Scientific Report

SNIS Project: What explains ambitious climate policy? Comparing updated climate targets and COVID-19 recovery packages and their drivers

Project: What explains ambitious climate policy? Comparing updated climate targets and Covid-19 recovery packages and their drivers

Authors: Tobias Schmidt[*†], Anna Stuenzi[‡], Jonas Meckling[§], Taryn Fransen[‡], Christopher Beaton[**], Florian Egli[*], Adrianna Pineda[*], Abdulrasheed Isah[*]

Picture: from final dissemination event at UN climate talks (COP28, 2023) in Dubai (credit: Luis Zamarioli)

February 2024

[*] Swiss Federal Institute of Technology Zurich
[†] Correspondence: tobiasschmidt@ethz.ch
[‡] University of St. Gallen
[§] University of California, Berkeley
[**] International Institute for Sustainable Development

Executive Summary

The beginning of the 2020s is a critical moment for climate action for two reasons. First, starting in 2020, countries submitted their first updated Nationally Determined Contributions (NDCs), outlining their climate targets. The ambitions of the updated NDCs will provide an early measure of whether the Paris Agreement's ratcheting-up mechanism – one of the key elements of the agreement – are working. On the other hand, the global COVID-19 pandemic and subsequent considerable COVID-19-related fiscal stimulus packages represent a critical juncture for climate change mitigation. For researchers, the fact that the NDC updates coincides with COVID-19 stimulus plans provides a unique opportunity to assess whether countries' long-term ambitions in NDCs are aligned with the "ad hoc implementation" of climate ambition in stimulus packages. The (non-)alignment of short-term action with long-term stated goals had not been sufficiently analyzed in the existing literature and is therefore at the core of this project.

Our project exploits the simultaneous overlap of the first global NDC update and the pandemic fiscal responses to contribute to our understanding of the challenges policymakers face in closing the emissions gap, the role of the multilateral development banks, and functioning of the international climate finance architecture in the aftermath of the Paris Agreement. The project is organized along three main research tasks.

In Task 1, we focused on analyzing the relationship between countries' climate policy ambition and the greenness of fiscal stimulus packages during the COVID-19 pandemic. Our results showed that there is a correlation between international and national policy ambition, with countries generally being more ambitious at the international level. Most countries missed the opportunity to respond to COVID-19 with massive green energy spending to accelerate the decarbonization of the economy. Overall, only 32% of stimulus spending was green. In a related paper, we map the variation in pledging behavior based on existing literature to determine which countries are over-pledging and which are under-pledging.

In Task 2, we focused on quantifying and conceptualizing an emissions gap between countries' climate pledges globally. We found that the policy adoption gap varies widely across countries. For the first round of NDCs-the emission reduction pledges that countries made under the Paris Agreement-the policy adoption gap ranged from -84% to 85% as a fraction of each country's 2019 emissions. Countries with a positive gap have projected emissions higher than their targets, meaning they will need stronger domestic policies to meet their targets, all else equal. Meanwhile, countries with a negative gap are already on track to exceed their targets under current domestic policies. Cross-country variation in the policy adoption gap may be due to strategic pledging behavior, domestic institutions, interest group politics, and public support.

In Task 3, we developed a consistent and replicable approach for estimating bilateral climate finance from ODA using a novel machine learning algorithm, ClimateFinanceBERT. We identified 82,023 bilateral climate finance projects (48% mitigation and 52% adaptation), representing US$80 billion in disbursements (65% mitigation and 35% adaptation) between 2000 and 2019. Bilateral climate finance flows increased from US$0.5 billion in 2000 to US$7.7 billion in 2019, with mitigation finance consistently outpacing adaptation. However, the gap has narrowed to a factor of 1.4 in 2019. Ongoing work is uncovering the mechanisms behind the formulation of international pledges and national action.

Introduction

Mitigating climate change and adapting to its impacts are one of the biggest challenges facing policymakers. In 2015, world leaders adopted the Paris Agreement to keep global temperatures ideally below 1.5 degrees Celsius. However, based on the climate targets in their Nationally Determined Contributions (NDCs), countries are falling short of this ambitious goal[1,2]. Despite the commitment to update NDCs every five years with higher climate ambitions, whether policymakers adopt and implement ambitious targets depends largely on a wide range of economic, political, and social factors.[3,4] In this context, the COVID-19 pandemic and subsequent fiscal spending have been championed as an opportunity to drive green economic recovery and contribute to the global fight against climate change, for example by investing in clean energy and phasing out fossil fuel subsidies[5,6]. This research project exploits the simultaneous overlap of the first global NDC update and the pandemic fiscal responses to contribute to our understanding of the challenges policymakers face in closing the emissions gap, the decarbonization potential of the multilateral development banks, and functioning of the international climate finance architecture in the aftermath of the Paris Agreement (See Appendix Table A1).

Our research relates to a bourgeoning body of literature in political science, economics, climate governance and finance. The existing literature on national climate ambition examines several categories of potential drivers, ranging from institutional differences to dependence on fossil fuels, demographic factors, or economic policy traditions of states. With respect to NDCs, the focus has been on a set of quantitative and qualitative questions. For example, an active integrated assessment modeling community has quantified the collective impact of NDCs on global greenhouse gas (GHG) emissions[7,8] and on the economy[9]. Moreover, an extensive qualitative literature provides insights into how first NDCs address a wide range of topics, including mitigation ambition[7], equity concerns[10,11], climate finance[12], and climate governance mechanisms[13]. With respect to the pandemic, how emissions evolve in the medium and long term after a crisis depends primarily on the level of climate ambition in the associated economic stimulus package[5,14]. Governments can impede climate policy ambitions, for example by providing bailouts to fossil fuel industries that contradict NDCs' stated climate commitments or accelerate ambition by reallocating spending to low-carbon activities and providing incentives for decarbonization.

While the existing literature on NDCs and the role of crises on climate ambition provides valuable insights, there remain three key research gaps related to 1) the dynamic changes in NDC climate ambition, as well as the correlation of NDC climate ambition with COVID-19 stimulus packages, 2) the political and economic drivers underlying national climate ambition in both NDCs and stimulus packages, and 3) the role of policymakers and international financial institutions in enhancing the effectiveness of the international climate finance architecture. This project aims to tackle these knowledge gaps with two broad research questions:

1. How ambitious are countries' updated NDCs and COVID-19 recovery packages and to what degree do they correlate?
2. Which political and economic drivers can explain country differences in climate ambition of NDCs and recovery packages?

Task 1: Assessment of the climate ambition in both updated NDCs and COVID-19 recovery packages. Mapping of climate ambition across countries.

Recent evidence shows a positive relationship between the ambition of climate pledges and their perceived credibility[15]. However, whether pledges that are perceived as credible are more likely to be delivered has not been assessed. Here, we argue that governments' fiscal responses to global economic shocks provide an opportunity to investigate the credibility of such climate pledges[16]. 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. Thus, this task is focused on understanding the relationship between countries' climate policy ambition and the greenness of economic recovery packages based on the response to COVID-19 energy-related recovery spending.

We combined multiple datasets from leading climate institutions and think tanks. International and national ambition data is derived from the Climate Action Tracker (CAT), while the greenness of stimulus spending is derived from the Energy Policy Tracker (EPT), published by the International Institute for Sustainable Development (IISD). Our dataset covers 24 countries plus the EU, representing 88% of global GDP. We carried out a correlational analysis that compares countries' international commitments, domestic policy ambitions, and the greenness of COVID-19 mitigation packages, focusing on the energy sector, including production and consumption.

Our results showed that there is a strong correlation between international and national policy ambition, though nations are generally more ambitious at the international level[16]. Despite this, only Kenya and Nigeria have made international mitigation pledges sufficient to meet the 1.5°C limit of the Paris Agreement. Most countries missed the opportunity to respond to COVID-19 with massive green energy spending to accelerate the decarbonization of the economy. Overall, only 32% of stimulus spending was green (Figure 1B). More worryingly, 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 associated with greener spending. For example, Peru's national climate policy is relatively ambitious, but none of its quantified energy-related stimulus spending was green. Japan's very green stimulus spending, on the other hand, contrasts with its mediocre national climate policy ambition. As a measure of how much governments prioritize climate action in the short term, stimulus spending paints a different picture than national climate policy.
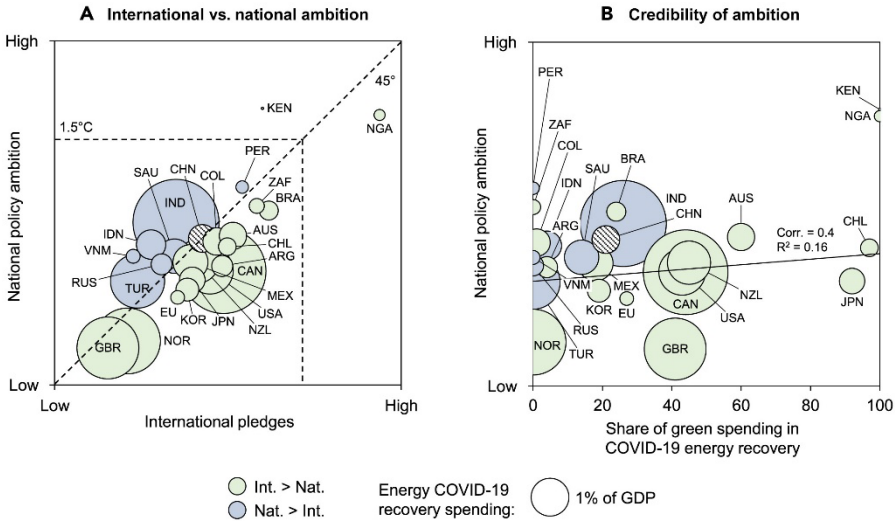
Figure 1: (A) International vs. national ambition (corr. = 0.82). Countries above the dashed 45° line (blue) have more ambitious national policy ambition compared to their international pledges and vice versa for countries below (green). China (hashed) scores equally on both dimensions. Countries above 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).

Further ongoing research paper in Task 1:

1. "Assessing the climate finance needs of developing countries to implement the Paris Agreement" (Current Status: Under Review).

Summary: Climate finance is critical for developing countries to achieve the goals of the Paris Agreement. Understanding their specific needs and priorities is essential for the international climate finance architecture. Here, we propose a novel framework for measuring the specificity of developing countries' climate finance needs and build the climate finance needs specificity (CLIFS) dataset by analyzing nationally determined contributions (NDCs) from 133 countries. Our results show an increase in the specificity of climate finance estimates since the Paris Agreement at the thematic, sectoral, and sub-sector levels, but also strong variance across countries.

Task 2: Analyses of country-level drivers of climate ambition in NDCs and recovery packages. Focus on the role of positive feedback from national green coalitions.

The existence of an emissions gap between climate pledges and outcomes is widely acknowledged. However, quantifying this gap and conceptualizing the role of institutions and stakeholder feedback, has remained elusive[17]. Here, we argue that this gap contains two parts: one in the policies that countries adopt, and the other in the outcomes that these policies achieve. Under the Paris Agreement, when a country first sets a target, an *implementation gap* — the gap between a country's future emissions under the target and those under its current policies — is expected, because countries typically set targets beyond what they are already on course to achieve. If such a gap lingers over time, however, both national and global climate goals will fail. Together with an *ambition gap* — the difference between pledged emissions targets and emissions pathways in alignment with a given temperature goal, such as 1.5 °C — the implementation gap contributes to a large deficit between the emissions pathway that is consistent with limiting warming to agreed levels and the pathway that the world is currently on track to follow. Despite its relevance, however, the implementation gap has not been thoroughly conceptualized.

In this task, we merged variables from different databases. First, we gathered data on countries' climate pledges and their alignment with the Paris target from Climate Action Tracker (CAT). Climate ambition rankings in NDCs ranged from 'critically insufficient' to 'Paris Agreement compatible (see for more information). Second, we obtained data on strength of climate policy and actual implementation from the Climate Change Performance Index (CCPI) published annually by the Germanwatch. We used the data to constructure variables including policy adoption gap, climate policy score, climate outcomes index (see figure 3).

We found that the policy adoption gap varies widely across countries[17] (figure 2). During the first round of NDCs — the emission reduction pledges that countries make under the Paris Agreement — the policy adoption gap ranged from –84% to 85% as a fraction of each country's 2019 emissions. Countries with a positive gap have projected emissions higher than their targets, meaning they will need stronger domestic policy to achieve their targets, all else held equal. Meanwhile, countries with a negative gap are already on track to exceed their targets under current domestic policies. Cross-country variation in the policy adoption gap may be due to strategic pledging behavior, domestic institutions, interest group politics, and public support. We noted that several factors explain the variation in the policy outcome gap across countries, including policy feedback[4], government capacity, innovation, and policy design. Positive policy feedback occurs when a policy empowers interest groups that benefit from it and facilitates stronger implementation-for example, through more robust enforcement of regulations or greater resources. On the other hand, in the case of negative policy feedback, opposing interest groups can mobilize a backlash against adopted policies.
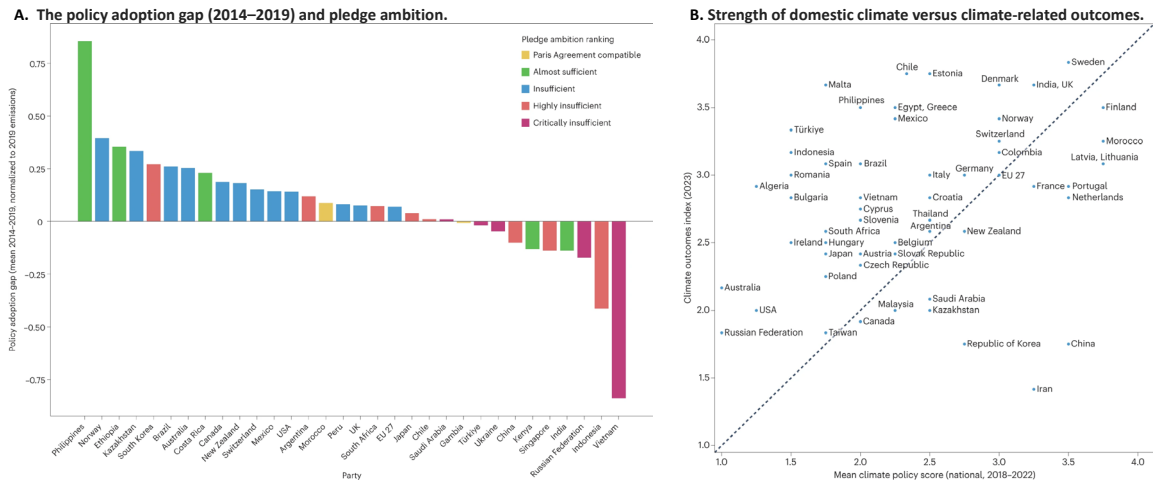
Figure 2: A) The policy adoption gap is the mean difference between projected 2030 emissions under current policies and the maximum 2030 emissions value under national contributions (typically corresponding to unconditional NDCs), Ambition rankings, from 'critically insufficient' to 'Paris Agreement compatible', are taken from the Climate Action Tracker's 2019 analysis. B) The climate policy score is the mean national score assigned by the Climate Change Performance Index, based on expert elicitation[17], over the years 2018–2022.

Further ongoing research paper in Task 2:

1. "Explaining Variation in Climate Pledging Behavior Under the Paris Agreement" (Current Status: Under Review).

Summary: This paper first maps variation in pledging behavior based on existing literature (e.g. Climate Action Tracker 2021; Meinshausen et al. 2022; UNEP 2022) to establish which countries are over-pledgers and which are under-pledgers. It then explores the relationship of under- and over-pledging to factors such as pledge alignment with the Paris Agreement temperature goals, domestic climate policy performance, and variety of climate governance, based on analysis of secondary data (e.g. Burck et al. 2022; Climate Action Tracker 2021). Finally, based on semi-structured interviews with officials and experts familiar with the target-setting process, it develops a set of case studies to investigate why countries make the pledges they do, with a particular focus on the role of pledges in signaling to international and domestic audiences.

2. "Why do NDCs look the way they look: The politics of NDC formulation" (Current Status: Analysis Stage).

Summary: The Paris Agreement overturned the global climate governance regime of top-down, binding emission reduction targets for developed countries and replaced it with a bottom-up, voluntary commitment by all countries based on NDCs. Combining insights from the policy design and climate policy, we aim to understand of the important role of public and private actors in influencing the specificity of climate finance needs in developing countries' NDCs by conducting an in-depth examination of the role of institutions, actors, and stakeholder engagement in NDC formulation and how they interact to facilitate or inhibit the representation of climate finance needs in NDCs.

Task 3: Analyses of country-level drivers of climate ambition in NDCs and recovery packages. Focus on the role of international financial institutions in driving positive feedback effects on the country-level.

In the Paris Agreement, developed countries pledged to support developing countries with US$100 billion in international climate finance (ICF) per year. However, estimates of climate finance flows have been highly controversial[18]. ICF estimates from the Rio markers are heavily

debated because they are self-reported by contributing countries, verification relies on the contributors' own checks and political pressure to increase ICF may lead to inconsistencies. This has led to controversies during climate negotiations and eroded trust in the current climate finance architecture[19]. Previous studies have typically compared ICF reported in official development assistance (ODA) to Rio markers with keyword searches and hand-coding which make it impossible to replicate. Here, we propose a consistent and replicable approach to estimating bilateral climate finance from ODA using machine learning[20]. We developed a machine learning model that classifies aid projects according to their focus on climate finance. We used the universe of bilateral donors from the Organisation for Economic Co-operation and Development (OECD) DAC database, which contains 2,737,303 projects. We have named this model "ClimateFinanceBERT". Specifically, the ClimateFinanceBERT model consists of two successive algorithm classifiers. The first classifier evaluates the relevance of a project description for mitigation, adaptation or environment, which is the broader scope of our ICF categorization (relevance classifier). The second classifier assigns relevant projects to the most appropriate climate finance category (multi-label classifier).

We identified 82,023 bilateral climate finance projects (48% mitigation and 52% adaptation), accounting for US$80 billion in disbursements (65% mitigation and 35% adaptation) between 2000 and 2019 (figure 3). Bilateral climate finance flows increased from US$0.5 billion in 2000 to US$7.7 billion in 2019, with mitigation finance consistently outpacing adaptation. However, the gap has narrowed to a factor of 1.4 in 2019. We contrast the trends in mitigation and adaptation finance with the self-reported data provided by the Rio markers (Figure 4). We estimate that the total ICF is 21% below the principal Rio markers and 64% below the principal and significant markers. For mitigation, the main Rio marker estimates mirror the ClimateFinanceBERT trends, albeit with slightly higher numbers. The top five donors (Germany, the United Kingdom, France, Japan and the United States) provide 78% of global bilateral climate finance. Compared to the average, Anglosphere countries (the United States, the United Kingdom, and Canada) and small, wealthy countries (such as Sweden and Switzerland) prioritize adaptation finance. In contrast, the main countries in continental Europe (France and Germany) and Japan focus their ODA on mitigation finance, which is strongly driven by renewable energy projects.
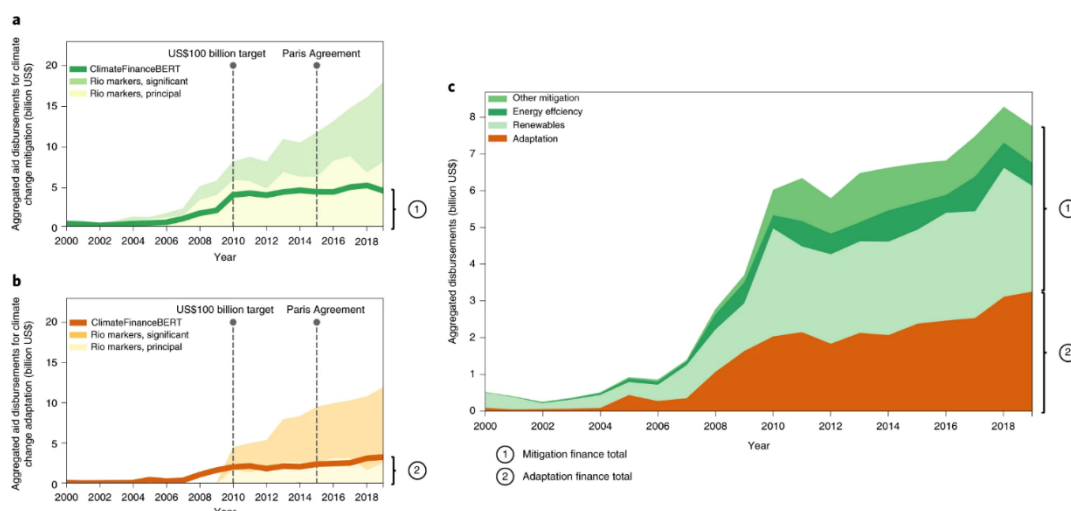
Figure 3: A) Comparison with Rio markers for mitigation. b, Comparison with Rio markers for adaptation (adaptation markers were introduced in 2009). c, Components of our ICF estimates. Mitigation covers 39,000 projects with disbursements totaling US$52 billion; adaptation covers 42,823 projects with disbursements totaling US$28 billion. Source: Toetzke et al. (2022). Published in Nature Climate Change.

Further ongoing research papers in Task 3:

1. "Donor control and the allocation of development aid for climate change mitigation" (Current Status: Working Paper; presented at a workshop, currently refined for journal submission)

Summary: We employ a mixed-methods approach consisting of descriptive data analysis, comparative statistics, and interviews. We examine the influence of export interests and national climate ambitions on donors' choice of aid allocation channels and hypothesize that countries with green industrial interests will be more likely to use bilateral over multilateral channels for climate-related aid than countries without and will tend to finance projects corresponding to their export industries.

2. "Decarbonizing multilateral development banks' power generation portfolios worldwide" (Current Status: Working Paper; presented at a workshop, currently refined for journal submission)

Summary: Multilateral Development Banks (MDBs) assume a pivotal role in financing power infrastructure in the developing world. Recently, many MDBs have adopted policies to increase climate finance, contributing to the international USD 100 billion target. Yet, we lack a comprehensive view on power sector investments after the Paris Agreement by MDBs. Here, we build on a power sector investment database established by Steffen & Schmidt (2018) and extend it to 2022 to find that the greening of MDB investment portfolios is almost complete but overall energy financing volume is decreasing, driven by lower volumes in the public arms.

3. "Considering sectoral differences in decarbonizing World Bank Group lending" (Current Status: Conference Paper)

MDBs can play an important part in climate change mitigation by providing access to finance for the adoption of low-carbon technologies in developing countries. However, differences in the economic viability of low-carbon technologies may lead to a shift of MDB investment between sectors. Here, we examine the case of the World Bank Group (WBG), combining industrial organization behavior literature with sectoral systems of innovation literature. We employ a mixed methods approach, using descriptive data analysis and interviews to examine 1705 projects in the four most carbon intensive sectors (agriculture, energy, transport, and industry), over two crisis periods (the GFC and the COVID-19 crisis).

4. "Multilateral development banks' climate policies and COVID-19 responses" (Current Status: Master thesis)

MDBs such as the European Investment Bank (EIB) play a pivotal role in the energy transition of member states by providing significant and sustained financing for climate mitigation and adaptation projects. Here, analyzed if the EIBs put in place COVID-19 response complied with its green lending policies and was in line with its firm commitment to become the European Union's climate bank. We found that based on the provided data, none of the EIB's COVID-19 projects was in breach of its applicable policies. However, the significant reallocation of its resources towards fighting the pandemic during 2020 and 2021 had a potentially adverse effect on the timely achievability of the Paris Agreement climate change goals.

Task 4: Outreach – Presentation of findings to relevant climate policy networks, e.g. at COP side events. Dissemination of findings in relevant networks through associated project members.

During the project, we conducted several outreach activities in collaboration with various stakeholders from academia, policy, civil society, and multilateral organizations (See Appendix Table A2). The results of this research project have also had significant policy and media impact (see Impact Report). Our engagement in policy and academic outreach spanned several countries over two years. In terms of policy engagement, we co-organized and presented research findings at official side-events during two high-level climate conferences, including the United Nations Framework Convention on Climate Change Conference of the Parties (COP) in Sharm el-Sheik, Egypt (2022), and Dubai, United Arab Emirates (2023). This included direct collaboration and participation with leading climate policy think tanks (e.g., World Resources Institute, NewClimate Institute, Institute for Climate Economics, etc.), government delegates (e.g., South Africa's Presidential Climate Commission), multilateral development banks (e.g., World Bank and African Development Bank), and multilateral groups (e.g., the Vulnerable 20 Group). In addition, we provided various technical inputs to the UNFCCC Global Stocktake on the gap between countries' commitments and actions on public support for energy, as well as to two Technical Expert Dialogues (TED) for the New Collective Quantified Goal on climate finance (NCQG) in Vienna, Austria, and Geneva, Switzerland, in 2023. These facilitated productive dialogue and exchange with policymakers and practitioners, accelerating the relevance of outputs for policy and society. In terms of academic outreach, we have presented our research at several conferences, workshops and seminars that bridge different disciplines. For example, we presented at the International Sustainability Transition Conference, a workshop on climate finance and investment in times of crisis, and an invited seminar at the African Development Bank. Related outputs have also been published in world-leading interdisciplinary academic journals such as *Nature Climate Change* and *One Earth*.

Conclusion and Outlook

Achieving the global goal of the Paris Agreement will be critical to ensuring a sustainable future. However, this will require policymakers not only to adopt ambitious global climate ambitions, but also to seize windows of opportunity (e.g., the Covid-19 pandemic) to redirect public resources towards low-carbon activities, and ensure pledges are implemented and aligned with national policies. In Task 1, we showed that there is a strong correlation between international and national policy ambition, with nations generally being more ambitious at the international level. In Task 2, we found that cross-country differences in policy implementation gaps may be driven by strategic pledging behavior, domestic institutions, interest group politics, and public support. In Task 3, we showed that the application of a standardized model for identifying climate finance will be critical to improving the transparency of the climate finance architecture.

Although the SNIS project has come to an end, we have not yet published all the planned research papers (see above). Importantly, we have secured additional funding from the Swiss National Science Foundation (SNF) through the Trans-Atlantic Partnership (TAP) to build on the portfolio of research projects started with the SNIS and to continue our research partnerships and policy impacts. This underscores the critical multiplier effects of SNIS's generous funding of this project and the global relevance of our research for academia and multilateral climate governance.

References

1. Ou, Y. *et al.* Can updated climate pledges limit warming well below 2°C? *Science* **374**, 693–695 (2021).

2. Iyer, G. *et al.* Ratcheting of climate pledges needed to limit peak global warming. *Nat. Clim. Chang.* **12**, 1129–1135 (2022).

3. Höhne, N., Fekete, H., den Elzen, M. G. J., Hof, A. F. & Kuramochi, T. Assessing the ambition of post-2020 climate targets: a comprehensive framework. *Climate Policy* **18**, 425–441 (2018).

4. Meckling, J., Kelsey, N., Biber, E. & Zysman, J. Winning coalitions for climate policy. *Science* **349**, 1170–1171 (2015).

5. Steffen, B., Egli, F., Pahle, M. & Schmidt, T. S. Navigating the Clean Energy Transition in the COVID-19 Crisis. *Joule* **4**, 1137–1141 (2020).

6. Quitzow, R. *et al.* The COVID-19 crisis deepens the gulf between leaders and laggards in the global energy transition. *Energy Research & Social Science* **74**, 101981 (2021).

7. Rogelj, J. *et al.* Paris Agreement climate proposals need a boost to keep warming well below 2 °C. *Nature* **534**, 631–639 (2016).

8. Meinshausen, M. *et al.* Realization of Paris Agreement pledges may limit warming just below 2 °C. *Nature* **604**, 304–309 (2022).

9. Hof, A. F. Welfare impacts of climate change. *Nature Clim Change* **5**, 99–100 (2015).

10. Winkler, H. *et al.* Countries start to explain how their climate contributions are fair: more rigour needed. *Int Environ Agreements* **18**, 99–115 (2018).

11. Pauw, W. P., Castro, P., Pickering, J. & Bhasin, S. Conditional nationally determined contributions in the Paris Agreement: foothold for equity or Achilles heel? *Climate Policy* **20**, 468–484 (2020).

12.   Egli, F. & Stünzi, A. A dynamic climate finance allocation mechanism reflecting the Paris Agreement. *Environ. Res. Lett.* **14**, 114024 (2019).

13.   Jernnäs, M., Nilsson, J., Linnér, B.-O. & Duit, A. Cross-national patterns of governance mechanisms in nationally determined contributions (NDCs) under the Paris Agreement. *Climate Policy* **19**, 1239–1249 (2019).

14.   Hepburn, C., O'Callaghan, B., Stern, N., Stiglitz, J. & Zenghelis, D. Will COVID-19 fiscal recovery packages accelerate or retard progress on climate change? *Oxford Review of Economic Policy* **36**, S359–S381 (2020).

15.   Victor, D. G., Lumkowsky, M. & Dannenberg, A. Determining the credibility of commitments in international climate policy. *Nat. Clim. Chang.* **12**, 793–800 (2022).

16.   Egli, F. *et al.* Scrutinizing countries' climate commitments: Insights from recovery spending. *One Earth* **6**, 1082–1084 (2023).

17.   Fransen, T. *et al.* Taking stock of the implementation gap in climate policy. *Nat. Clim. Chang.* **13**, 752–755 (2023).

18.   Weikmans, R., Roberts, J. T. & Robinson, S. What counts as climate finance? Define urgently. *Nature* **588**, 220–220 (2020).

19.   Weikmans, R. & Roberts, J. T. The international climate finance accounting muddle: is there hope on the horizon? *Climate and Development* **11**, 97–111 (2019).

20.   Toetzke, M., Stünzi, A. & Egli, F. Consistent and replicable estimation of bilateral climate finance. *Nat. Clim. Chang.* **12**, 897–900 (2022).

Appendix
Table A1: List of Research Papers

N	Task	Research paper	Status	Journal	Collaboration
1		Scrutinizing countries' climate commitments: Insights from recovery spending	Published	*One Earth*	ETH Zurich, HSG, UC Berkeley, IISD
2	**1**	Explaining Variation in Climate Pledging Behavior Under the Paris Agreement	Analysis	*NA*	UC Berkeley
3		Assessing the climate finance needs of developing countries to implement the Paris Agreement	Under Review	*One Earth*	ETH Zurich, HSG
4	**2**	Taking stock of the implementation gap in climate policy	Published	*Nature Climate Change*	ETH Zurich, HSG, UC Berkeley
5		Why do NDCs look the way they look: The politics of NDC formulation	Analysis	NA	ETH Zurich, HSG
6		Consistent and replicable estimation of bilateral climate finance	Published	*Nature Climate Change*	ETH Zurich, HSG
7	**3**	Donor control and the allocation of development aid for climate change mitigation	Working paper	NA	ETH Zurich
8		Multilateral development banks' climate policies and COVID-19 responses	Working paper	NA	ETH Zurich, HSG
9		Transforming intermediaries to accelerate clean energy transitions: Technological characteristics and the need for organizational change	Analysis	NA	ETH Zurich

Table A2: List of Outreach Activities

N	Event type	Input	Event	Location	Date	Participating institutions
1	Policy	Paper presentation and panel talk	United Nations Climate Change Conference (COP27)	Sharm el-Sheik, Egypt	2022	ETH Zurich, UC Berkeley
2	Policy	Panel talk	Bonn Climate Change Conference, Germany	Bonn, Germany	2023	IISD
3	Academic	Paper presentations (2x)	Swiss Network for International Studies Conference	St. Gallen, Switzerland	2023	ETH Zurich, HSG, UC Berkeley
4	Policy	Expert input	UNFCCC 6th Technical Expert Dialogue New Collective Quantified Goal on Climate Finance	Vienna, Austria	2023	ETH Zurich, HSG
5	Academic	Paper presentation	International Sustainability Transitions Conference	Utrecht, Netherlands	2023	ETH Zurich
6	Policy	Paper presentation	African Development Bank Seminar	Virtual	2023	ETH Zurich
7	Policy	Organization, moderation, paper presentation and panel talk	United Nations Climate Change Conference (COP28)	Dubai, UAE	2023	ETH Zurich, HSG
8	Academic	Presentation	Zurich Political Economy Seminar Series	Zurich, Switzerland	2023	ETH Zurich
9	Policy	Expert input and moderation	UNFCCC 7th Technical Expert Dialogue New Collective Quantified Goal on Climate Finance	Geneva, Switzerland	2023	ETH Zurich, HSG
10	Academic	Paper presentation and workshop	Resourcing international organizations: New insights from the Earmarked Funding Dataset	Glasgow, UK	2024	ETH Zurich
11	Academic	Presentations (2x)	Climate Finance and Investment in Times of Crisis	Potsdam, Germany	2024	ETH Zurich
12	Academic	Presentation	119th American Political Science Association Annual Meeting	Los Angeles, USA	2023	UC Berkeley
13	Academic	Presentation	International Studies Association	San Francisco, USA	2024*	UC Berkeley

*Scheduled