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Adaptation Gap Report 2020

Online annex

Annex 1.

Challenges in estimating adaptation costs

Significant variation exists in both estimates of adaptation costs and adaptation finance. The dimensions on adaptation cost highlight that most estimates significantly underestimate costs.

Adaptation costs estimates need to be made in the context of costs of mitigation and residual impacts. The trade-off between the impacts of climate change (depending on the mitigation level in the cost estimate), the costs of adaptation and the residual costs (after adaptation) profoundly influences adaptation cost estimates. Determining the optimal combination of these three elements is a scientifically and ethically complex undertaking.

Socioeconomic development changes adaptation costs. It can increase costs, for example, when economic activities expand in an area vulnerable to coastal flooding. However, socioeconomic development can also decrease costs, for example, when infrastructure quality improves.

Incomplete coverage of sectors and risks present a challenge. The costs of adaptation for some sectors remain largely unknown, notably for biodiversity and ecosystem services. Among coastal zone risks, for example, erosion and flooding are typically covered, but ocean acidification is not. This means reported costs of adaptation are partial, and therefore, are underestimated. The extent to which omissions of sectors and risks underestimate costs is difficult to ascertain, but it could be significant.

Indirect climate effects amplify costs. Indirect and unforeseen climate change impacts amplify adaptation costs. For example, during the summer drought of 2018 in Western Europe, low water levels in the major rivers in the Netherlands constrained shipping of fuel, causing shortages of fuel at gas stations. Such an unforeseen impact could require additional investments in adaptation that are currently not included in cost estimates.

Omission of autonomous adaptation leads to underestimation of the costs. Most of the literature focuses on planned adaptation and omits autonomous adaptation. For example, farmers take reactive farm-level decisions to changes in the climate, and households could face increased energy costs for cooling. Therefore, estimates underestimate the costs of adaptation.

There are limits to adaptation. Current estimates assume unconstrained adaptation. In practice, however, there will be limits to adaptation, determined by physical and ecological constraints, technological limitations, information and cognitive barriers, and social and cultural barriers. It is difficult to quantify, but nonetheless, evident that such limits result in higher cost

estimates. The relation between limits to adaptation and the costs of averting, minimizing and addressing loss and damage are unclear and remain a major gap.

Integrating positive impacts of climate change can be misleading. Some studies aggregate positive impacts of climate change with adaptation costs, leading to lower overall cost estimates. Aggregated estimates of the negative and positive impacts of climate change are misleading, because they assume that the benefits and the costs affect the same people, sector or country, or that there is the potential to transfer costs and benefits between these.

The co-benefits of adaptation may not be acknowledged. In addition to reducing climate risk, adaptation can have other benefits that are not always included in the benefit estimates. Improving agricultural land management practices, for example, could lead to reduced erosion/siltation and carbon sequestration and therefore generate additional benefit streams.

Addressing the current adaptation deficit relates to the adverse impacts of current climate variability and extremes, which many countries do not incorporate in their adaptation management plans and strategies. While this adaptation deficit is not primarily caused by climate change, future adaptation will be less effective if the adaptation deficit is not addressed beforehand.

Learning, innovation and scale could reduce costs. In some sectors, costs can be reduced through learning and innovation, and with the scale of implementation.

There are limitations on considered adaptation options. Most estimates tend to consider 'hard' structural adaptation measures rather than 'soft' behavioural or regulatory adaptations. This means most estimates underestimate the costs of adaptation.

Implementation costs are occasionally underestimated. Most studies focus on the technical (engineering) costs of delivering adaptation and overlook opportunity costs (for example, the socioeconomic impact of alternative uses of finance) and transaction costs. The actual implementation of adaptation, including design, management and execution, as well as the need for monitoring and reporting, all lead to transaction costs. Arguably, least developed countries in particular also face additional governance costs. These are often not included in cost estimates.

Sources: UNEP 2016; Chapagain *et al.* 2020; Fankhauser 2010; Parry *et al.* 2009

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Annex 2.

Challenges in estimating adaptation finance

The lack of universally agreed modalities to account for international adaptation finance has given rise to multiple accounting practices. Bilateral and multilateral adaptation finance providers have diverse interpretations of key accounting parameters. This makes it very difficult to compare countries' or institutions' reported adaptation finance figures or interpret multi-year changes.

Defining adaptation: The definition of adaptation is highly context-specific. It must take into account multiple future climate scenarios, uncertainty within these scenarios and socioeconomic factors that cause vulnerability. Differentiating between adaptation and 'good' development can be complicated. This challenges the measurement of adaptation finance, as opposed to development finance, disaster risk reduction finance or humanitarian finance. In addition, private sector actors might not realize their activities are contributing to adaptation to climate change, but instead might call these activities business continuity or contingency planning, for example.

Precision: Only a couple of (mainly multilateral) providers have component-level adaptation finance accounting (only a share of the project volume is counted as adaptation finance). Most providers count the whole amount of an adaptation project as adaptation finance. This can lead to huge differences in accounting, in particular for climate-resilient infrastructure – for which the largest share of the total amount is not adaptation-related.

Financial instruments: While some providers only account for concessional flows that meet the strict official development assistance (ODA) criteria, others also account for non-concessional loans, equity or guarantees under adaptation finance. Adaptation finance provision is often reported at face value (instead of, for example, grant equivalents). This makes the financial efforts of such providers considerably larger on paper but not necessarily in practice.

Newness and additionality: Some providers only account for and report as adaptation finance the financial flows that they consider 'new and additional' to ODA. The terms 'new and additional' are included in Art. 4.3 of the United Nations Framework Convention on Climate Change (UNFCCC 1992). However, the interpretation of these terms varies considerably between providers.

Coverage of sectors and sources: While good coverage exists around concessional international public finance flows (predominantly ODA from Organisation for Economic Co-operation and Development [OECD] member countries), much less data exist around mobilized finance from domestic- and private-sector sources. As data coverage increases, care must be taken to ensure this does not lead to overestimates of resources devoted to adaptation that could instead be explained by better data availability.

Double counting: Climate finance contributors report through multiple mechanisms (for example, to the OECD Development Assistance Committee and through biennial reports delivered to the UNFCCC) and climate finance can flow through institutions (for example, contributor countries provide resources to multilateral climate funds that are implemented by multilateral development banks that report both these and their own resources annually), so care must be taken when aggregating this information so as not to overinflate climate finance flows.

Other parameters: Currency conversions to increase comparability can be challenging. In addition, disbursements are not often adjusted for falling technology costs or inflation, nor for purchasing power parity. While some providers report committed adaptation finance, other providers report disbursement figures. For large multi-year loans, significant differences and fluctuations could be observed between yearly commitments and disbursements.

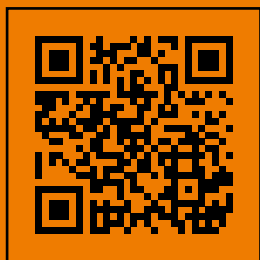
Changing accounting methodologies: Many providers have changed their climate finance accounting methodologies over time, which makes multi-year comparisons almost impossible.

Sources: Adapted from Weikmans and Roberts 2019; UNFCCC Standing Committee on Finance [SCF] 2018

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