BRIEFING NOTE

Transboundary Climate Risks and the National Adaptation Planning Process

NAP Global Network

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1. Introduction

As the impacts of climate change are felt by more and more communities around the world, governments are increasingly using their National Adaptation Plan (NAP) processes to identify and address their medium- to long-term priorities for adaptation to climate change and integrate them into development planning and budgeting processes. Although adaptation is place-based, climate change is not contained within political borders. The impacts of climate change can generate both risks and opportunities at the transboundary level, irrespective of the sovereign boundaries that appear on the map. Similarly, adaptation responses can also have transboundary effects, both positive and negative, and, as such, transboundary coordination and collaboration on adaptation planning should be encouraged to help address and manage these risks.

This brief aims to offer adaptation practitioners, policy-makers, and negotiators—especially those involved in their countries' NAP processes—new perspectives on how the NAP process can play a role in addressing transboundary climate risks. 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 future opportunities for stronger integration of such risks into NAP processes.

2. What Are Transboundary Climate Risks?

Transboundary climate risks are "consequences of climate change that occur remotely from the location of their initial impact, where both impacts, and potentially also responses to those impacts such as adaptation, are transmitted across one or more borders" (Carter et al., 2021, p. 2). While some refer to these risks as "transboundary" (Adaptation Without Borders, 2017; Nadin & Roberts, 2018; Benzie & Persson, 2019; World Adaptation Science Programme, 2021), others describe them as "cross-border" and "cascading" (Carter et al., 2021) or "transnational" (Stockholm Environment Institute, 2016) climate risks.

Transboundary climate risks emerge from the interplay between worsening climate change impacts, complex ecosystems and feedback loops, increasing global economic interdependence, and existing inequalities and socioeconomic vulnerabilities. These factors, particularly when taken together, generate global networks of risks that have consequences for countries' food and water security, trade and energy supply, economic development, peace and security, and biodiversity.

These risks may be transmitted across political or administrative borders through shared biophysical resources and ecosystems; through connected trade, finance, and economic networks (known as "tele-connected" channels); and through the movement of people (Harris et al., 2022). There are several pathways—the links and connections countries share or have established—through which the risks related to climate impacts in one place may be transmitted to another:

- **biophysical connections** through shared ecosystems and natural resources that span neighbouring countries and entire regions: Risks transmitted through this pathway are propagated via transboundary ecosystems, including river basins, lakes, oceans, arid lands, and air currents (for example, basins like Lake Chad or ecosystems like the Himalayas and the Amazon).
- **trade links**, including the flow of goods, services, and commodities, as well as shared infrastructure, flow of capital, and foreign investments: For instance, climate change may impact the production or supply of agricultural outputs, such as wheat, rice, or coffee, in one location (often an agricultural exporter) that subsequently triggers food insecurity in another region (often an agricultural importer).
- **financial connections**, including the flow of capital, remittances, and foreign investment: Climate change impacts on productivity in one location may result in cascading financial risks across economic value chains, incurring financial losses for investors at another location, far from where the impact originally took place.
- **human mobility**, including seasonal migration and forced displacement: Both climate and non-climate drivers of vulnerability may influence migration decisions and impact both the country of origin and of destination.

These risks can be transmitted at different scales and in different ways. They may be transmitted between neighbouring countries or regions, for example, through shared ecosystems. They may also be transmitted between countries without a shared border through tele-connected channels.

The transmission of these risks may also be escalating or diminishing, while multiple climate impacts originating from different locations could result in compound risks for another region (Anisimov & Magnan, 2023).

The interconnectedness and the interdependence of vulnerabilities to climate risk between communities, countries, and regions may require a coordinated approach, including at the international level, to effectively assess and address.

3. Observations From the NAP Document Review

A systematic review of NAP documents aimed to investigate how transboundary climate risks are approached and discussed in the 41 NAP documents (multisector NAPs only) that had been submitted to the United Nations Framework Convention on Climate Change (UNFCCC) by January 2023. It further assessed which transboundary climate risks countries referred to, building on the four main pathways (as outlined above) through which climate impacts can transmit and generate cascading risks across borders and scales.

A content analysis was performed using a subset of questions and a systematic search of keywords associated with the concept of transboundary climate risk and pathways, as outlined in Section 2. It must be noted that there is no internationally agreed-upon definition for transboundary climate risks.[1] The review also examined if countries identified adaptation solutions of a transboundary nature and what opportunities may exist to expand these discussions moving forward. The process of the review encountered some limitations. NAP documents are largely based on the UNFCCC NAP Technical Guidelines by the Least Developed Countries Expert Group, and NAP processes are country driven and do not follow a prescribed framework or set of instructions due to the flexibility embedded in the guidelines. Similarly, the resultant documents vary significantly: they differ in terms of sections, level of specificity, and format, which can make a systematic analysis challenging.

The following section presents the key findings from the NAP document review.

While countries make sporadic references to what can be considered transboundary issues, they do not systematically apply a conceptual logic and deliberative approach to identifying and assessing transboundary climate risks.

From the review of 41 NAP documents that had been submitted to the UNFCCC by January 2023, only two NAP documents (South Sudan and Timor-Leste) have dedicated sections on transboundary climate risks. Most of the NAPs do not explicitly mention or actively explore transboundary climate risks in the sense of climate change consequences that occur remotely from

[1] The review included several different keywords based on the variety of terms being used in the literature to describe transboundary climate risks, such as "transboundary impacts," "transboundary issues," "transboundary considerations," "cross-border risks," "cascading risks," "spillover effects," "collateral risks," and "transnational considerations."

the location of their initial impact. Similar response measures remain within national borders and do not employ a transboundary perspective. NAP documents that do reference transboundary climate risks in some form apply different terminology, including "transboundary impacts," "transboundary issues," "transboundary considerations," "cross-border risks," and "transnational considerations." None of the NAP documents explicitly include transboundary climate risks as part of their climate vulnerability and risk assessment section. This is likely because NAPs take their reference from national circumstances and focus on climate risks that occur within their boundaries. A handful of NAP documents sporadically reference indirect impacts that are due to issues beyond their borders (e.g., commodity prices, trade). For instance, Cambodia, Brazil, Timor-Leste, Sierra Leone, Liberia, and Palestine reference the impacts of climate change on commodity prices, specifically cash crops such as coffee, wheat, and rice. Similarly, Bosnia and Herzegovina, Paraguay, Suriname, Kenya, and Colombia point to possible supply chain interruptions due to climate impacts.

Several NAP documents identify and describe climate-driven changes and risks related to shared ecosystems and natural resources, in particular transboundary waterways, river basins, and lakes.

If countries refer to "transboundary issues," they primarily do so in reference to transboundary ecosystems and natural resources. Of the countries that discuss transboundary ecosystems, almost all are linked to water resources and identify risks such as declines in breeding grounds and fish stocks affecting catches for the fisheries sector; issues of flooding, irrigation, and increasing sediment; and reduced water levels in reservoirs, diminishing energy production. For example, Brazil, Paraguay, South Sudan, and Suriname mentioned their hydropower infrastructure is vulnerable to upstream climate change impacts in neighbouring countries, particularly in the Amazon basin and Nile River regions. A small number of countries with transboundary waterways—Albania, Brazil, and Palestine—also raised concerns about water security unrelated to agriculture and fisheries, and subsequent risks of conflict. However, in the majority of cases, references to transboundary issues stop short of fully articulating the potential impacts of climate change in neighbouring countries that could present risks to shared ecosystems and natural resources.

The transboundary climate risks associated with ocean acidification, warming, and biodiversity decline, specifically the decline in fish stocks and coral reef degradation, are a common theme across coastal countries, including Small Island Developing States.

Climate change has major impacts on oceans and coastal shared resources, particularly fish stocks. Ocean warming and acidification are commonly discussed climate impacts in coastal countries' NAP documents, including their consequences for large- and small-scale marine fisheries, species migration (the move to waters more suitable for feeding), changes in sea levels and associated damages to infrastructure, loss of habitat, and degradation of coral reefs, with subsequent risks to tourism. While these risks are discussed extensively in NAP documents, they are not labelled as transboundary risks. They do not consider their potential to exacerbate

economic or geopolitical tensions, disrupt global fisheries supply chains, or generate cascading consequences for ocean ecosystems.

Several African NAPs note the challenges of and threats posed to cross-border pastoralism in a changing climate.

In West Africa, pastoralism accounts for around 40% of agricultural GDP, providing an important component of rural livelihoods. Several African NAP documents, including those by Chad, Sudan, Central African Republic, Togo, and Niger, mention pastoralists that move across borders for grazing land and water. This transboundary movement exposes pastoral livelihoods to a range of climate hazards, such as droughts, heat waves, and more variable rainy seasons. Climate hazards and slow-onset events in one country or across a multi-country region can trigger impacts that spread regionally through interconnected livestock economies and shared rangeland ecosystems. These may result in modified mobility patterns, tensions between herders, conflicts over water, and subsequent increased vulnerability. For example, Burkina Faso, Niger, Central African Republic, and Togo note the likely increase in pastoral–herder conflict as more people move further across borders to access grazing land and water for cattle. However, the NAP documents reviewed do not directly reference the need for regional climate risk management of cross-border rangelands.

A quarter of the NAP documents scanned mention potential transboundary transmissible disease risks associated with a changing climate.

These NAP documents acknowledge and reference potential changes in the geographical distribution, prevalence, and emergence of vector-borne infectious diseases (such as dengue fever and malaria) under a changing climate and the migration of disease vectors across borders. Although it seems certain that the health impacts of climate-sensitive diseases will increase significantly and likely span across borders, none of the NAP documents reviewed explicitly mention this risk as a cross-border or transboundary climate risk or assess the risks of health impacts in neighbouring countries on health systems in their own country.

A small number of NAP documents refer to supply chains and commodity prices but primarily from the perspective of a country's own ability to export key commodities due to the impacts of climate change.

While some NAPs[2] make reference to fluctuations due to climate change in commodity prices and the availability of food, goods, and services they are exporting, they do not consider the economic vulnerability of their key trading partners to climate change and how this could impact supply chains or the price and availability of key imports. Moreover, none of the reviewed NAP documents refer to the impacts that climate change may have on the flow of remittances from overseas where economic migrants live, nor do any of the NAPs identify the climate vulnerability of public funds or state-owned companies' investments abroad.

[2] Five NAP documents reference commodity price, five mention food security and import and export prices, and three mention logistics impact (13 in total).

Most conflict-affected countries that have submitted NAPs identify climate change as a "threat multiplier" and a potential driver of future transboundary resource conflicts.

South Sudan, Chad, and Benin acknowledge climate change acting as a "threat multiplier" on existing neighbouring conflicts that may directly alter or worsen security within their own country through an influx of refugees across their borders. If NAP documents refer to cross-border conflict, it is often with a focus on shared resources (ecosystems near and across borders). Niger flags the wetland areas of Lake Chad as an ecosystem that hosts many refugees, while Albania flags potential future conflict over transboundary water resources.

Countries identified adaptation options, channels, and actors to address climate change collaboratively within their region.

For countries whose NAP documents acknowledge transboundary climate risks—particularly those framed around shared ecosystems—existing intergovernmental organizations are seen as platforms for scaled-up cooperation in addressing such risks. Four countries—Cameroon, Central African Republic, Niger, and Chad—identified the Lake Chad Basin Commission, while Cameroon and Niger identified the Niger Basin Authority as a means of regional collaboration and governance. Select countries raised the need for bilateral collaboration to address the management of transboundary ecosystems and the climate risks they face. For example, Timor-Leste's NAP describes the country's shared marine, riverine, and terrestrial natural resources and ecosystems with Indonesia and proposes future cooperation with Indonesia on integrated water resource management and whole-basin approaches to managing their shared ecosystems. The most common references related to an interregional approach to adaptation across all NAP documents call for regional approaches for vulnerability risk assessments, data sharing, and bilateral and multilateral research and climate science.

4. The Role of NAPs in Addressing Transboundary Climate Risks

Global interconnectedness has established pathways for the transmission of climate-related risks across sectors and borders, for instance, through trade, finance flows, human mobility, and shared ecosystems. While governments and international bodies like the Intergovernmental Panel on Climate Change (2022) and the UNFCCC have increasingly acknowledged the transboundary nature of climate risk, the examination of NAP documents shows that countries sporadically reference transboundary climate risks and indirect impacts arising from issues beyond their borders. They do not, however, apply a deliberative approach to identifying and assessing transboundary climate risks in their NAPs.

A likely explanation is the dominance of place-based approaches to adaptation, as well as the governance limitations of complex cross-border risks. Conventional adaptation planning to date has focused on local, subnational, or national vulnerability and risk assessments, confining attention to the impacts and responses that they can conservatively control within their own

national borders and unique circumstances. It has been a longstanding norm—underpinned by the principle of state sovereignty—that adaptation is a local and national responsibility, as established by the 1992 UNFCCC Convention text (Benzie & Persson, 2019). Furthermore, the responsibility for adaptation planning often lies within a single ministry that lacks a mandate to consider transboundary effects. It is, after all, the National Adaptation Plan process and not a regional or global process.

Further, given that there is no universally agreed-upon framework to assess transboundary climate risks and measure their significance, it is likely that their dynamics across scales and different means of transmission are not well understood and difficult to account for by adaptation teams (Anisimov & Magnan, 2023). Understanding globally networked risk is not an easy undertaking for research and poses challenges of uncertainty, complexity, and governance. It requires the development of new methods to assess complex risks to better inform climate change adaptation policy and planning.

It must be recognized that NAP processes are already complex undertakings that involve several research and administrative burdens for countries. Adding the assessment and governance of transboundary climate risks to the agenda may be overwhelming. On the other hand, the increasing recognition of transboundary climate risks and potential amplification of their international dimensions arguably requires NAP processes to pay closer attention to their implications and identify suitable responses. Several countries are currently assessing their NAP progress and are updating their plans, providing opportunities for them to consider interregional effects and/or cross-reference the NAPs of neighbouring countries to integrate transboundary climate risks in future iterations.

The review of current NAP documents offers some considerations for how their role may be enhanced to address transboundary climate risks.

Harness the role of non-state actors and intergovernmental organizations who focus on the collaborative management of shared ecosystems and resources or regional cooperation throughout the NAP process.

Many NAP documents identify opportunities and potential mechanisms for enhancing global and regional cooperation to address the impacts of climate change. This includes harnessing the role of non-state actors and intergovernmental organizations whose work focuses on common and shared ecosystems and places that are at high risk (e.g., Lake Chad). Transboundary resource management is not new—transboundary river basin and watershed management, for example, has existed for decades and withstood political and economic upheavals. Transboundary adaptation could build upon such existing legal frameworks, bodies, and mechanisms. Their role may be elevated to fulfill certain regional adaptation governance functions to address transboundary climate risks. This could be done by facilitating cooperation and coordination between existing transboundary initiatives and NAP teams developing adaptation plans or by establishing transboundary working groups on shared ecosystems at high risk (e.g., the Mekong River). These

working groups would allow the fostering of exchanges between countries around shared climate risks, potential policy responses, and best practices.

Some intergovernmental organizations and non-state actors are already engaging in regional adaptation planning and conducting regional vulnerability and risk assessments. For instance, the African Adaptation Initiative is uniquely placed to assess and coordinate transboundary climate risk considerations on the continent. Similarly, the African Union's regional economic communities and member states recently recognized the need to address and manage transboundary and cascading climate risks in its Africa Climate Change and Resilient Development Strategy and Action Plan (2022–2032). NAP teams should be encouraged to identify specific international or regional cooperation mechanisms, non-state actors, and channels of collaboration that they can use and adapt to address transboundary climate risks.

Provide support to NAP teams for integrating transboundary considerations in assessing climate vulnerabilities and identifying and implementing adaptation options.

The current UNFCCC Least Developed Countries Expert Group NAP Technical Guidelines—specifically Element B, Step B.2.A and Element C, Step C.4.B[3]—provide guidance on assessing and raising awareness of transboundary climate risks in NAP documents. NAPs may draw attention to the fact that some climate risks emerge in a dynamic global context that affirms the need for transboundary cooperation (at the regional or global level) to address them. They may highlight existing information gaps and challenges in addressing transboundary issues as they impact priority sectors such as trade, economic development, water resources, forestry, shared basins, and seas. Further, NAP documents may point to the need to strengthen approaches to assess and monitor the regional or multi-country dimensions of risk (e.g., regional vulnerability and risks assessments), as well as the need for comprehensive capacity building on how NAP actors could be supported to consider more transboundary climate risks and how to manage them.

Use transboundary climate risks identified in NAP documents as a basis for developing a more territorial- or ecosystem-level framing of adaptation, facilitating regional collaboration around adaptation planning.

The majority of NAP documents identify climate-driven changes and risks to shared ecosystems and natural resources, in particular transboundary waterways. Some even propose bilateral action or identify regional and international governance initiatives to address identified risks collaboratively, taking advantage of joint adaptation financing opportunities. The evidence of current and projected climate risks to shared ecosystems documented within NAPs is an opportunity for more territorial framing of adaptation planning at the ecosystem level, enabling regional collaboration more naturally.

[3] Element B, Step B.2.A focuses on "assessing climate vulnerabilities and identifying adaptation options at the sectoral, subnational, national and other appropriate levels." "Other appropriate levels" may include regional or global levels. Element C, Step C.4.B focuses on "identify and promote synergy in assessment, planning and implementation of adaptation at the regional level, as appropriate." The step emphasizes that "regional cooperation has to potential to enhance effectiveness and longer-term adaptation planning" to "avoid negative transboundary impacts."

Additional support is required to explore more complex transboundary climate risks.

While the risks to shared ecosystems, such as waterways, have received significant analytical attention, more abstract and complex risks, such as those to supply chains and financial systems, are often overlooked. To boost transboundary climate risk considerations across countries' NAPs, additional support is needed for NAP practitioners to consider these less-explored transboundary risks.

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