cascades

Cascading climate risks:
Towards adaptive and
resilient European Societies

Cascading climate impacts: a new factor in European policy-making

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Key messages

- Impacts of climate change – such as droughts, floods, wildfires and sea-level rise – can have knock-on effects that cross borders and continents. With its strong links to the rest of the world, Europe is exposed not only to the regional effects of a changing climate, but also the fallout from those materialising elsewhere.
- The effects can cascade and sometimes escalate through security relations, international trade, financial markets, international aid operations as well as migration. However, Europeans are only beginning to recognize the risks, and possible opportunities, associated with these impacts.
- To assess these risks and formulate effective responses demands the involvement of experts and decision-makers in areas such as political science, market regulation and banking who are not normally involved in climate policy discussions.
- The European Green Deal and the EU's actions on adaptation to climate change must recognize cross-border climate impacts and prepare to integrate risk management measures into a much wider group of policies, ranging from trade to welfare.

Introduction

Knowledge of how climate impacts occurring outside Europe might affect the continent is poor, and even less is known about what measures national governments and the European Union (EU) should take to address them.

The scientific studies synthesized in the three recent special reports of the Intergovernmental Panel on Climate Change (IPCC)[1] show that some of the harshest direct effects of climate change are likely to be felt in countries with limited capacity to plan for and cope with them. Many of these effects could reach European countries and potentially 'cascade', given Europe's strong links to the rest of the world via trade, value chains, business operations and financial investments, as well as security, development and diplomatic interests.

As the EU revisits and updates its climate adaptation strategy and deals with fast-changing external relations, it is essential that policy-makers consider the risks of cross-border and cascading impacts and the Union's range of influence for mitigating and preparing for them. In this short policy brief, the newly launched CASCADES project sets out the challenge.

To date, cross-border and cascading climatic impacts have taken governments and business by surprise.

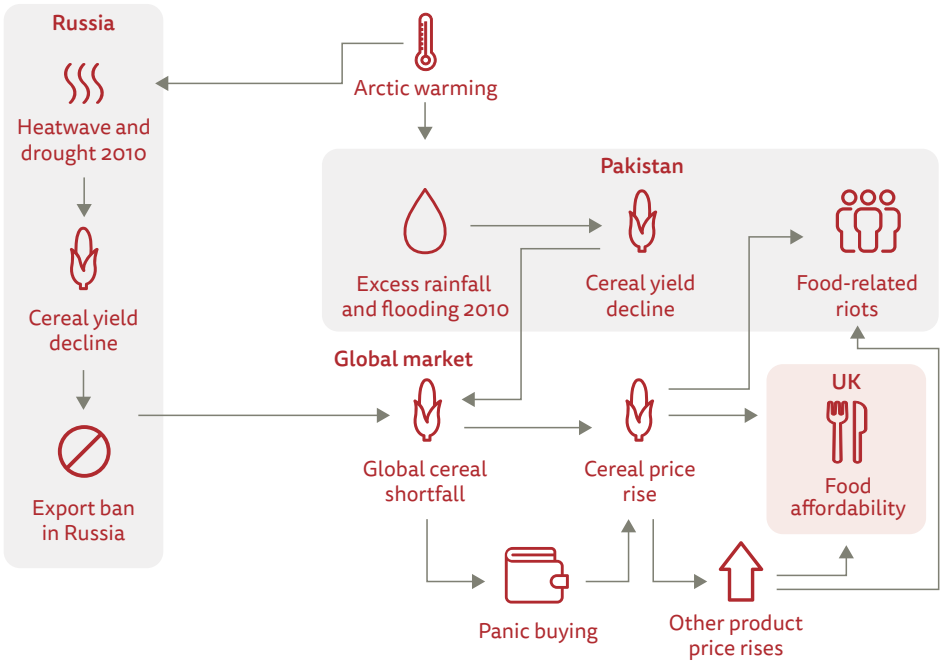
What are 'cross-border' and 'cascading' effects of climate change?

The reach of climate-related environmental events beyond national borders is becoming ever-more apparent: from the extreme weather impacts of melting glaciers[2] to the effects of increasing rainfall variability causing transnational drought and susceptibility to wildfires. Such impacts may not only physically cross borders but can also be transmitted through international processes such as trade and financial flows. Consider a climate trigger, such as drought destroying a crop that was destined for export through global trade. If production losses affect world supply, local hardship may also impact countries that import the produce via higher prices.

These kinds of risks can cascade through multiple physical, human and market effects and responses. The perception of a climate-related impact may be as important as the impact itself as markets attempt to price in future events. Figure 1 illustrates simultaneous initial impacts of such a climate trigger in two countries (Russia and Pakistan), resulting in a shortfall of cereals to international markets.[3] This is based on what happened in 2010 when cereal prices spiked as a result of drought-related harvest failures and a subsequent Russian export ban. This led to higher food prices globally including in Europe – use of food banks in the UK, for example, went up by 50% in 2010.[4] In Egypt (whose government had conducted partial market liberalization reforms), the higher cost of food became one trigger for riots which led to a change of government – although the main drivers of the uprisings were historical and domestic.

This example shows how impacts may escalate rather than diminish with distance and policy challenges could vary greatly across the different regions affected. The global interconnectedness of financial systems, the just-in-time nature of supply chains, and the breakdown of multilateral

Figure 1. An example of cross-border impacts: drought and food prices[5]



cooperation mechanisms (which could buffer shocks), have increased systemic fragility at a time when climate change shocks are intensifying.

Similar patterns are identifiable for major forest fires, floods or hurricanes affecting the EU's trading partners. European companies with assets and operations in affected areas may see shocks influence capital flows, profit margins and insurance premiums, with potential knock-on effects for the banking sector and national economies. Figure 2 gives an idea of the multiple ways in which climate impacts elsewhere could become risks for Europe.

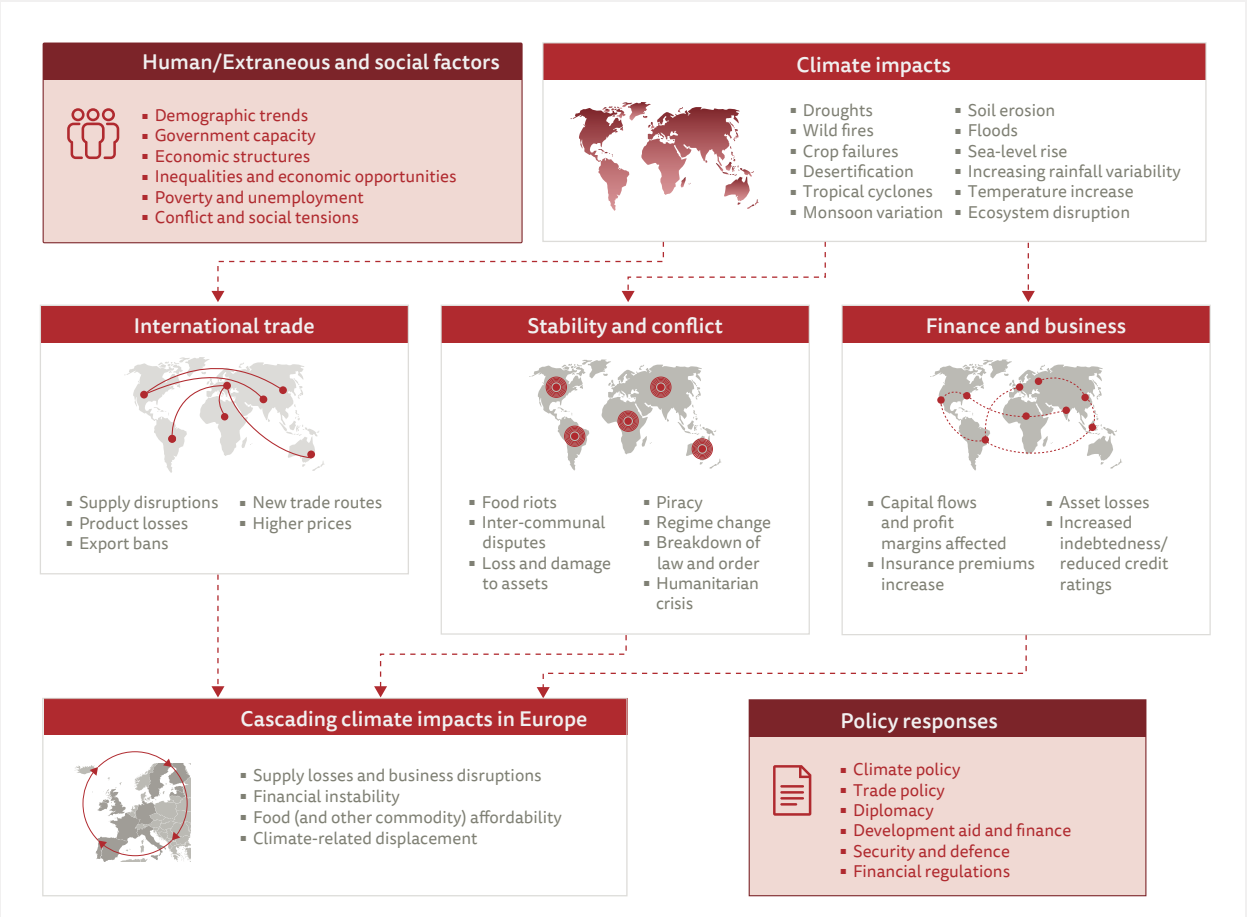
Gradual changes in climatic conditions may also result in cross-border impacts, including society-wide transformations, such as migration induced by land degradation, and impacts offering new strategic opportunities, like the opening of Arctic shipping routes due to ice retreat.

In security circles, climate change is spoken of as a 'threat multiplier'. Whilst it will rarely be the sole driver of a security threat, its effects can amplify local grievances, ongoing environmental problems and governance challenges, potentially prompting competition over resources and political influence, which in turn have cross-border effects.[6]

Resulting geopolitical dynamics could include new alliances between countries facing climate-related national crises and those offering credit and humanitarian response, as well as militarized expansionist strategies where resources become scarce. Moreover, severe and/or repeated climate impacts could overpower the governance capacities of regional powers (e.g., monsoon irregularities in South Asia), with potentially highly destabilizing consequences.

To date, cross-border and cascading climatic impacts have taken governments and business by surprise. We are only just beginning to explore the web of potential impacts, transmission mechanisms, and responses triggered by one or more climate-related events.

Figure 2. Some examples of Europe's exposure to cascading climate change impacts



What does this mean for EU policy?

In Europe, negative fallout from cross-border and cascading climate-related events will be heightened or reduced depending on preparation and policies not only in individual member states, but also collectively at EU level. Risk reduction and timely adaptation are likely to reduce human suffering and be cheaper than post-event response. Understanding likely consequences and trends will also help the EU to capture opportunities, for example in competitiveness and influence in global governance forums.

Responses to cross-border impacts can take many forms. Adaptation actions may focus on reducing the transmitted effects, on diminishing the transmission or on alleviating the initial impacts – for example through international cooperation to build resilience in high-risk regions.

As such, adaptation actions must not be limited to 'climate policies' alone, but rather be integrated into a wider policy mix, including trade, finance, development, emergency response and security. The geopolitical dimensions may be best addressed as part of diplomatic and multilateral governance processes. Full engagement with all these areas of expertise and decision-making will be needed to both assess risks and develop appropriate measures.

As a starting point, the EU should recognize cross-border impacts of climate change in drafting the new ambitious EU strategy on adaptation to climate change announced in the European Green Deal,[7] and ensure that the issue becomes an integral part of the EU Mission on adaptation to climate change, including societal transformation.

Endnotes

1 IPCC (2018). Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty. IPCC. (2019). Climate Change and Land: An IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems, www.ipcc.ch/srccl/; IPCC (2019). Special Report on the Oceans and Cryosphere in a Changing Climate, www.ipcc.ch/srocc/.

2 Milner, A. et al (2017). Glacier shrinkage driving global changes in downstream systems, Perspective, Proceedings of the National Academy of Sciences of the United States of America, www.pnas.org/content/114/37/9770/.

3 Challinor AJ, Adger WN, Benton TG, Conway D, Joshi M, Frame D. (2018). Transmission of climate risks across sectors and borders. *Phil. Trans. R. Soc. A* 376: 20170301. http://dx.doi.org/10.1098/rsta.2017.0301.

4 Challinor et. al.

5 Based on Challinor et. al.

6 Vivikananda, J. et al (2019). Shoring up Stability: Addressing Climate and Fragility Risks in the Lake Chad Region, *Adelphi*, Germany, https://shoring-up-stability.org/wp-content/uploads/2019/06/Shoring-up-Stability.pdf.

7 European Commission (2019). The European Green Deal, 11.12.2019 COM (2019) 640 final, https://ec.europa.eu/info/sites/info/files/european-green-deal-communication_en.pdf.

This policy brief was prepared by Mikael Hildén, Glada Lahn, Timothy R. Carter, Richard J. T. Klein, Ilona M. Otto, Benjamin Pohl, Christopher P. O. Reyer and Fabien Tondel as part of the CASCADES project (2019–2023). CASCADES is an interdisciplinary project funded under Horizon 2020 (grant agreement 821010) devoted to the analysis of cross-border impacts of climate change. It applies state-of-the-art quantitative and qualitative research and stakeholder engagement approaches to identify critical areas of concern for European societies and EU policy and explore different solutions. One of the results will be actionable knowledge on cross-border impacts, co-produced with and for key actors in Europe and beyond.

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