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Commentary

Scrutinizing countries' climate commitments: Insights from recovery spending

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The Global Stocktake of the Paris Agreement on Climate Change assesses countries' collective progress toward holding warming to well below 2°C, or 1.5°C. In this commentary, we argue that governments' fiscal responses to global economic shocks provide an important opportunity to investigate the credibility of climate pledges and progress.

The Paris Agreement is the global treaty under the United Nations for the international governance of climate change. It requires countries to submit and regularly update their emissions-reduction targets in the form of nationally determined contributions (NDCs). A process called the Global Stocktake (GST) examines countries' collective progress toward achieving the Paris Agreement goals of limiting warming to well below 2°C, or 1.5°C. Recent studies suggest that warming may be limited to 2°C if all countries' pledges, including their 2030 NDCs as well as their net-zero emissions targets for mid-century and beyond, are implemented.[1] However, the extent to which countries will implement these politically and economically costly policies to achieve their pledges is uncertain.[2]

Recent evidence shows a positive relationship between the ambition of pledges and their *perceived* credibility[3]—that is, the likelihood that the pledges will be delivered. However, whether pledges that are perceived as credible are actually more likely to deliver outcomes has not been assessed. The potential difference between pledges and outcomes has been termed the implementation gap, and recent work proposed that the implementation gap consists of a policy adoption gap and a policy outcome gap.[4] The former describes the difference between pledged emission reductions and projected emission reductions under adopted national policies, while the latter describes the difference between policy projections and eventual policy outcomes (e.g., in emissions). One way of assessing pledge credibility is to estimate projected future emissions under adopted national policies and compare them to the international pledges.[2] However, public policy literature has shown that this is tricky because political systems differ, resulting in diverse policy mixes, and because the effectiveness and ambition of policies critically depend on policy design and policy enforcement, which are difficult to assess and compare.[5,6]

Here, we argue that governments' fiscal responses to global economic shocks provide an opportunity to investigate the credibility of such climate pledges. We postulate that pledge credibility is high when pledges are backed up by equally ambitious national policies *and* green crisis-recovery spending. Put differently, we suggest that the greenness of economic recovery packages helps reveal the extent to which governments prioritize climate policy in the near term.

How credible are international climate pledges?

To contrast countries' climate policy ambition with the greenness of economic recovery packages, we focus on the response to COVID-19 and energy-related recovery spending. We do so because among all carbon-intensive sectors, the energy sector features both the highest emissions and the greatest low-cost mitigation potential[7]: currently, renewable energy sources like wind and solar are economically viable alternatives to fossil fuels under most circumstances. Hence, whether spending is redirected toward clean technologies in the energy sector is largely a political choice.

As might be expected, there is a strong correlation between international and national policy ambition, though nations are generally more ambitious at the international level (Figure 1A). Even so, only Kenya and Nigeria have made international mitigation pledges sufficient to align with the 1.5°C limit of the Paris Agreement. Most countries similarly missed the opportunity to respond to COVID-19 with massive green energy spending to accelerate the decarbonization of the economy. Overall, only 32% of recovery spending was green (Figure 1B). Even more concerningly, when we assess the extent to which national climate policy ambition is translated into the economic policies of recovery spending, there is limited evidence that high ambition is related to greener spending. For example, Peru's national climate policy is relatively ambitious, but none of its quantified energy-related recovery spending was green. Japan's very green recovery spending, on the other hand, stands out against its mediocre national climate policy ambition. As a measure of how much governments prioritize climate action in the near term, recovery spending paints a different picture than national climate policy.

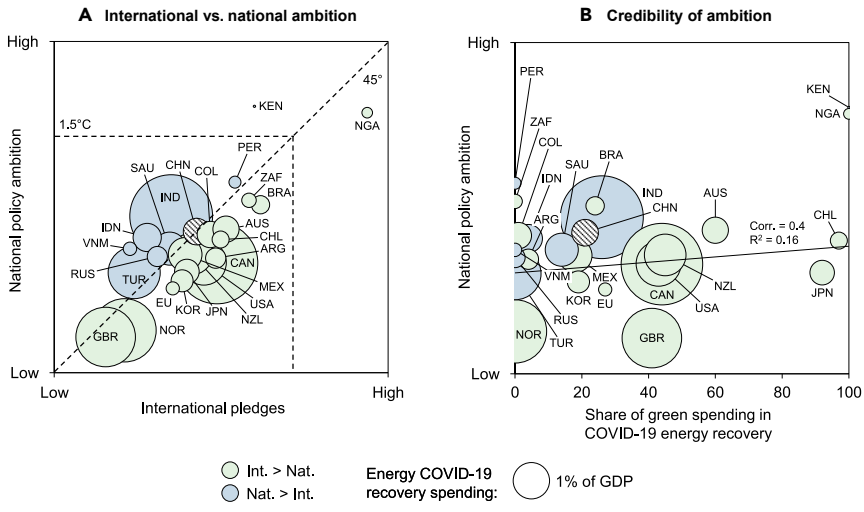

Figure 1. Climate policy ambition and recovery spending

(A) International vs. national ambition (corr. = 0.82). Countries above the dashed 45° line (blue) have more ambitious national policy ambition compared to their international pledges and vice versa for countries below (green). China (hashed) scores equally on both dimensions. Countries above and to the right of the "1.5°C" line have more ambitious policies than reaching 1.5°C would require.

(B) Credibility of national policy ambition according to the green share of recovery spending (corr. = 0.4, or 0.47 when excluding countries with 0% green spending).

Country legend: ARG, Argentina; AUS, Australia; BRA, Brazil; CAN, Canada; CHL, Chile; CHN, China; COL, Colombia; EU, European Union; GBR, United Kingdom; IDN, Indonesia; IND, India; JPN, Japan; MEX, Mexico; KEN, Kenya; KOR, Republic of Korea; NGA, Nigeria; NOR, Norway; NZL, New Zealand; PER, Peru; RUS, Russia; SAU, Saudi Arabia; TUR, Türkiye; USA, United States; VNM, Vietnam; ZAF, South Africa.

Scrutinizing credibility: A research agenda

This simple analysis calls into question the credibility of climate policy for many countries in light of their fiscal responses to an economic crisis, such as COVID-19. In the face of a significant disruption to the world's economies, most governments, at least during initial recovery spending, did not orient spending to advance climate objectives. This observation casts doubt on the ability of countries to deliver on the Paris Agreement, especially in the face of crisis. Yet, this observation is based on a singular crisis response and limited data availability (see experimental procedures). Without a deeper understanding of the underlying drivers, making robust statements about climate policy credibility or predicting reactions to future crises is impossible. Hence, researchers must strive to shed light on the underlying drivers of countries' climate policy credibility to support the GST and the further implementation of the Paris Agreement. We propose three avenues for such research.

First, the politics of economic recovery spending may differ from standard climate politics in ways that help explain why countries adopt ambitious climate policy but fail to channel recovery spending toward green investments, and vice versa. For example, it may be that finance ministries implement crisis responses regardless of climate policy or that the crisis and climate policy domains differ in their insulation from political influence.[8,9] Moreover, climate policies typically aim to restructure economies over a period of years to decades. A country that adopted policies in the years preceding 2020 to achieve an ambitious climate goal by 2030 may, therefore, have entered the COVID-19 pandemic with an economy still significantly dependent on fossil fuel-intensive sectors for employment. Governments may have perceived it necessary to double down on such sectors with their recovery spending to avoid the destabilizing effect of sudden, massive job loss.[10] Consistent with these explanations, an investigation of three OECD countries identified both strong environmental governance and leadership in deploying green technology prior to the pandemic among the key factors governing green recovery spending.[11] To better understand such dynamics, comparing countries with a high fossil fuel reliance but very different crisis responses, such as Nigeria and Saudi Arabia, might produce further insights into how fossil fuel interests play out in crisis responses depending on the policy domain.[12] In this, it is crucial to consider how lasting crises response packages are. In the case of Nigeria, with a very small crisis response budget, it may be the case that the public spending was simply not large enough to trigger opposition from fossil fuel interests. The complexity of these dynamics underlines the need for multivariate analyses using mixed methods to develop policy insights tailored to local context.

Second, more recent experience suggests that the dynamics described above may also be moderated by crisis-specific factors. Following the period covered by our analysis, Russia's invasion of Ukraine provoked a massive increase in energy spending. This included at least $500bn of additional clean energy spending in 2022 since the invasion—exceeding total clean energy spending during the COVID-19 recovery.[13] Yet, the energy crisis also led to new investments in fossil fuel infrastructure and a return to coal in countries that were heavily dependent on Russian energy, such as Germany. This differs greatly from Germany's COVID-19 recovery response, in which fossil fuel-related energy spending primarily consisted of industry bailouts (e.g., airlines) and relief packages for coal and auto industries that were linked to transformation targets (e.g., phasing-out lignite). Unpacking crisis-specific moderators, such as competing policy goals (e.g., energy security vs. decarbonizing) could further help explain the (in-) consistency between climate policy and recovery spending, thus contributing to making climate policy more robust in times of crisis.

Third, the political costs and opportunities of green spending may differ between OECD and non-OECD countries. The former, on average, have healthier public finance, which gives them more levy to increase and redirect fiscal spending. At the same time, these countries are less reliant on international support for recovery spending. They may therefore exhibit stronger influence of the national political economy. While the number of analyzed countries in Figure 1 does not allow for robust conclusions, we observe a much higher correlation between national climate policy ambition

and green recovery spending for non-OECD countries compared to OECD countries. Yet, non-OECD countries, on average, exhibit smaller energy-related COVID-19 responses compared to OECD countries (0.7% of GDP compared to 1.4% of GDP). Nigeria and Kenya are examples of non-OECD countries that achieved extraordinarily high shares of green recovery spending, albeit small in absolute terms, suggesting a complex relationship between development status and green recovery. Future research should investigate variation in political economy drivers by development status as successful policy strategies may differ.

The outcome of the GST will undoubtedly underscore the persistent challenges involved in translating ambitious climate goals into action. As countries grapple with how to address the outcome of the GST—including, potentially, through more ambitious climate pledges—the credibility of those pledges will draw greater scrutiny. To assist this process, research can contribute by investigating the political economy dimensions of crisis response and how these interact (or fail to interact) with climate policy in various national contexts. This could shed light on the factors that make climate pledges more robust, shepherding climate policy into a polycrisis era.

EXPERIMENTAL PROCEDURES

Resource availability

Lead contact

Inquiries related to the article or the data should be directed to Florian Egli (florian.egli@gess.ethz.ch).

Materials availability

This work did not generate new materials.

Data and code availability

Data underlying Figure 1 is publicly available and can be downloaded from Climate Action Tracker[14] and Energy Policy Tracker.[15] No code was used in the analysis.

Analysis summary

We present a simple correlational analysis that compares countries' international commitments, national policy ambition, and greenness of COVID-19 recovery packages, focusing on the energy sector, including production and consumption (e.g., extraction, infrastructure, power generation, buildings, mobility). International and national ambition are derived from the Climate Action Tracker (CAT),[14] while the greenness of recovery spending is derived from the Energy Policy Tracker (EPT).[15] Our dataset covers 24 countries plus the EU, representing 88% of global GDP.

International policy ambition describes the relationship between each country's projected 2030 emissions under its NDC and the average of two CAT-defined benchmarks representing the fraction of the global emissions reductions needed to limit warming to 1.5°C that the country should deliver, as of September 2022. These benchmarks are the "fair share" benchmark and the "modeled pathways" benchmark. Under the "fair share" benchmark, the global reduction is divided among countries according to equity-related principles from the effort-sharing literature. Under the "modeled pathways" benchmark, the global reduction is divided among countries according to where mitigation can be achieved at least cost.

National policy ambition describes the relationship between each country's projected 2030 emissions under its current domestic policies, as of September 2022, and the same average benchmark described above.

Green recovery spending is calculated as recovery spending that enables the use of low-carbon energy with negligible environmental impacts or that may enable the use of low-carbon energy conditional on other contextual factors ("clean unconditional + clean conditional" divided by "total energy-related recovery spending"). An example of contextual factors would be subsidizing electric vehicles, which is counted as "clean conditional" irrespective of the current electricity generation mix of a country. The EPT data is limited to green policies that can be linked to quantified public spending, excluding regulation without defined spending that may have environmental implications. For example, policies such as a feed-in tariff or a renewable energy auction policy are often unquantified (e.g., Kenya) and therefore not counted toward green spending. Moreover, some countries have enacted relief measures for fossil-intensive industries conditional on environmental criteria such as emission reduction plans ("fossil conditional"). An example would be the bailout of Air France, which was conditional on emission reductions. We do not include such policies in our calculation of the green share of recovery spending, and our estimate may therefore represent a lower bound for green spending. Policy data from the EPT includes quantifiable policies enacted in 2020 or 2021 with data as per September 2022.

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AUTHOR CONTRIBUTIONS

F.E., A.S., T.S.S., T.F., and N.S. conceptualized the article. N.S., T.F., and A.S. collected and prepared the data. F.E. analyzed and presented the data. F.E., T.F., and T.S.S. wrote the article with inputs from A.S., A.P., A.I., and C.B.

DECLARATION OF INTERESTS

The authors declare no competing interests.

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