Linking Mitigation and Adaptation in Long-Term Strategies

Discussion Paper

Introduction

The 2015 Paris Agreement agreed the goal of 'holding the increase in the global average temperature to well below 2 C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5 C' [Article 2a]. In line with this goal, the Agreement also called on all Parties to 'formulate and communicate long-term low greenhouse gas emission development strategies (LEDS)', taking into account their common but differentiated responsibilities and respective capabilities [A4.19]. These Long-term strategies (LTS) typically extend out to the year 2050. As of November 2018, ten Parties had communicated their long-term strategies to the UNFCCC.

The Paris Agreement also agreed a global goal for adaptation, 'enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change, with a view to contributing to sustainable development and ensuring adequate adaptation response in the context of the aforementioned temperature goal' [Article 7.1]. This raises the question of how to integrate these adaptation goals into LEDS, i.e. so that LTS take account of the changing climate and are climate resilient.

Alongside this, a recent UNFCCC technical paper on Long-term adaptation planning (AC/2018/12) has set out the role for national adaptation plans to 'serve as the main vehicles for national adaptation planning and implementation in the decades to come, while maintaining synergy [with]… the goal to limit the rise in global average temperature'. This therefore raises a similar question, i.e. how to ensure that long-term adaptation plans align with emission reduction goals and are low carbon.

Finally, as mitigation and adaptation are both moving to a long-term planning perspective, an emerging question is whether to move towards combined, synergistic low carbon and climate resilient long-term strategies.

GIZ, funded by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, have commissioned some early research to stimulate discussion in this area. This has assessed the technical and political economy issues with long-term mitigation and adaptation planning, drawing on current LTS practice. This factsheet summarizes early findings from the research and sets out some initial suggestions, but it is primarily presented as a work in progress to stimulate discussion and inputs from other stakeholders.

Mitigation and adaptation

Both mitigation and adaptation reduce the risks of climate change. Mitigation lowers greenhouse gas (GHG) emissions (or captures carbon) to reduce change at the global scale, while adaptation includes a range of measures at different scales to react to or prepare for impacts.

The fact that both mitigation and adaptation reduce risks means that in theory, there could be a global optimal mix of the two. This mix would depend on their relative costs and benefits, but also the level of residual damage (the costs after mitigation and/or adaptation).

In practice, however, mitigation and adaptation are complements, not substitutes. This is because the benefits of mitigation mostly arise later in time (after 2050) - so only adaptation can reduce climate impacts in the next few decades. At the same time, climate change will lead to long-term major impacts, including the risks of catastrophic global discontinuities (tipping points) – and only mitigation can reduce these risks because they are beyond the limits of adaptation.

While for both mitigation and adaptation the national level is important for planning, there are different imperatives for action by country grouping.

The largest impacts of climate change before 2050 – in relative terms – will occur in the least developed countries (LDCs). As highlighted above, these impacts can only be avoided by adaptation. However, economic development (and poverty reduction) can also reduce climate vulnerability in the LDCs, thus there are potential synergies between economic growth and adaptation. The corollary is that ambitious mitigation, if this leads to higher energy prices, could be counter-productive for climate resilient

Published by

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

development (if is not combined with supporting growth policies). This indicates that the primary narrative for LDCs is likely to be towards integrating cost-effective mitigation in long-term LDC adaptation plans.
In contrast, developed countries must reduce emissions if the Paris goal is to be achieved, and these countries also have better capacity and finance to adapt. This suggests that the primary narrative for these countries will be to develop LEDS and mainstream adaptation to build climate resilience.

Linking mitigation and adaptation

There is an existing literature that looks at the potential linkages between mitigation and adaptation in national and sector policy and planning. The IPCC 4th Assessment Report (2007) identified four such linkages:

1. Strategies or options that are beneficial for mitigation and adaptation (win-win or synergistic);
2. Mitigation strategies or options that make adaptation more difficult e.g. that reduce resilience;
3. Adaptation strategies or options that make mitigation more difficult (i.e. increase GHGs);
4. Strategies or options where there is a trade-off between the two, i.e. where prioritising one (e.g. mitigation) is counter-productive for the other (e.g. adaptation) and vice versa.

Much of the policy debate to date has focused on promoting the first of these (i.e. win-win). However, the research study – which has reviewed linkages by sector – has identified many linkages that are negative or involve trade-offs (i.e. that are 2, 3 and 4).
It is also possible to consider the linkages above in light of different levels of ambition. While it might be preferable to have synergistic win-win options integrated into a long-term adaptation strategy, it might be sufficient to avoid GHG increases. Similarly, for LEDS, there is a difference in ambition between a strategy that actively seeks to *deliver* adaptation, from one that minimises climate risks to new low carbon infrastructure.
The review has also investigated which integration opportunities matter the most. While there are hundreds of potential linkages, only a small number are important at the national level (i.e. in terms of national GHG targets or national adaptation plans). For example, warmer temperatures will lead to reactive/planned adaptation and change heating and cooling demand, and thus energy demand: these changes will be material for LEDS. The introduction of biofuels / bioenergy mitigation (including capture) will alter land-use, prices and agricultural and water management, and affect adaptation plans.
However, these linkages need to take account of variation with time, location and context, e.g. higher electricity demand is not a source of additional GHG if the system is already decarbonised.

Review of LEDS and LTS

The research has assessed whether these integration opportunities are being taken up in long-term strategies, starting with the submitted LEDS. A review of these plans finds that they are almost exclusively focused on mitigation (though this is their primary objective). In general, there is little integration of adaptation and little analysis of how the changing climate could affect low emission plans over time. Where links are mentioned, it is mostly in the forestry and natural resource management sectors (e.g. as in the U.S. and German LEDS). Several plans also identify possible urban linkages (building design) but do not provide detailed options or analysis. Part of the reason for the low level of integration is because these countries have separate adaptation plans. The exception is Mexico, which has an integrated plan that captures more (but not all) linkages.
The research then reviewed long-term adaptation plans. Most LDC adaptation plans are medium-term (to 2030), though there are a number of long-term strategies (e.g. Rwanda, Burkina Faso). In general, these are more focused on adaptation, though some include low carbon development including synergistic plans in agriculture and forestry. However, long-term adaptation analysis is based on current sectoral growth trajectories, not low carbon pathways (and thus the differences in land-use availability, technological advances, etc).
The review therefore concludes that the integration of climate change impacts and adaptation in LEDS, and the integration of low carbon futures in adaptation LTS, are at an early stage. Why is this? The reason is that there are barriers that make it difficult to plan and deliver integration or take advantage of synergies in practice.

Analysis of barriers

The research has assessed the various policy, technical, market, financial and governance barriers that act to reduce the integration of mitigation and adaptation in LTS.
The first set of barriers identified are ***policy barriers***, because at the national level, mitigation and adaptation involve different incentives. Mitigation is a global public good and it requires collective action (by all countries) to be effective. In contrast, adaptation has costs and benefits that are local, near-term and accrue to those that take the action.

Mitigation and adaptation also involve different entry points and modalities, that act against integration. Mitigation has mostly been taken forward in stand-alone plans, both short and long-term. In contrast, adaptation is a cross-cutting issue, and it is increasingly implemented through mainstreaming (the integration into existing plans, not stand-alone ones).

There are also ***governance and organisational barriers***. Mitigation and adaptation are taken forward by different sectors: mitigation focuses on the major emitters (energy, transport, industry, and sometimes forestry and agriculture), while adaptation focuses on the most climate sensitive (agriculture, water, health). They also involve different actors, with mitigation delivery through the private sector (energy markets), but adaptation through the public (water, health, natural resource management). There are often different teams, with different disciplinary expertise among the people who develop mitigation and adaptation plans. For example, energy modellers, who develop demand projections and assess technological change, often have less expertise in climate change impacts. Conversely, adaptation planners have specific expertise that aligns to different perspectives, e.g. designing actions that focus on the most vulnerable.

There are also a number of ***market failures*** that act to prevent integration or synergies. If carbon prices were already in place (to reflect the external costs of GHG emissions), adaptation plans would already be prioritising lower emission options. Similar issues exist with impacts and adaptation, especially where this involves public goods or non-market sectors.

There are also ***information and technical barriers***. GHG emission sources are well known, and reductions can be targeted deterministically, prioritising and incentivising the most cost-effective measures. In contrast, planned, pro-active adaptation (the focus for LTS) is time and pathway dependant, site and context specific, and involves high uncertainty and multiple criteria. Its appraisal requires extended cost-benefit analysis and decision making under uncertainty. This makes integration difficult: for example, iterative adaptation does not fit to a LEDS marginal abatement cost analysis. Synergistic options are often more complicated to design. For example, it is relatively easy to design a building to reduce energy use for heating (cold), but more difficult to extend design to reduce over-heating, factoring changing levels of each over a building's lifetime.

Last, but not least, there are ***financial and economic barriers***. The benefits of synergistic policy and integration are commonly ancillary (co-benefits) or non-market in nature. They also involve opportunity and transaction costs that make implementation costs higher. This means that integration may make sense from an economic perspective (in societal terms), but not from a financial one (for private investors). This is compounded by the economics of long-term adaptation. The present value of future adaptation benefits is low due to discounting, which makes it more difficult to justify short-term integration investment. Addressing these barriers will require policy change, but it will also require finance. More positively, there has been a major uplift in climate finance flows for mitigation in recent years. Data from the Climate Policy Initiative suggests that in 2017, global mitigation finance flows amounted to $400 billion/year, with most of this from the private sector. This is good news for LEDS development. In contrast, global adaptation finance flows were tracked at $25 billion/year, all from the public sector (although data on private adaptation finance flows is poor): this lower level of finance will act as a barrier to adaptation integration in LEDS, as well as long-term adaptation planning in LDCS more generally.

Moving forward, the research has mapped the individual barriers to each of the major opportunities for mitigation and adaptation integration. Importantly, this finds that they differ. For some linkages, integration is made harder by policy and governance barriers. In others, it is due to information challenges, or a combination, etc. This has one key implication: it means there is no single solution that will unlock integration or enhance the uptake of synergistic win-win options, it will require a portfolio.

So how can these various barriers be reduced and what are the drivers for change?

There is a strong role for the public sector to create the enabling environment for integration. Most of these barriers can be tackled, but this will require planned initiatives and action. Interestingly, there are already positive examples where such change is happening. The multilateral development banks have recognised the risks of climate change to their infrastructure investment portfolios and are integrating adaptation. They are undertaking climate risk assessments and financing additional resilience (adaptation) for their routine investments, including their mitigation projects, thereby addressing information and financial barriers. Similarly, new initiatives such as the Task Force on Climate-related Financial Disclosures are raising awareness of climate risks within the financial markets. More examples are emerging at the sector and individual option level. The priority is therefore to learn what works and scale up.

Discussion

The research findings address three key questions.

What is the evidence base for joint mitigation and adaptation in LTS?

The research finds that the potential for win-win synergies in mitigation and adaptation planning is less optimistic than portrayed in much of the policy literature. We also find that integrating climate resilience into LEDS - and low carbon measures in adaptation LTS – is important but challenging to deliver in practice. This is because of multiple barriers, (governance, information, policy and finance). Enhancing the integration of adaptation in LEDS, and low carbon integration in LTS, will therefore require a portfolio of measures and actions to address these barriers.

What are the entry points for combining or linking adaptation and mitigation in long-term strategies?

Designing and delivering any long-term strategy is challenging. While many countries have long-term visions (e.g. LDCs produce aspirational long-term economic development vision plan), strategic planning is carried out through the medium-term lens (e.g. 5-year plans).

For LDCs, one entry point is to use these core economic visions and integrate mitigation and adaptation, rather than producing stand-alone plans: this would then cascade down into medium-term national and sector development plans. However, these long-term visions are led by the economic, finance and planning ministries, while climate change is usually led by environmental ministries: integration into national visions is therefore difficult unless there is a high-level political champion. For LDCs, an alternative would be to develop long-term adaptation plans, but integrate low carbon perspectives within these. Such analysis would need to consider the issue of higher energy costs in the short-term, the risks of carbon intensive lock-in (as LDCs move to middle and high-income), but also spill-overs in low carbon technology to LDCs over time (e.g. electric vehicles).

For developed countries, there is a need to enhance the mainstreaming of adaptation in LEDS, but there might be additional entry points through the development of sector LEDS and integration into sector strategies and plans, to ensure sector specific barriers are targeted.

How can LTS be realised and achieve transformation in the context of sustainable development?

Recent climate reports have recommended a shift from current governance arrangements towards multi-level governance, collaborative multi-stakeholder partnerships, and more. This will be needed to deliver transformational change, but it involves major political change.

At a more pragmatic level, there are some success factors that could enhance integration of adaptation and mitigation in LTS. These include the presence of a high-level champion, the involvement of strong Ministries, and the availability of climate finance, accompanied by technical assistance, information and capacity building support. These need to be complemented with more targeted barrier analysis for each integration opportunity.

The study has also identified a number of research priorities. Most LEDS do not consider the impacts of climate change – and the need for adaptation integration – in their scenario development and projections, e.g. how higher temperatures will alter energy demand, or productivity changes in agriculture. Similar issues arise for adaptation LTS, which omit the impacts of low carbon pathways. Factoring in such analysis will signpost the need for integration.

The analysis also finds that addressing barriers is critical for integration. Further work to document the main barriers, and to identify actions to address these, is therefore a priority. This could also include good practice case studies to provide insights and learning on how barriers can be overcome.

To conclude, the research undertaken has shown that despite the difficulties and barriers, the consideration of a changing climate in LEDS and low-carbon visions in LTS are crucial for sustainable futures. The findings presented in this fact-sheet will hopefully stimulate further discussion and we would welcome additional insights as well as comments from stakeholders.

Published by:
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On behalf of the
German Federal Ministry for the Environment,
Nature Conversation and Nuclear Safety

Berlin, 2018

On behalf of:

Federal Ministry
for the Environment, Nature Conservation
and Nuclear Safety

of the Federal Republic of Germany