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Tricky tensions: Being a climate policymaker in the Paris Agreement era

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Key messages

- Whether the Paris Agreement objectives are met depends on domestic policymaking, but the diversity of local contexts, the fast pace of social and political change and the greater importance of markets limit the span of control for the climate policymaker.
- Climate policymakers face many tricky tensions, including: (1) using policy evaluation while the world is changing, (2) taking a firm lead while remaining on speaking terms with society's diverse stakeholders, on whom they depend for implementation, and (3) the need for cooperation while countries and companies are also in tough global competition for the world's clean technology market share.
- To manage these tensions, climate policymakers are advised to shape clear and ambitious climate policy, which takes into consideration regional and national contextual factors and at the same time builds trust through real stakeholder influence in the policy formation phase. However, policymakers should not let those contexts or stakeholders decide policy ambition nor instrumentation for them, and flexibility should not be confused with inconsistency.
- To navigate the tensions between cooperation and competition, policymakers can support international collaboration that is designed to build absorptive and innovative capabilities so that the implementation of more advanced technologies, true competition and localisation of technology is enabled.

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Introduction

The Paris Agreement sets ambitious global goals to limit global warming to well below 2°C and pursue efforts to keep it below 1.5°C. It leaves the implementation of this objective to domestic policymakers. Those policymakers, for instance, need to decide which mitigation policy instruments will be used at what time, and which mix of technologies is supported in earlier innovation phases. One of the challenges for policymakers is to understand what a potential goal of near-zero emissions by 2050 means in terms of today's policymaking.

While the Paris Agreement provisions are challenging enough by themselves, recent developments in many societies and markets put policymakers in an even more demanding position. For example, in many countries, societies are more polarised, and competitive markets and shareholder capitalism have increased their impact on company decision-making, often to the detriment of the health of our environment. Innovation has sped up the development of communication technologies, enhancing people's engagement in single issues, though in many cases not climate change. While there is also good news – many mitigation options offer immediate local co-benefits, also in low-income countries, so that early action need not represent a trade-off with short-term goals – the pressure is mounting to take climate action now rather than tomorrow. Climate policymakers are really not in an enviable position. When implementing climate change mitigation policies to achieve the Paris Agreement goals, they face several tensions and dilemmas caused or enhanced by these societal developments.

But the aim of this policy brief is not to discourage climate policymakers. Instead, our aim is to provide them with actionable insights from research that can help them navigate this challenging environment. While there are many tensions, we discuss three in particular based on CARISMA project results: (1) using policy evaluation in a rapidly changing world, (2) taking a firm lead while remaining on speaking terms with society's stakeholders, on whom they depend for implementation, and (3) the need for cooperation while countries and companies are also in tough global competition for the world's clean technology market share.

1 Policy evaluation in a fast-changing world

While policymakers can avail of a wide range of climate policy instruments – e.g. carbon pricing, renewable energy support, energy efficiency standards – it is difficult to figure out which mix of policies will be the most effective in practice in reducing greenhouse gas (GHG) emissions. For the implementation of the Paris Agreement, policymakers need to learn fast from past successes and failures in both their own and other jurisdictions.

Ex-post policy evaluation, both of effectiveness and ancillary impacts of policy instruments implemented earlier, as well as of the results of policy implementation in other countries, provides information that can inform future policy choices. Information about the functioning of existing climate change mitigation policies can be an important way of

strengthening new and more ambitious policies. Understanding the performance – for instance, in terms of cost-effectiveness or effectiveness in reducing GHG emissions – can help understand what policies have worked in the past, and which policies may need reforming. It can also help understand which sectors are covered by which policies.

However, this information is rarely unequivocal. The world, nowadays, changes fast. By the time the lessons from policies and measures from the past are clear, the context can have changed significantly, making it unclear whether the lessons still apply. What can policymakers still learn from ex-post policy evaluations?

First, we take a look at ex-post evaluations of the effectiveness of policy instruments. The first observation is that ex-post evaluations are conducted much less frequently than forward-looking estimations of the impact of a policy. Second, work carried out as part of CARISMA has shown at least two shortcomings in learning from ex-post evaluations. On the one hand, policy *information* is still lacking in some sectors and jurisdictions. Reviewing 24 databases containing information on climate policies, Bößner et al. (2017) found that the information of policies in place and their impacts is concentrated largely on the energy sector, with an emphasis on energy efficiency. Moreover, data availability is unevenly distributed, with information on policies in developing countries (particularly in sub-Saharan Africa) still being scarce. Most importantly, the databases offer little information about the costs of and actual emissions savings attributed to specific policies, showing that such information is not yet systematically available. If more ex-post evaluations would be conducted in a structured fashion, and all their findings would be shared, for example in an EU-wide or global repository, policymakers would have a greater pool of information on policy effectiveness.

The lack of certain information is in part due to the shortcomings of policy evaluations themselves. A systematic meta-analysis carried out by Fuijwara et al. (2017a) in the EU and six of its Member States (Austria, Czech Republic, France, Germany, Greece and the United Kingdom) confirmed the dominance of the energy sector in the evaluation of climate policies, and a shortage in sectors such as agriculture, waste and land-use. Also, climate policy evaluations tend not to question the adequacy of underlying goals. Most studies are focused exclusively on goal attainment and eschew including criteria such as fairness or coordination with other policies. While such evaluations can aid in understanding of whether certain policies help achieve existing goals, they are less helpful for understanding whether such policies can achieve more ambitious mitigation goals.

But even when policymakers can learn from past successes and failures, new societal developments and economic, social or technological circumstances are constantly influencing the outcome of policies and need to be anticipated. We call such circumstances that differ across jurisdictions and time contextual factors. Most of them are largely outside the direct influence of climate policymakers. Contextual factors partly explain that even if lessons learned from past successes and failures can be useful, they are only indicative and need to be re-evaluated in their new context. New policies do not necessarily yield the same results as existing ones and replication of success stories or good practices cannot be taken for granted since they are highly context-, scale- and time-specific.

Our research provided us with many examples in which contextual factors influenced climate change mitigation policies. For instance, feed-in tariffs in Spain and the UK were ill-equipped to deal with the rapid drop in global costs of solar photovoltaics (PV), which led to inefficiencies and drastic changes to the policy design that did not help the local PV market (Fujiwara et al. 2017b). In the same vein, the market and regulatory framework fell short not only of giving investors confidence and certainty but also proved insufficient to deal with increasing shares of renewable energy, as the market was set up for large utilities with business models which do not fit renewable electricity production patterns. In another example, in the Netherlands, smart grid solutions required cooperation between energy companies, while the EU's electricity market legislation limits cooperation of commercial entities. However, it can also work the other way: in Greece, the EU framework played a positive role, with updates in EU regulation spurring the development of domestic policies and, subsequently, the energy efficiency market, especially pertaining to the energy performance of buildings and innovation technologies (Fujiwara et al. 2017).

Whether contextual factors influence climate change policies negatively or positively, to render climate policy more robust several aspects are needed. First, pertinent information about policies but also about the performance of those policies is key. Well-informed stakeholders and the sharing of good practice examples can make policies more resilient. Second, stakeholders can only be provided with the flexibility to respond to unforeseen consequences - needed in an ever faster changing world - if contextual factors are taken into consideration. Such flexibility must not be confused with inconsistency since clear and long-term objectives are vital for climate change mitigation innovation and investment decisions. And third, policymakers might want to remind themselves that even in a fast-changing environment, they are not only context-takers, but also context-makers and their actions can at least outline the road to be taken.

2 Leading while engaging

Given the effort required to achieve the necessary emission reduction measures, climate policymakers need to lead by setting goals, developing strategies and implementing policy instruments. While this seems like a no-brainer, policymakers do face a tension here as well.

On the one hand, showing leadership often means taking decisions that are not popular with stakeholders such as citizens or companies, thus leading to resistance or lack of responsiveness. For reasons of both democratic accountability and ensuring buy-in, policymakers are expected to adopt climate and other policies through a process that balances the often diverging interests and needs of stakeholders with the likely result of leaving some stakeholders dissatisfied. Moreover, climate mitigation technologies and their implementing policies often come with a trade-off or face significant barriers, also a source for dissatisfaction for some. For instance, many low-carbon technologies are less mature and more costly than their fossil fuel-powered cousins (Bößner 2018). Some technologies may also have adverse environmental and social effects. Crops for biofuels might enter in competition with crops for food, lithium for batteries must be mined leading to land-use change, and hydrogen-based applications in transport and industry are only as sustainable

as the way in which the hydrogen is produced (Böbner 2018). Those trade-offs and barriers have real-world consequences, particularly when stakeholders feel that their concerns are not heard or overlooked and their public opposition leads to the cancellation of mitigation projects such as carbon capture and storage (CCS) demonstration plants.

On the other hand, successfully tackling wicked problems such as climate change requires all concerned stakeholders to be on board. Policymakers can't afford the luxury of ignoring either their citizens or private sector interests. Indeed, citizens are one of the key actor groups on which the government depends. As CARISMA case studies in Greece show, policymakers need to build on the knowledge and skills of citizens while designing policies to make them more acceptable and robust. Moreover, even the best climate mitigation policies can underperform if end-users don't pull their weight. Citizens can form energy collectives, reduce energy use and material consumption, implement renewable energy projects in and around their homes and public buildings, change the way they use means of transport, or change their diets. All those measures help the government to achieve the Paris Agreement's objectives. If society is not on board, those targets are much harder to achieve.

Private sector players are likewise a key piece of the puzzle. Industry needs to make the effort to change installations and processes, and at times even currently lucrative business models. The times that major emitting installations are in government's hands are long past and private interests nowadays often play out across borders and jurisdictions. And while some business sectors are driving emissions up and climate ambitions down, they are also part of the solution. Private sector players are important drivers of innovation (Böbner 2018; Clochard and Alberola 2017). And while some private sector stakeholders might still resist ambitious policies and regulations, more and more businesses openly demand for more robust climate action since a level playing field and a clear market signal are preferable to murky regulation and ambiguity.

This means that there are ways for policymakers to square the circle, to balance the interests of a variety of stakeholders and making them feel heard, while taking firm decisions that enable and give guidance for ambitious climate targets.

Policymakers (and politicians) should give clarity on both long- and short-term targets and firm this up in law. They should add predictability by giving a timeline for decision-making about climate actions, but they should also commit to procedural justice in their interaction with citizens and companies. By doing so, citizens and companies can trust that their interests are taken into account when difficult decisions have to be taken. Moreover, instead of taking decisions which go beyond stakeholders' interests, policymakers are advised to enter in a serious dialogue and listen to stakeholder's grievances, as otherwise implementation can be costly or may stall.

3 Cooperation in competitive markets

The Paris Agreement calls upon parties to cooperate on climate technology deployment and diffusion. At the same time, as more countries and companies are entering the global

marketplace and trade continues to intensify, international cooperation would compromise the ability of companies to reap the benefits of their investments in innovation, and may even be perceived as undermining the competitiveness of economies. How to balance cooperation and competition, especially with new climate change mitigation technologies that are about to get commercialised?

Policymakers already find it challenging to determine how to best target their support for early stage low-carbon technology development and innovation, and what choices to make in innovation policy (Mazzucato 2017). This is because, ultimately, motives leading to decision-making among actors in the field are path-dependent and complex in nature. They are generally overshadowed by high outcome uncertainty and inhibiting barriers are rarely overcome solely with finance and market mechanisms. While technologies to decarbonise our economy already exist (Elkerbout et al. 2018), they are not at the same stage of maturity, and some technologies still need additional research and development (R&D) efforts and tailor-made policy support (Böbner 2018).

The most commonly used representation of this process for energy technologies indicates that a multitude of actors and processes play a role in different stages of development (Figure 1). Successful commercialisation of new technologies in the market depends on policies regulating the demand side (consumers, government) as well as the supply side (i.e. the research community in both the private and the public sectors). The level of policy intervention is expected to reduce as the technology reaches commercialisation, but the level of private and public investment increases with scaling up in the earlier stages.

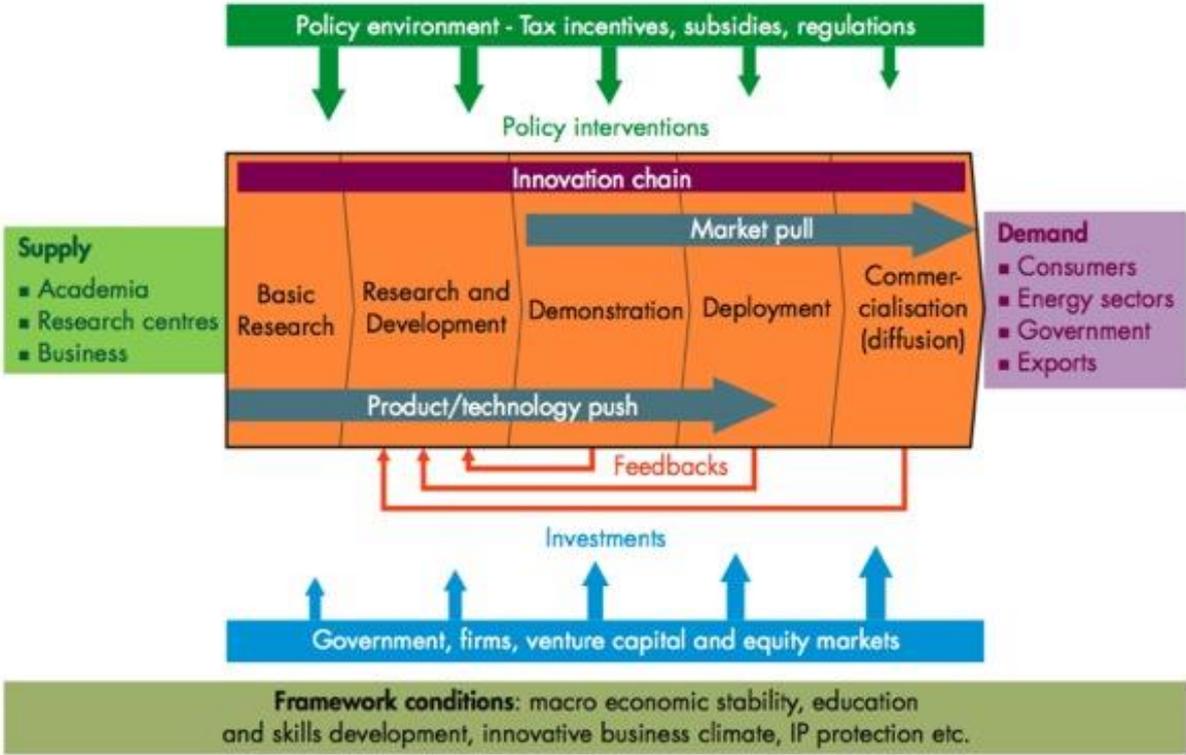


Figure 1. The role of different actors in the innovation chain (IEA 2008; adapted from Grubb 2004 and Foxon 2003)

How does cooperation and competition play into Figure 1 for climate technologies? Generally, cooperation on basic research is welcomed by all potential partners, as everybody can benefit from each other's knowledge to generate new ideas. Cooperation also serves to spread initial costs, and thus lower financial risk. Mature firms may agree to cooperate with young start-up companies if the start-ups have niche knowledge about a specific technology, but are missing financial capability to upscale the technology. Early-stage collaboration between private industry and government is often established because firms often find it too risky to pioneer technology development by themselves. Thus, for governments there exists a clear opportunity at the beginning of the innovation cycle to establish long-lasting partnerships with private sector actors who then benefit from initial public research funding support to mitigate risks embodied in early adoption.

For technologies further advanced in the innovation chain, subsidies, regulation and emissions pricing are examples of policy interventions. Emission pricing has as an advantage that it does not affect the treasury, but to make it effective for innovation is tough. In the EU, low carbon prices have restricted the uptake of clean technology, as the EU ETS failed to spur innovation with carbon prices at around €8 per tonne of CO₂eq emitted (Marcantonini et al. 2017).¹

Recent years have seen considerable growth in the number and variety of international cooperation initiatives (both public and private sector led) seeking to foster the innovation and the deployment of low-GHG energy technologies. This trend includes new cross-cutting technology initiatives, new technology- and sector-specific initiatives, and an increased focus on international energy technology collaboration within existing multilateral entities that have wider economic or political mandates (IEA 2014; 2016). This is also demonstrated by the global clean energy initiative Mission Innovation (2018).

Nonetheless, in stages beyond fundamental research, even as early as the R&D stage, fears that competitors may pick up on the development once it has shown initial success, come into play. Companies and applied research centres reap benefits from innovations by patenting their inventions, which makes the information and knowledge public but restricts the application of the knowledge. For R&D and research and innovation (R&I) cooperation across borders to be successful, clear policy signals are essential for R&I in climate change mitigation (Lindner and de Coninck 2017).

However, policies in target countries are not necessarily consistent, even though, for instance, differences of legal arrangements could discourage private sector actors to engage in R&I collaboration initiatives. However, some differentiation adapted to countries' needs might be needed. According to Glachant et al. (2013), for instance, the best strategy for emerging economies would be to implement climate policies, such as carbon pricing, to encourage sectors to orient their development towards green growth, and to strengthen intellectual property rights (IPRs) to encourage investments in low-carbon technologies. However, for Least Developed Countries, the best solution would be technology transfer,

¹ Recent reforms of the EU ETS have led to price increases, but between 2013 and 2018 the carbon price was hovering below €10 per tonne of CO₂e.

and capacity building is needed the most. This is confirmed by qualitative research in technology development and transfer (Bhasin et al., 2014).

The European Commission offers substantial funding for international collaboration in research, development and innovation on low-carbon technologies. CARISMA discussed a diverse portfolio of funding opportunities and projects between developed and developing countries which have received support (Lindner and de Coninck 2017; Clochard and Alberola 2017). In general, several regional collaborations, private-public and private-private industry partnerships have been established with varying project length and success. Analysing those initiatives allows us to make some recommendations to facilitate future engagements.

We find that the motives of all actors involved need to be thoroughly understood. For governmental actors, international collaborations on technology may be a good vehicle to foster and further diplomatic relationships with the partnering country. When diplomatic relations takes the front seat, technology innovation quickly becomes secondary and may not be pursued. Firms and suppliers of technologies, however, may be driven by new market opportunities and aim for profit when engaging in regional collaborations, a motivation that differs strongly from that of governments or research institutions.

Given the urgency to implement climate-friendly technologies, the later stages of the innovation chain are more relevant. This is also where the investments (public or private), and therefore the commercial interests and risks, are largest. For earlier-stage technologies international cooperation is generally not problematic. In such collaborations, crucial capabilities could be built in countries and companies across the world, which can enable the eventual implementation of more advanced technologies. In later stages, it is key that innovation actors in developing countries can partake on an equal footing. For that, it is recommended that international collaboration for meeting the Paris Agreement objectives is designed to build absorptive and innovative capabilities so that the implementation of more advanced technologies is enabled.

Conclusions and recommendations

Being a climate policymaker in the Paris Agreement era is not easy. Whether the Paris Agreement objectives are met depends on domestic policymaking, but the diversity of local contexts, the fast pace of social and political change and the greater importance of global markets limit the span of control for the policymaker.

The aim of this policy brief was therefore to hearten our climate policymakers and stimulate them, when planning climate development pathways and enabling environments, to address the following three tensions head-on: (1) using policy evaluation while the world is changing, (2) taking the lead while depending on other societal actors for implementation, and (3) cooperate internationally while countries and companies are also engaged in a global competition for the world's clean technology market share. Our well-intentioned words of advice to tackle these tricky tensions are to remain context-sensitive and flexible, to observe procedural justice for citizens and actors in the private sector, and

to focus international cooperation on innovation capabilities and capacity to adopt new technologies in specific local conditions.

Policymakers are advised to seize their democratically conferred legitimacy to shape clear and ambitious climate policy which takes into consideration regional and national contexts instead of letting those contexts decide policy for them. This is also true for innovation and R&D policies where policymakers can contribute to a level playing field between new and innovative technologies and more polluting incumbents by supporting adequate international collaboration for meeting the Paris Agreement objectives, designed to build absorptive and innovative capabilities so that the implementation of more advanced technologies is enabled. This applies to both domestic innovation policies but also for the great potential of international cooperation on R&I. Finally, policymakers could contribute to more robust and accepted climate policies if they facilitate the provision of pertinent and transparent information about policies and their impacts.

Policymakers are not to envy in these difficult times between a rapid changing climate and attacks on the liberal, rule based world order from many sides. However, not all is hopeless and strategies to overcome the climate and societal crisis exist. But with evidence emerging almost on a daily basis that time is running out, we bid them make haste!

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