

National Adaptation Plans and the indirect impacts of climate change

Introduction

Climate change poses substantial challenges to development around the world, particularly for poorer countries, which means effective adaptation is essential. Many governments are currently drafting variations of National Adaptation Plans (NAP) under the United Nations Framework Convention on Climate Change (UNFCCC), which creates an opportunity to raise the ambition and coherence of adaptation planning to new levels.

Adaptation planning to date has tended to focus locally, reflecting the local jurisdiction of most decision-makers, and the direct nature of many climate impacts. Yet societies and economies do not exist in isolation; through global trade, financial ties and migration, we are highly interconnected. In the context of adaptation, this means that both the climate risks we face, and measures to address them, extend well past territorial boundaries.

This policy brief aims to help countries to take stock of what we call the “indirect impacts” of climate change – impacts that require adaptation in one place as the result of climate change somewhere else – and to address them in their NAP. This approach is in line with the UNFCCC’s NAP guidance, which urges countries to “develop strong working linkages between global, regional and national levels to ensure synergy and coherence of actions”.¹

Few countries have to date taken deliberate account of indirect climate impacts, focusing instead on direct impacts from climate change within their territories. Our focus here is on practical steps that planners can take to identify key indirect impacts and begin incorporating measures to address them in their NAPs.

A simple framework for identifying indirect impacts

Some indirect impacts are fairly straightforward to identify: those that occur just across the border, upstream in a shared river basin, or within the same region. We call these transboundary indirect impacts. Many other indirect impacts, however, occur across larger distances, through trade and other, complex links; we call these teleconnected indirect impacts. The basic concept of indirect impacts is simple: direct impacts (a drought or a flood, for example) affect what we call a “receptor system” (for example, a shared river basin, or an international supply chain), and via one of four main pathways – people, bio-physical, trade and finance – climate risk is transmitted. Figure 1 shows an example of how indirect impacts could affect a country.

The sections below describe each of the four pathways and provide starter questions that can be used to identify specific indirect impacts at the country level. Useful sources of data and further information are provided for each pathway to help NAP coordinators begin to explore these issues.

Countries that are able to answer some or all of these questions, for example in a dedicated chapter of their NAP, will have produced a base upon which to engage relevant

Key points

- Climate change impacts can extend beyond the places where they occur, indirectly affecting other countries through shared natural resources, global supply chains and trade, and the flow of people and finance around the world.
- In crafting their countries’ National Adaptation Plans (NAPs), decision-makers should thus consider not only direct impacts, but also indirect ones. A simple framework described in this policy brief can help them identify and explore key indirect impacts, which can be incorporated into NAPs using existing frameworks.
- Identifying and addressing indirect impacts will help countries to improve the effectiveness of their adaptation plans, uncover specific opportunities for synthesis with other countries, improve regional cooperation, and highlight how adaptation at the national level can improve overall regional and global resilience.

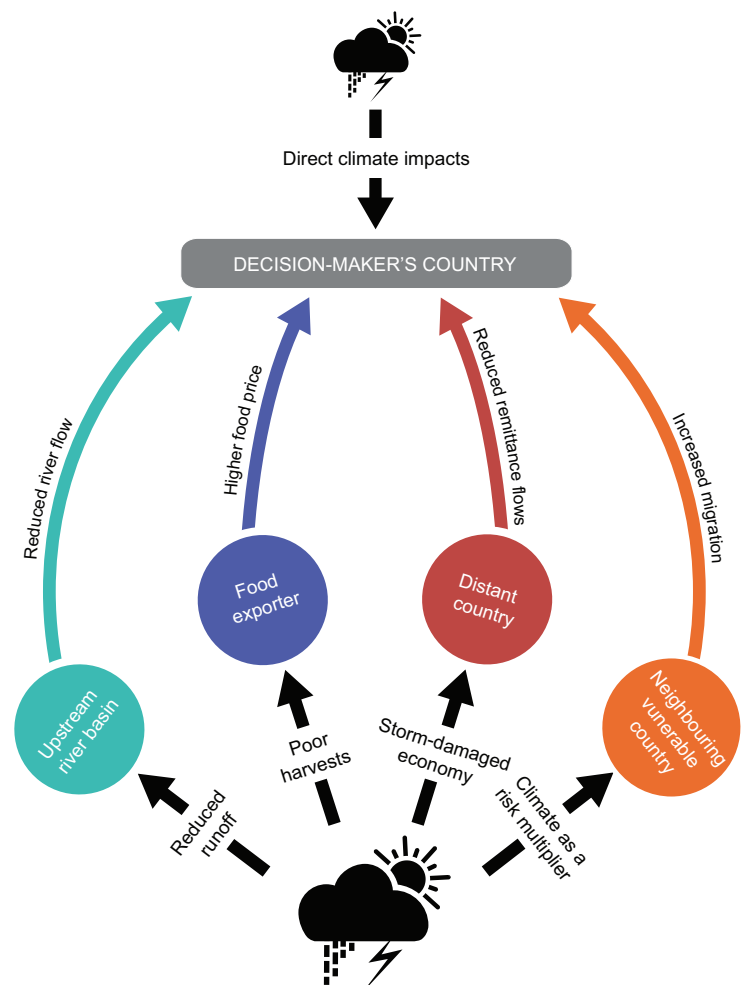


Figure 1: Indirect impacts in practical terms: via four main risk pathways, climate change impacts outside a country – even far away – can come to affect that country.

Indirect impacts and small island developing states

Small island developing states (SIDS) are widely recognized as vulnerable to direct impacts of climate change, particularly sea-level rise. But they are also particularly exposed to indirect impacts. Most SIDS depend on imports for food, fuel and materials – some more than others – and their options are limited by their geographic isolation. This poses a substantial challenge for adaptation.

Nauru has taken an innovative approach to recognizing indirect impacts in its forthcoming national framework for climate change adaptation and disaster risk reduction. It identifies high import dependence as well as the concentration of foreign earnings in a few primary sectors (including fishing) as important sources of vulnerability to climate change. As such, the need to address indirect impacts is recognized as one of the guiding principles in the national framework.

However, the Nauru case also highlights the potential difficulties in addressing indirect climate risks. Recognizing indirect impacts is one thing, but planning strategic responses is not straightforward, and requires a high degree of intra-government coordination. The question of which departments can and should hold responsibility for managing strategies to address indirect impacts – in the context of existing challenges without climate change – remains open and requires further examination.

government departments and stakeholders in a discussion about the potential significance of specific indirect impacts and the priorities for national and even regional and international adaptation.

Many of the questions require a preliminary overview of climate vulnerability in other countries. Such an overview is provided by various climate vulnerability indices, such as the Notre Dame Global Adaptation Index (<http://index.gain.org>). It is important to remain aware of the limits of such indices as decision support tools,² but they may be useful to screen and compare countries on a general level.

For many questions it will be useful to consult other countries' existing adaptation plans for an overview of their key climate vulnerabilities and adaptation priorities – for example, National Adaptation Programmes of Action,³ or even draft NAPs.

The questions help to identify the current exposure of a country to indirect impacts. It is of course important to recognize that links and flows between countries – and hence the risks associated with indirect impacts – will change over time.

People pathway

This includes potential climate-related changes in the pattern of cross-border migration, including forced and voluntary migration, and other changes involving people directly, such as public health impacts and changes in tourism travel. Recognizing that the influence of climate change on migration is highly uncertain, the goal here is to identify potential impacts if there were changes in migration flows linked to climate change.

Key questions:

- Does your country currently receive significant flows of voluntary or forced migrants, either as a transit or destination country?
- Which are the main countries of origin for these migration



A shipment of food and fuel arrives in the Maldives, which imports almost all its supplies.

flows?

- How will climate change affect these “source” countries? Is there a risk of significant changes to migration flows as a result of climate change (where climate change may be one among a number of drivers – or barriers – to migration)?
- How would your country be affected (positively or negatively) by a changing flow of cross-border migrants?
- What current policies or strategies are in place to monitor and respond to significant changes in migration flows into your country?
- To what extent is your country currently affected by public health impacts from the movement of people from other countries? How might climate change in those countries create new public health risks in your country?
- How reliant is your national economy on tourism? How might significant changes in the timing or flow of tourists from other countries affect opportunities for the tourism-based economy?

Helpful resources:

- National migration office statistics
- International Organization for Migration <http://www.iom.int>
- UN statistics on international migration: <http://unstats.un.org/unsd/Demographic/sconcerns/migration/default.htm>
- World Bank Global Bilateral Migration Database: <http://data.worldbank.org/data-catalog/global-bilateral-migration-database>
- World Health Organization – Atlas of Health and Climate Change: <http://www.who.int/globalchange/publications/atlas>
- World Tourism Organization: <http://www2.unwto.org>

Bio-physical pathway

This includes climate-driven changes in the flow of ecosystem services and species via transboundary ecosystems, or in the flow of water or other resources from transboundary systems.

Key questions:

- Does your country rely on transboundary rivers for water supply, and if so, with which countries do you share key river basins? How might climate change affect water flows, upstream and downstream (e.g. in case of droughts or floods)?
- How would changes in those water flows affect people and sectors in your country?
- What existing governance arrangements are in place to manage transboundary water resources?
- How might air quality in your country be affected by climate-related impacts on neighbouring ecosystems, such as increased forest fires, or desertification and dust storms? How vulnerable are neighbouring countries to these impacts?
- Is fishing from open oceans or shared seas an important source

of food and income for some people in your country? How would a change in fish stocks in open waters affect them?

- Could climate change in other countries increase the flow of invasive species into your country – for example, via habitat shift or new migratory patterns?

Helpful resources:

- FAO Aquastat transboundary water dependency ratio: <http://www.fao.org/nr/water/aquastat/data/query/>
- PRIO Shared River Basin Database: <http://www.prio.org/Data/Geographical-and-Resource-Datasets/Shared-River-Basin-Database/>

Trade pathway

This includes climate-driven changes in the price, availability or quality of goods and services imported from other countries, as well as climate-related changes in demand for key national exports.

Key questions:

- What are the key imports in terms of volume and economic value for your country? Which sectors are most reliant on imports?
- Who are your country's key trading partners? How many key trading partners do you have, and how easy is it to switch to alternative trade partners for your key imports?
- How vulnerable are your key import commodities and trading partners to climate change? How might the price, availability and quality of key imports be affected?
- How have you been affected by previous trade disruptions in key sectors/for key strategic commodities? Which sectors and/or populations in your country are most vulnerable to trade-related disruptions?
- What are your most important exports and export markets? How might demand and prices for your key exports be affected by climate impacts on your country and on other countries?

Helpful resources:

- National trade statistics
- UN Conference on Trade and Development statistics: <http://unctadstat.unctad.org>
- FAO Food Security Indicators: <http://www.fao.org/economic/ess/ess-fs/ess-fadata>

Finance pathway

This includes climate-driven changes in the flow of capital from abroad, including returns on public investments such as state-owned companies or state pensions, private investments and personal financial flows such as remittances.

- How reliant is your economy on remittances from overseas? How might climate change and extreme events impact the flow of remittances from key cities and economies where economic migrants are based?
- To what extent are public funds or state owned companies invested abroad? In which sectors are investments concentrated, and how vulnerable are these to climate-related risk?
- How significant is the financial sector to your national economy?
- To what extent are major multinational companies headquartered in your country exposed to climate risks in economies abroad?
- How much of your outgoing Foreign Direct Investment is in economies that are highly vulnerable to climate change?

Helpful resources:

- National financial statistics
- CDP data on global investment and climate risk: <https://www.cdp.net/en-US/Programmes/Pages/climate-change-programs.aspx>
- World Bank remittance data: <http://go.worldbank.org/092X1CHHDO>
- UNCTAD bilateral FDI statistics: <http://unctad.org/en/Pages/DIAE/FDI%20Statistics/FDI-Statistics-Bilateral.aspx>
- IMF Coordinated Direct Investment survey data: <http://elibrary-data.imf.org>
- World Bank FDI outflows: <http://data.worldbank.org/indicator/BM.KLT.DINV.GD.ZS>

Understanding global dynamics

It is also important to recognize that national adaptation occurs in a dynamic global context that itself will be affected by climate change. This could manifest via changes in the general conditions of economic or political stability in neighbouring countries, or the requirements for increased engagements abroad, such as disaster relief or peacekeeping operations.

Countries will need to adapt to a broad set of changes and risks beyond their borders, many of which will be directly and indirectly influenced by climate impacts, as well as other actors' adaptation responses to those changes. Thus, a key question for national adaptation planners to ask is: To what extent is your adaptation strategy dependent on the cooperation and active involvement of key partner countries at the regional or international/ multilateral level?

Indirect impacts and the NAP Technical Guidelines

There is no need to “reinvent the wheel” when it comes to adaptation. Although they are often missed, indirect impacts can be identified and assessed within mainstream adaptation frameworks, such as the one put forward by the Least Developed Country Expert Group (LEG) in the NAP Technical Guidelines document – specifically, in Element B, part B.2, “Assessing climate vulnerabilities and identifying adaptation options at the sectoral, subnational, national and other appropriate levels”.

Here, “other appropriate levels” may be key; local vulnerabilities will often be influenced by regional or global factors, such as trade dynamics; some indirect impacts will require responses at the regional and even global level, via regional trade negotiations or at the World Trade Organization.

Considering indirect impacts simply requires decision-makers to use a broader definition of the systems that might be vulnerable, or that require adaptation. Start by defining the systems that affect vulnerability today. For example, most countries import at least some of their food – therefore, climate impacts abroad are likely to affect food security in some ways.

Below we use the “key questions” from the LEG Guidelines to demonstrate how indirect impacts could be integrated into a NAP, drawing on the example of food security in Senegal.

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Policy recommendations

- All countries should dedicate a section or chapter of their first NAP to the international and transboundary dimensions of their climate vulnerability and adaptation. This chapter should have at least two aims: 1) to identify specific indirect impacts which may be of concern for the country; and 2) to highlight how climate change in the country may create indirect impacts for others, including neighbouring countries, trade partners, and others.
- NAPs should provide an overview of the opportunities and channels for cooperation at the regional and international level to address shared risks and indirect impacts through adaptation.
- NAP coordinators should seek to engage and appoint to NAP Steering Groups new stakeholders internally, such as trade experts and departments; regionally, including fellow NAP coordinators in neighbouring countries and from regional economic organizations; and internationally, including via multilateral forums, in order to facilitate knowledge exchange, identify synergies and address shared climate risks identified in NAPs.
- Draft NAPs should be shared between neighbouring countries early in their development to facilitate learning about vulnerability, impacts and adaptation issues that may have indirect (e.g. transboundary) effects and to identify gaps and shared responsibilities.
- Monitoring and evaluation frameworks within NAPs should explicitly aim to track the development of relevant climate risks in neighbouring countries, as well as progress by neighbours in implementing adaptation to those impacts, in order to consider the implications for national planning.
- Assessments of indirect impacts, for example those affecting international supply chains, could be referenced when appealing or applying for climate finance from bilateral and multilateral sources in order to emphasise the benefits of improved resilience internationally from adaptation at the national or sub-national level.
- The role of the Global Adaptation Network and regional adaptation networks should evolve to explicitly identify and address shared climate risks and transboundary adaptation solutions.
- The Adaptation Committee and the Least Developed Country Expert Group (LEG), supported by the United Nations Development Programme (UNDP) NAP Global Support Programme, should provide advice or guidelines to Parties on how to assess indirect impacts and the potential for coordination between NAPs to address shared risks via adaptation.
- Future versions of the UNDP Adaptation Gap Report should assess the sum of national adaptation measures in NAPs to identify the adaptation gap in relation to indirect impacts and shared climate risks across borders.

Endnotes

- 1 5th Meeting of the UNFCCC Adaptation Committee, Bonn, Germany, 5–7 March 2014. See: http://unfccc.int/files/adaptation/application/pdf/april_2014_eupdate_final.pdf (emphasis added).
- 2 Existing indices do not account for countries' vulnerability to the indirect impacts of climate change. The forthcoming SEI framework for an Index of Exposure to the Indirect Impacts of climate change is an initial attempt to fill this gap.
- 3 For a listing, see: http://unfccc.int/adaptation/workstreams/national_adaptation_programmes_of_action/items/4585.php.
- 4 See: http://unfccc.int/adaptation/workstreams/national_adaptation_programmes_of_action/items/7279.php (p.64 in the English version).

B.2 Key questions⁴

Indirect impacts relevant to Senegal

Which systems, regions or groups work towards key development goals such as food security, poverty alleviation, economic development, etc.?	International food trade, specifically in rice, which is the staple crop in Senegal for both rural and urban consumers (70% imported, 30% of daily calories)
What are the main climate vulnerabilities of those systems/ regions that are key to achieve the main development goals?	Food security depends on the price of rice on international markets, which can be volatile, and is influenced by harvests in producer countries, which depend on climate conditions. Stable prices are essential for poverty alleviation and economic development.
What are the expected impacts of climate change?	Climate change in rice producing regions (e.g. Thailand and Vietnam, from which Senegal currently imports its rice) will increase the risk of poor harvests due to drought, salinization, sea-level rise and flooding. ⁵ Climate change in Asia, combined with other factors, may increase the volatility of rice prices for import-dependent countries such as Senegal.
What are examples of adaptation responses that may reduce the impacts of climate change or exploit opportunities?	Senegal is intensifying rice production with the aim of achieving self-sufficiency. ⁶ Other measures include crop and diet diversification to "spread" risks, reduce dependence on rice imports and increase households' adaptive capacity. At the regional level, via the Economic Community of West African States (ECOWAS), the establishment of a strategic grain reserve to reduce the effect of global price shocks is being considered.

5 Chen, C.-C., McCarl, B. & Chang, C.-C. (2011). Climate change, sea level rise and rice: global market implications. *Climatic Change*, 110(3-4), pp.543–560.

6 A forthcoming SEI discussion brief examines the case of Senegal in detail; find it at <http://www.sei-international.org>.

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