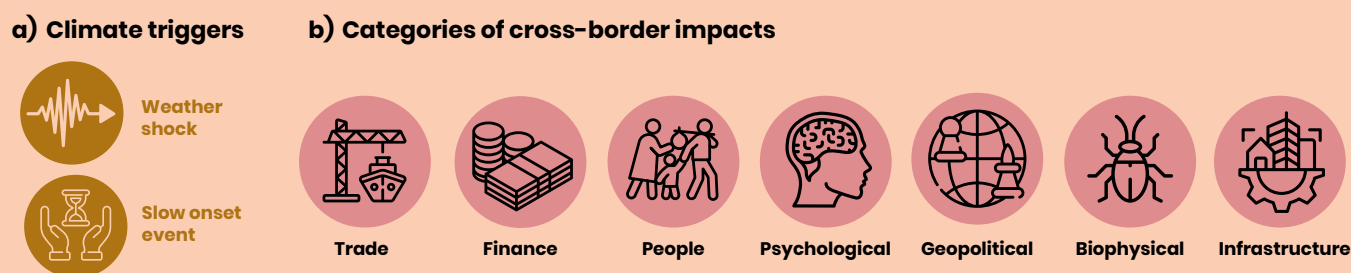
As societies, economies, and ecosystems are all interconnected, the impacts of both climate change and policy responses to climate change can generate cascading risks that propagate to neighboring countries and/or distant regions. These "transboundary climate risks" have the potential to set back economic development, thereby affecting food, water, and energy security, global trade, shared natural resources, infrastructure and investments, and peace and security (Anisimov and Magnan 2023). In its *Sixth Assessment Report*, the IPCC recognizes that "weather and climate extremes are causing economic and societal impacts across national boundaries through supply chains, markets, and natural resource flows, with increasing transboundary risks projected across the water, energy and food sectors" (IPCC 2022, 19).

Globally, transboundary risks are increasingly being recognized. While climate negotiations initially treated adaptation as primarily a local or national concern, several Parties and groups within the United Nations Framework Convention on Climate Change (UNFCCC), including the African Group of Negotiators and the Least Developed Countries Group, are advocating the adoption of a multi-level approach to adaptation governance, including strengthening regional and international cooperation to manage transboundary climate risks (Opitz-Stapleton et al. 2025).

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Figure 1 – Examples of transboundary climate risk transmission pathways



Source: adapted from Carter *et al.* 2021.

This reflects the Paris Agreement, which defines adaptation as a “global challenge faced by all with local, subnational, national, regional and international dimensions” (Art. 7.2). It also reflects decisions related to the UAE Framework for Global Climate Resilience (2/CMA5) and the first Global Stocktake (1/CMA.5), in which Parties recognized 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”.

At other scales, efforts are also underway to recognize, assess and manage transboundary climate risks, led by regional bodies from the Hindu Kush Himalayas to the African Union.^[1] Regional organizations are well positioned

[1] See, for instance, Adaptation Without Borders. 2023. *A Roadmap for African Resilience: Addressing Transboundary and Cascading Climate Risks*. Stockholm: Stockholm Environment Institute. <https://adaptationwithoutborders.org/knowledge-base/adaptation-without-borders/a-roadmap-for-african-resilience/>.

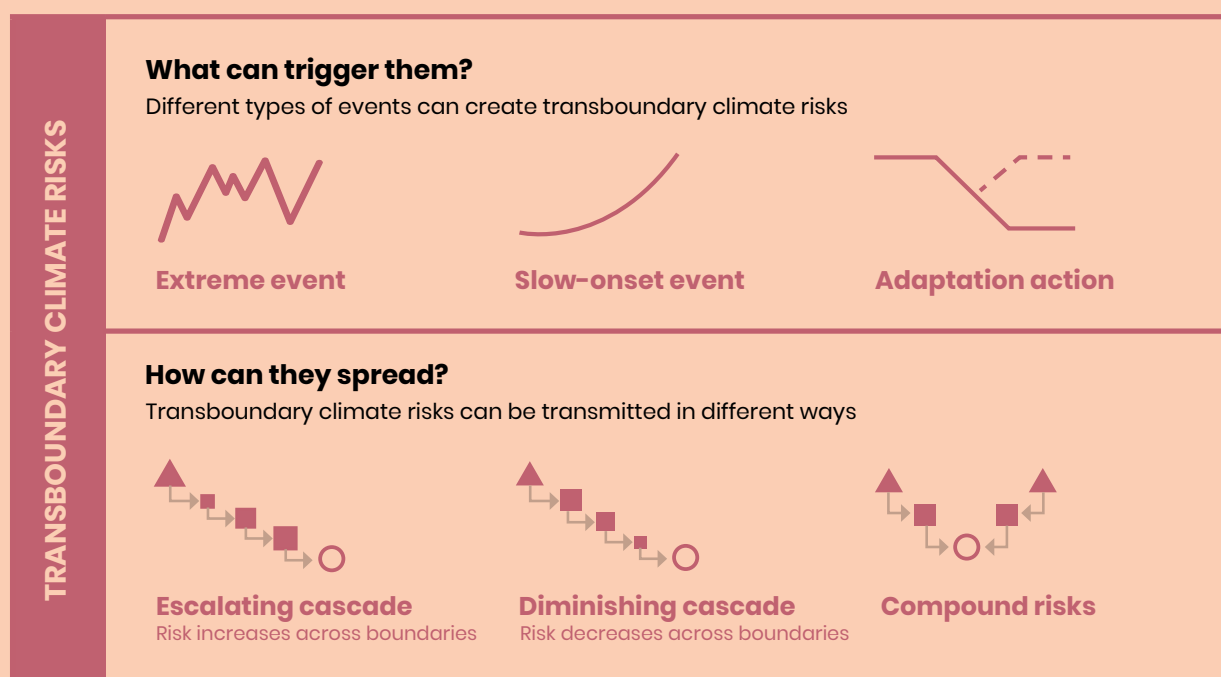
to identify propagation pathways and coordinate adaptation actions because of the proximity and often high degree of integration among their member countries.

Analytical frameworks for transboundary climate risks

When considering the management of transboundary climate risks, a compass is needed rather than a two-dimensional map. Adaptation practitioners and policymakers must consider the transmission dynamics of cross-border climate impacts (Talebian *et al.* 2025). This is often referred to as a “risk cascade”, a common phenomenon in transboundary climate risk pathways. As shown in Figure 2, a climate impact can escalate as it crosses international borders, decrease in magnitude, or interact with other drivers of risk, compounding its effects (Anisimov and Magnan *op. cit.*). For more information on transmission dynamics, see Carter *et al.* (*op. cit.*).

Figure 2 – Transmission dynamics

▲ Triggers ■ Transmitted risks ○ Recipient



Source: adapted from Anisimov and Magnan 2023, 19.

Cascades offer multiple entry points for adaptation measures to manage the risk, from the point of impact to the risk recipient. Talebian *et al.* (*op. cit.*) define a typology of adaptation response measures to cross-border climate impacts, such as:

- Blocking or preventing a cascading impact before it arrives.
- Absorbing the impact through domestic adaptation.
- Adapting at the point of origin to mitigate the risk and reduce contagion to others.
- Adapting along the risk transmission pathway through targeted interventions.
- System-wide adaptation across the entire transmission chain.

There are opportunities for multiple stakeholders across sectors and constituencies to establish shared ownership of risk and cooperate on joint adaptation initiatives. For example, individual countries and the regional Economic Community of West African States (ECOWAS) are elevating transboundary climate risks within national and regional policies and developing programs to tackle various cascading risks.

West Africa

The African Union and Africa's Regional Economic Communities have long been concerned with transboundary climate risks. Of the 23 Least Developed Countries that had submitted National Adaptation Plans (NAPs) by 2023, 10 African countries explicitly identified concerns about transboundary risks related to shared waterways, forests, or other cross-border ecosystems (Opitz-Stapleton *et al. op. cit.*). In West Africa, shifts in temperature and precipitation are likely to exacerbate challenges in land and natural resource management. In response, West African countries are undertaking or planning initiatives to protect transboundary ecosystems as a means of reducing transboundary risks to people, related to transhumance or conflict (Opitz-Stapleton *et al.* 2021).

Transboundary livestock markets and value chains are an important part of West African economies, contribute to food security and resilience, protect rangelands, and support livelihood diversification (Opitz-Stapleton 2023; Baker 2023). However, transboundary climate risks to trade and infrastructure require greater management efforts to protect and strengthen regional trade and food security, particularly livestock markets and value chains. In its Regional Climate Strategy and Action Plan (2022–2030), ECOWAS draws attention to the region's cross-border road infrastructure. The plan recognizes that roads are not designed with climate change in mind: they are neither wide enough nor sufficiently maintained to withstand climate hazards. As a result, heavy flooding already causes losses in trade flows and increases in food prices when roads are damaged or destroyed. Additionally, ECOWAS has acknowledged the need for regional cooperation on livestock and human health to reduce disease outbreaks and damage to livestock value chains in its Regional One Health Strategic Plan 2025–2029 and its Regional Strategy for Livestock Development and Securing Pastoral Systems in West

Africa and the Sahel (2023). These trade-related risks, amplified by climate change, could trigger cascading financial risks across the region (Opitz-Stapleton *et al.* 2021).

Quantitative assessments of transboundary climate risk, especially in trade and infrastructure, are required, in addition to stronger alignment of policies across sectors and countries. However, West Africa needs additional climate finance support to design such assessments, fully implement measures, and effectively bolster resilience to these risks and to realize potential resilience benefits through trade. Financial support from AFD *via* the second phase of the Regional Project to Strengthen a Platform of Solutions to Support Pastoralism and Livestock Farming in West Africa (PEPISAO II) and the West Africa Milk Offensive Support Project (PAOLAO) can help strengthen some avenues for transboundary climate risk management in West Africa livestock trade and value chains.

Recommendations

1. Climate policies at sub-national, national, regional and international scales need to account for transboundary climate risks. At the national level, this means including them in NDCs, NAPs, Biennial Transparency Reports, and Long-Term Strategies. At the regional level, this also requires supporting the development of adaptation strategies by relevant regional organizations, as is already the case with the African Union, for example. At the international level, indicators tracking progress toward the Global Goal on Adaptation that can be disaggregated at different scales are also essential.
2. Climate policies and adaptation actions to address transboundary climate risks need to be mainstreamed into and integrated across sectoral policies by subnational, national, regional, and international institutions. Concretely, this means ensuring that all sectoral strategies systematically assess and address climate risks, including cascading effects and transboundary dimensions. While this integration is more advanced in sectors where such risks are evident (such as water), they remain insufficiently and inconsistently addressed in others, including agriculture, infrastructure, and related systems.
3. Delivering on the objectives and activities for addressing transboundary climate risks articulated in climate and sectoral policies requires piloting. A “learning by doing” approach that embeds research and knowledge management could support the design and implementation of innovative multi-country adaptation programs for some sectors (particularly those for which transboundary risks extend beyond a single region). For other sectors, strengthening the integration of transboundary climate risks within existing initiatives will be more appropriate. ECOWAS is one region with strong potential for such efforts. Implementing such a pilot project also requires mobilizing national and regional stakeholders and understanding the sectoral and climate governance systems related to the issues at stake: Who are the key actors? Which institutions hold the mandate? What capacities are in place, and what gaps remain?

4. Implementing multi-country and regional pilots requires financing. To date, relatively few multi-country or regional adaptation projects have been financed, in part because there have been few bankable projects proposed by countries or regional institutions. Governments need to work with their neighbors and regional and international Accredited Entities to develop multi-country and regional adaptation project proposals for submission to climate funds. Climate and non-traditional climate finance sources should fund these projects. The recent reorganization of the Green Climate Fund (GCF) around nationally led programming requests will not facilitate the development of multi-country or regional initiatives. It is therefore essential to rely on the most relevant regional and international entities to advance this agenda. Institutions such as AFD and West African Development Bank (BOAD) – accredited to the GCF – or multilateral development banks such as the African Development Bank (AfDB), accredited to the Global Environment Facility (GEF), are key actors whose mobilization is crucial to supporting such regional initiatives.
5. Climate, social and environmental risk assessments for projects, programs and disclosure compliance should account for transboundary climate risks as a standard good practice. Moreover, as transboundary risks shift and new cascades come to light, our methodologies must keep pace by evolving to reflect the increasingly interconnected economic, social, and environmental systems they seek to assess, while ensuring that decision-makers are not left navigating tomorrow's risks with yesterday's tools. This consideration should be incorporated as early as possible in the project identification cycle. For example, at AFD, this would mean systematically integrating this dimension during the initial approval committee stage, at the climate-screening analysis stage, which is applied to all projects in the pipeline.

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