

Transboundary climate risk and adaptation

About the WASP and the Policy Briefs

- The *Science for Adaptation Policy Brief Series* is an initiative of the World Adaptation Science Programme (WASP). The briefs target researchers, policy-makers and practitioners to help them bridge the science-policy-action interface.
- The WASP is led by the UN Environment Programme (UNEP), the World Meteorological Organization (WMO), the United Nations Framework Convention on Climate Change (UNFCCC), the Intergovernmental Panel on Climate Change (IPCC) and the Green Climate Fund (GCF). Its Secretariat is hosted at UNEP, Nairobi. The current Chair of the WASP is Dr. Youssef Nassef at the UNFCCC, Bonn.
- WASP's mission is to ensure researchers, policymakers and practitioners have the knowledge and capacity necessary to underpin effective adaptation to climate change.

Key messages

- Adaptation science should support the policy community to adopt a transboundary lens to better manage the systemic nature of climate risk.
- Adaptation is not (just) local or national – it can also be regional or global, it requires scientific knowledge and cooperation at all scales, and should be recognized as delivering, in some cases, global public goods.
- Adaptation is not necessarily benign – it can redistribute vulnerability and create or magnify risk for others, especially across borders.
- Adapting to transboundary climate risk falls between the remits of government departments and national jurisdictions and ends up being “no-one’s job” – analysis is needed to support solutions at various scales.

Introduction

When a global food price crisis occurred in 2007-8, many countries experienced severe social and political unrest. Analysts offered explanations of the causes, which were myriad¹, including not just poor harvests linked to unusual weather, but also the collateral effects of response measures taken by countries to insulate their domestic markets from early price spikes (such as export bans and commodity hoarding). These initial “adaptations” exacerbated the risk for many low-income import-dependent countries, and ultimately turned a series of local impacts into a systemic crisis.

Climate scientists predict more severe and frequent harvest failures in many of the main food-exporting countries in the coming decades as a result of climate change. Against the backdrop of this increasing risk baseline, two lessons from 2007-8 can be drawn: (1) that how

interdependent countries respond to climate impacts and anticipated risks can be as important as the initial impacts themselves in determining levels of damage and disruption; and (2) climate impacts can affect other systems far away from their initial source.

The extent and rate of the cascading consequences of the COVID-19 outbreak in 2020 serve as a reminder of how deeply connected the world has become. How will climate change impact this globalized, hyper-connected world? Adaptation scientists, practitioners and funders need to consider how their work can help to prevent or manage transboundary climate risks.

1. Including high oil prices, the spillover effects of biofuels policy, speculation, diet changes and environmental factors, among others.

What do we know about transboundary climate risk?

As the example of the food price crisis suggests, the impacts of climate change will cross borders through the links and flows that connect countries, communities and companies. Measures taken to adapt to climate change will also have consequences that cross borders, as a result of these same connections. Together, these two dimensions comprise transboundary climate risk.

There is no widely accepted lexicon or commonly applied terminology with which to identify and compare transboundary climate risks². Nevertheless, there is emerging agreement on the intertwined pathways through which transboundary climate risks are expected to be transmitted, including via people, trade, ecosystems and finance. Other categories of transboundary climate risk commonly referred to include infrastructure, security, geopolitical and health risks.

Few studies have assessed the potential magnitude of transboundary climate risk. A 2013 study for the UK concluded that such risks are expected to be equal to or

“an order of magnitude greater” than threats from domestic climate change impacts (PwC 2013). A similar conclusion was reached in a quantitative study of Germany’s exposure to transboundary climate risk via trade (Peter, Guyer and Füssler 2018). A global economic modelling study concluded that investments in adaptation by high-income countries in low-income ones will have a positive pay-back for donors if the feedback effects of trade are considered (Schenker and Stephan 2014). Yet economic comparisons of domestic versus transboundary climate risk – or indeed of different types of transboundary climate risk facing the same country – are lacking. As are studies into the distribution of such risks, for example between sectors or between different groups within society.

However, work has been undertaken to explore the potential distribution of exposure to transboundary climate risk at the global scale. The Transnational Climate Impacts (TCI) Index uses nine indicators of country-level exposure to rank 203 countries and compiles these indicators into a global index. The results paint a different picture of the distribution of climate risk to the one we are used to seeing from more traditional climate vulnerability and risk analyses, which tend to focus exclusively on “direct” climate impacts within country borders and establish a strong correlation with levels of development. For example, 80% of the top 30 countries ranked in the popular ND-GAIN Index (University of Notre Dame 2013) are from Sub-Saharan Africa (SS Africa), with Big Ocean/Small Island Developing States (SIDS) and the Middle East and North Africa (MENA) regions making up the remaining 20%. The top 30 countries in the TCI Index, however, are much more diverse, with Europe the most represented region (with 9 countries), alongside SS-Africa (7), MENA (5, including the top 4 most exposed countries), SIDS (4), Central Asia (3) and South East Asia (2).

Notwithstanding the critical importance of direct impacts, this implies that the characteristics of highly exposed countries may be much more diverse and complicated than previously thought – marked by their dependence on transboundary ecosystems, trade and remittances, for example, or the extent of their connections to highly vulnerable countries through imports, financial investments and/or migration (Benzie, Hedlund and Carlsen 2016). Transboundary risks should therefore be taken seriously by all countries in their adaptation planning.



Source: <https://www.shutterstock.com/image-photo/upset-woman-supermarket-empty-shopping-trolley-1507099391>

2. Terms such as “indirect”, “spillover”, “international”, “teleconnected”, “cross-border”, “systemic”, “impact chain” and “cascade” have been applied to describe the same or very similar phenomena.

Has knowledge on transboundary climate risk informed adaptation policy and practice?

A recent review by the Overseas Development Institute (ODI) revealed that 34 least developed countries (LDCs) reference or explicitly recognize transboundary issues in their National Adaptation Programmes of Action (NAPAs): most commonly in the context of the movement of people, imports (specifically food), transboundary wildlife, desertification and shared water resources. Of these, many – especially in Africa – note the importance of collaborating with direct neighbouring countries on adaptation.

A small number of countries have explicitly attempted to assess transboundary risks at the national or city level³, predominantly to assess the potential implications of climate change on approaches to security, development, diplomacy, trade, food security and migration. Few have translated these into specific adaptation priorities or specified adaptation measures to address transboundary climate risk in their national plans. It is even rarer to find adaptation plans that highlight the potential effect of a country's own adaptation responses on others.

The low level of adaptation planning for transboundary climate risk does not mean that countries are unaware, or that no action is being taken to address such risks. Much of the current effort to identify and govern cross-border risks takes place beyond the realms of what is explicitly called “adaptation”. For example, regional cooperation to build cross-border resilience to drought in the Horn of Africa is actively



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Box 1: Risk ownership remains unclear: the case of the UK

The UK was an early mover in identifying and assessing transboundary climate risk, with the first paper commissioned in 2009 and major assessments in 2011 (Government Foresight report), 2013 (an input to the first national climate change risk assessment (CCRA)) and 2017 (2nd CCRA), highlighting trade and investment, infrastructure, energy and food security and foreign policy as priority categories of transboundary climate risks for the UK. Despite this evidence base, ‘ownership’ of transboundary climate risk is unclear within the UK government structure: acute emergencies are managed by cross-departmental committees, but longer term, more strategic (non-military) risks remain largely ungoverned. Most related actions in the National Adaptation Programme were assigned to UK business, as the day-to-day managers of international supply chains and overseas investments. This example shows that knowledge on transboundary climate risk is not enough to enable or motivate active adaptation to address those risks. Perhaps dedicated institutions or governance mechanisms are required.

pursued via the Intergovernmental Authority on Development (IGAD) and their Drought Disaster Resilience Sustainability Initiative (IDDRSI). The African Union's Great Green Wall Initiative aims to build regional resilience throughout the Sahel and Sahara. Likewise, many International River Basin Organisations (IRBOs) provide a platform for cooperation on water resource management and explicitly deal with cross-border impacts and the effects of upstream interventions. These examples are rarely framed explicitly as “adaptation”, despite their obvious contributions to climate resilience, and as such they are often absent from and governed separately from national adaptation reporting and implementation processes.

There are also UN conventions other than the Framework Convention on Climate Change (UNFCCC) that hold mandates and remits relevant to the assessment and management of certain types of transboundary climate risk, including the Conventions related to desertification (UNCCD), biodiversity (UNCBD) and the Water Convention. In addition, the basic tenets of International Law could be applied to avoid “transboundary harm”, particularly as a result of adaptation in one country that negatively impacts another⁴ (Overseas Development Institute 2020). The opportunities such conventions and legislative tools provide to effectively govern adaptation to transboundary climate risk have not yet been explored in detail.

3. For example, Finland, UK, Canada, Netherlands, Sweden, Germany, Switzerland, Norway.

4. International Law can be seen as a parallel but perhaps stronger mechanism than the somewhat buried reference in Article 4.1F of the UNFCCC, which similarly calls on Parties to employ “appropriate methods” to avoid “adverse effects” from adaptation (and mitigation) projects and measures.

Why should adaptation policymakers and practitioners take note?

An interconnected world in which transboundary climate risk remains largely unidentified, unassessed and ungoverned is in nobody's interest. If countries assume that they can build resilience in isolation, they are likely to face a "climate kick-back" from the negative impacts of climate change on the countries, markets and ecosystems on which they depend. A territorial approach to adaptation – far from serving the national interest – is likely to heighten a country's vulnerability to climate risk, as well as raise the risk exposure of their closest neighbours and allies.

Climate resilience might be under-provided in the absence of meaningful international cooperation. There is a global public good nature to climate resilience in the sense that all countries stand to gain from the enhanced stability, predictability and reliability of global systems, such as markets and ecosystems, and the flows within them⁵. Transboundary cooperation and joint international action on adaptation is also likely to reveal potential synergies, benefits, complementarities and even cost savings.

There are also benefits to be realised for the private sector. Companies will find it much easier to operate internationally if all of the locations where their raw materials, customers, partners and investors are based have adapted to climate change and their supply chains are resilient. Implementing a successful growth strategy will be challenging if companies find themselves increasingly on the retreat from markets that are overwhelmed by climate risk and therefore forced into ever more intense competition for a dwindling supply of resilient resources and customers.

Greater understanding of the ways in which climate risk might propagate through international systems will reveal to international organisations how they can play a valuable role in resilience-building through efforts to mediate countries' disputes or to update and enforce rules that stabilise global trade, finance and migration flows – via the World Trade Organisation, World Economic Forum, International Migration Organisation or the United Nations, for example.

What kinds of adaptation might be effective?

There has been relatively little evidence generated to date to assess the most effective responses to govern, manage or adapt to transboundary climate risks, but multi-level adaptation will almost certainly be required. For example, international cooperation may be necessary to reduce systemic climate risks, especially where there are governance mechanisms to coordinate such action. Transboundary or regional adaptation plans – that bring together actors from different sides of national borders to jointly plan and implement resilience-building measures – may be an obvious (and as yet underexplored) response (Prabhakar, Shivakoti

and Corral 2018). But solutions might also result from local or national adaptation plans that explicitly address transboundary climate risks – either at their "source" (via direct bilateral support to other countries) or their "point of impact" (by adapting domestic systems).

Ideally, mechanisms would be developed to facilitate and incentivise countries to share and even co-create each other's national adaptation plans in order to identify potential transboundary risks and alternative adaptation pathways that both avoid transboundary harm and maximise mutual benefits.

What needs to happen next?

While strides have been made in recent years to acknowledge the systemic nature of climate risk and develop conceptual frameworks to better understand and classify transboundary risks, there are a number of barriers that undermine the capability or motivation of policymakers to manage them. These need to be overcome.

The most obvious pertain to the empirical challenges of dealing with complexity and uncertainty in assessments of multi-tiered spatially-dispersed risks, as well as the lack of established governance mechanisms for addressing systemic risk in today's world.

A territorial framing of climate risk has dominated the adaptation negotiations, which is understandable given the Party-driven nature of the process. The 'location-specific'

nature of direct climate risks goes hand-in-hand with the location-specific mandate or jurisdiction of most policymakers. The result, however, is that "managing transboundary climate risk is currently no-one's job" – as an international workshop on transboundary climate risk, convened by the UK Foreign Office at Wilton Park in 2019, concluded (Wilton Park 2019).

The evidence base that planners can use to derive adaptation priorities for transboundary climate risk is patchy and thin; the data that are available (such as on climate impacts on international agricultural trade) are rarely at the level of detail required to underpin an adaptation assessment. Furthermore, it may be difficult for policymakers to generate significant political reward at the domestic level to justify investments in transboundary climate risk responses, especially given crowded political agendas and the abstract nature (and low public perception) of many of the risks.

5. Not all benefits will be enjoyed equally around the world, but many of the benefits of well-planned adaptation will be « transnational » and even « global ».

A global backlash against the value of multilateralism and a surge in competitive, nationalist and protectionist stances also undermines the spirit of regional and international solidarity needed to effectively address transboundary climate risks. There is even a danger that improved knowledge on transboundary climate risk could motivate countries to adapt strategically, and out of narrow self-interest, in ways that increase the vulnerability of others – for example to securitise high risk supply routes or to retreat from or fortify themselves against highly vulnerable and volatile countries or markets. A cautious approach is needed, informed by critical adaptation science⁶.

Nevertheless, there is a need to move on from a conceptual or analytical focus on ‘defining the problem’ to a counter-balance focus on ‘appraising solutions’: for example, analyses that identify policy entry points, decision-support that accounts for transboundary risks and technical guidance that applies this knowledge to the planning process. There is also a need for more applied, policy-relevant knowledge, for instance around the following research questions:

- What are the key transboundary climate risks from a national, regional and global perspective?
- What measures could reduce these risks – effectively, equitably, justly and sustainably?
- What are the options and prospects for coordinated governance of transboundary climate risk and adaptation?
- How might the geopolitical dangers and inequalities that could result from a greater awareness of transboundary climate risk be avoided, minimized or eliminated?



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The idea that countries, communities and companies can adapt in isolation is hard to accept in an interconnected world, but this is the implicit assumption behind much of mainstream adaptation research and practice. Responding to the global nature of the adaptation challenge will not be easy, but it could inject new momentum and spark new kinds of cooperation on adaptation – raising the bar to the benefit of all.

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6. By which we mean scientific research on and for adaptation to climate change (Klein 2017).

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