perspectives climate research

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THE POLITICAL ECONOMY OF ACHIEVING 1.5°C

Potential and limitations of climate policy instruments

KEY MESSAGES

- While there is a vast toolbox of regulatory and financial policy instruments for climate change mitigation, its application requires robust political will.
- The IPCC Special Report on the 1.5°C target specified in the Paris Agreement shows that greenhouse gas mitigation ambition needs to be raised drastically to keep the target of global net zero emissions by mid-century within reach.
- Yet, the report does not address political economy questions like how interest groups influence the design, implementation and effectiveness of mitigation policy instruments. Moreover, it does not discuss how governance should be structured to prevent undermining climate policy ambition.
- In order to mobilize large-scale and cost-efficient investments in rapid decarbonization, governments need to abandon fossil fuel subsidies immediately and introduce effective financial mechanisms such as competitive auctions for renewable energy and emission reductions.
- Forest landscape restoration holds great potential for CO2 removal but requires multi-stakeholder collaboration and the reconciliation of carbon sequestration with agricultural interests, local livelihood concerns, and biodiversity conservation.
- Climate models suggest that reaching the 1.5°C target requires large-scale carbon dioxide removal, including through largely untested technologies. Policy challenges and potential conflicts with sustainable development require dedicated research and international oversight.

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FACING THE 1.5°C CHALLENGE

The recent Intergovernmental Panel on Climate Change (IPCC) Special Report on Global Warming of 1.5°C (SR1.5) states unequivocally that while limiting average temperature rise to 1.5ºC above preindustrial levels is in principle still possible, it will demand unprecedented transitions in all aspects of society and the global economy (IPCC 2018). The report, which involved over 200 leading scientists, had been commissioned by governments after the 2015 Paris Agreement set a 1.5°C warming limitation target. IPCC (2018) summarizes the scientific understanding of pathways towards, and impacts of, limiting warming to 1.5°C against a backdrop of sustainable development. Drafts were reviewed by thousands of experts and government representatives. The report reaffirms the urgency of reaching net zero greenhouse gas (GHG) emissions – a balance between sources and sinks of GHGs – as soon as possible and no later than by mid-century. This requires dramatically increased mitigation ambitions compared to current goals.

THE KEY ROLE OF POLITICAL ECONOMY FOR MITIGATION POLICY INSTRUMENT CHOICE

The importance of suitable policy instruments for mobilizing deep mitigation is duly acknowledged by the IPCC (2018), which stresses the need for high carbon prices and complementary regulatory instruments. Yet, the report hardly draws on the scientific literature on the political economy of policy instrument design and implementation. Analyzing how key actors and interest groups stand to gain or lose from specific policy instruments is crucial to selecting politically feasible instruments and to advancing our understanding of the feasibility of reaching ambitious temperature goals. In the research project Raising Transformative Ambitions - Contributions of Effective Climate Instruments (TABEK), researchers from Perspectives Climate Research and the University of Freiburg analyzed the political economy of introducing mitigation policies. Policy instruments assessed include carbon markets and climate finance, whereas the sectoral analysis focused on forestry (esp. forest landscape restoration (FLR)) and carbon dioxide removal (CDR). The project generated important insights into the design and effectiveness of climate policy instruments in relevant sectors.

THE POLICY CHALLENGE

The rapid decarbonization required to limit warming to 1.5°C demands accelerated deployment of existing and novel zero-carbon technologies and practices, leaving fossil fuels in the ground and the early retirement of carbon-intensive infrastructure – sometimes long before the end of its technical or economic lifetime. This applies to fossil fuel power plants, unsustainable transport systems, energy-inefficient buildings and industrial production processes. Past experience with the design and implementation of mitigation policy instruments for achieving such far-reaching objectives is bleak: Carbon pricing policies, for instance, have often exempted high emitting sectors due to successful lobbying (Michaelowa et al. 2018). Some success stories can be found e.g. in the renewable energy sector. Yet, while there may be declining marginal costs associated with low-carbon infrastructure, the far-reaching transformations required by the 1.5°C (or even the 2°C) target pose a threat to current business models and economic interests of large and powerful companies in energy, industry, agriculture and other sectors. Many of these companies are multinational and some are state-owned; they have significant influence in the jurisdictions in which they operate. They have often successfully hampered ambitious climate policy (e.g. see Baranzini et al. (2017) on emitter lobbying against carbon pricing policy instruments). Emitters also raise legal arguments against early retirement of high-carbon infrastructure by demanding large-scale compensation based on the principle of protection of private property from arbitrary expropriation. Therefore, often only those instruments that benefit well-organized interest groups will be implemented, while costs are spread as widely as possible (Michaelowa et al. 2018).

Electorates have repeatedly been successfully mobilized against structural change propositions that would accompany, e.g., a phase-out of coal power on the basis of fears of losing jobs and regional identity. Concerns relating to local harm from underground storage of CO2 have also limited the application of carbon capture and storage (CCS), which is a central element of the technologically most advanced carbon removal method of combined bioenergy production and CCS (also known as BECCS; see Honegger and Reiner 2018).

Against this backdrop, the fundamental relevance of political economy analysis should be clear. In the following, we take a detailed look at political economy aspects in the areas of climate finance and market mechanisms, forest and landscape restoration and use, and carbon dioxide removal.

MOBILIZING CLIMATE FINANCE AND MARKET MECHANISMS

Delivering emission reductions consistent with a 1.5°C pathway requires innovative policy instruments and financial mechanisms designed to redirect trillions of dollars towards low-, zero- and negative-carbon public and private investments. It is one of the goals of the Paris Agreement to make the financial system compatible with a transformation of the global economy consistent with the 1.5°C target. First, governments and international organizations need to abandon fossil fuel subsidies immediately. Established public financing instruments such as grants and concessional loans need to be upscaled to provide the price signals required to shift private investments towards low-carbon technologies.

Innovative market mechanisms such as auctions for renewable energy or emission reductions could convince policy makers that mitigation costs are lower than expected and thus accelerate mitigation (Michaelowa et al. 2018). These policy instruments improve the efficiency of public climate finance while mobilizing private investment (see e.g. the World Bank's Pilot Auction Facility or the United Kingdom's Contracts for Difference for renewable energy (Bodnar et al. 2017)). Moreover, such performance-based approaches can enhance ambition by identifying high-impact interventions, e.g. regarding heating and cooling technologies that rely on highly potent GHGs. When embedded in ambitious and reliable regulatory frameworks, such

policy instruments accelerate technology development and deployment needed to achieve a 1.5°C outcome. They should therefore be proactively supported by climate finance institutions such as the Green Climate Fund. Moreover, they can enhance the effectiveness of carbon markets under the Paris Agreement by contributing to price discovery.

PROTECTING AND RESTORING FOREST LANDSCAPES

Degraded land is widely available and holds high potential in terms of long-term CO2 removal that could contribute to adaptation, rural development and biodiversity conservation. Although landscape restoration is not a particularly new approach, it still remains heavily underutilized. The political economy around land use planning and land use plays a critical role in understanding why actors decide to leave land in a degraded or unproductive state and rather risk increasing the pressure on (natural) forests even further.

Through FLR decisive contributions for climate mitigation, adaptation, conservation and livelihoods may be achieved simultaneously (Photo by Ollivier Girard/CIFOR)

The experience from REDD+ and the Clean Development Mechanism has shown that land use projects in the context of forest climate governance may produce tensions and goal conflicts between local livelihoods and agriculture, nature conservation and carbon sequestration. Recent FLR efforts such as the Bonn Challenge therefore promote an integrated and holistic approach to landscapes, emphasizing the importance of multi-stakeholder collaboration for co-achieving multiple benefits for humans and the environment.

FLR practice depends on the political will of, and support from, various actors, including (regional) governments, the finance sector, donors, corporate actors in the agriculture sector and local communities (Reinecke and Blum 2018). Questions arise such as how local stakeholders may be more actively involved in the planning, management and monitoring of FLR and how, at the same time, whole agribusiness models can be transformed toward more sustainable practices. Supposedly creating new friction and political and economic losers through such transformations, any FLR project will need to identify ways of reconciling the interests of powerful agricultural actors with the new reforestation agenda in land use, which is often an arduous and time-consuming task.

Political economy challenges are also likely to arise around the bi- and multilateral funding schemes that underpin large-scale restoration programs. In the quest to balance multiple objectives (mitigation, adaptation, development and biodiversity conservation), a system of multiple co-benefit requirements and comprehensive safeguards has evolved around various funds, which imposes high transaction costs on recipients, as seen with REDD+. Grounded in inter-institutional competition for influence, it seems that existing procedures for cooperation among funders lead to an increase in the transaction costs for individual players. While a common system of rules would be the optimal approach for accelerating FLR action, funding organizations do not yet seem to be willing to give up on individual rules (Carrapatoso and Geck 2018).

On a positive note, interests (or rather opportunity costs) in degraded land may be modest compared to fertile land, which offers an unprecedented window of opportunity for substantive transformations in using degraded land. However, taking a political economy perspective, actors should be aware that once this land is restored, new political and economic interests may arise that will put these new carbon sinks at risk.

HOW TO ACHIEVE LARGE-SCALE CARBON DIOXIDE REMOVAL?

1.5°C scenarios require technologies or practices that remove CO2 from the atmosphere through biological, geological and technological processes. Most of the scenarios assume that producing biomass energy and storing captured CO2 in geological formations (known as BECCS) would have to be scaled up to permanently store billions of tonnes of CO2 annually (30–50% of current annual CO2 emissions).

While bioenergy production is expected to increase globally, the amount necessary for most 1.5°C scenarios dramatically exceeds business-as-usual projections. In addition, biomass power plants would need to be equipped with CO2 capture technology and linked to a system to transport and store huge amounts of CO2 safely. While biomass energy production might be politically attractive in some world regions, it is plausible that trade-offs and severe conflicts will emerge with larger scale applications, rendering policy interventions politically fraught and increasingly unappealing. Direct air capture and storage – a more technology-driven approach to carbon removal – is an alternative with fewer land- and water-use trade-offs but higher costs due to its large energy requirements. In addition, most carbon dioxide removal (CDR) approaches do not seem to offer co-benefits besides mitigating climate change.

Given that the costs of necessary resources – including suitable storage sites can vary significantly with location, policy instruments that seek to incentivize CDR will need to be flexible to mobilize the most cost-effective options. Furthermore, progressive industrialized countries would have to take the first step of providing substantial financial means for piloting and scaling-up CDR. In light of currently prohibitive costs, such pioneering measures are required to enable technology learning that drives down costs, while preventing negative impacts on sustainable development

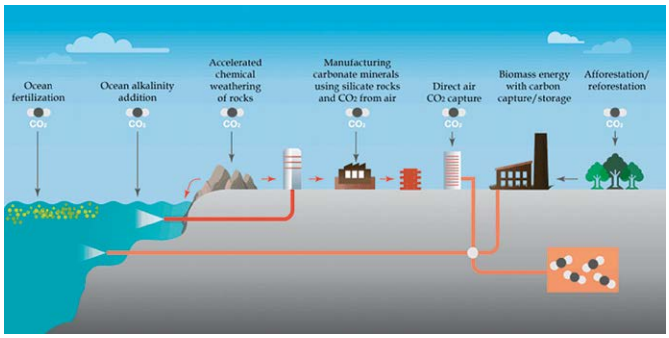

Diagram illustrating carbon dioxide removal approaches (Source: Caldeira, K., Bala, G., Cao, L., 2013. The Science of Geoengineering. Annu. Rev. Earth Planet. Sci. 41, 231–256)

that would occur in cases of excessive land-, water-, or energy use (Honegger and Reiner 2018).

In light of their unique role in eventually enabling net-zero emissions by overcompensating for residual unavoidable emissions, it is necessary to advance CDR technologies in a sustainable manner. Given that CDR has no purpose other than removing CO2, the process of measuring, reporting and verifying the removed amounts needs to be particularly robust and credible in order to maintain a modest level of political support. International oversight and a transparent process to prevent social and environmental conflicts would be crucial elements of policy instruments to develop and scale-up applications of CDR.

CAN POLICY INSTRUMENTS OVERCOME THE POLITICAL ECONOMY CHALLENGES TO ADDRESS THE 1.5°C CHALLENGES?

Evidently, political will is needed for the design and even more so for the implementation of climate policies. Incumbent actors in GHG-intensive sectors – including industry, energy, but also agriculture and forestry – exert substantial political influence that undermines the deployment and effectiveness of climate policy instruments. This is a critical barrier for moving toward the scale of ambition needed to address the 1.5°C challenge. Empirical evidence shows that carbon pricing instruments, especially emissions trading systems, have been "hollowed out" in many jurisdictions (Michaelowa et al. 2018). International policy instruments that mobilize negative emissions technologies are non-existent even though scientifically modelled mitigation pathways rely on large-scale implementation of such technologies later this century. Likewise, landscape restoration efforts have hardly ever succeeded in reaching their full potential. Besides lack of actor coordination, technical capacities or reliable large-scale finance, the mistrust and reluctance of relevant political actors to really engage in climate policy have played a critical role.

Applying a political economy perspective more widely to climate policy and related research is crucial for our understanding of when and how policy instruments can be effective. This is especially relevant in a world with increasing geopolitical tensions, protectionism, ideological cleavages relating to climate policy and a general tendency toward short-termism in policy design.

A key open question is whether progressive governments will find the political will and courage to overcome such barriers and initiate the "unprecedented measures" identified by the IPCC report as necessary to limit warming to 1.5°C. This means putting in place a solid foundation of effective policies, radically increasing NDC ambition in the short term, as well as designing long-term strategies consistent with the need for mid-century balance of emissions and sinks. For industrialized economies, a complete decarbonization of all economic sectors is required. Governments need to find ways to overcome political economy barriers. Extreme meteorological events or political shifts open up new 'windows of opportunity' to advance such ambitious climate policies.

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