

Accelerating Climate Action and the State: Getting to Net Zero (ACCELZ)

1. Excellence

1.1 State of the art, knowledge needs and project objectives

Attaining the target of net zero global greenhouse gas (GHG) emissions by 2050 cannot happen without unprecedented acceleration of climate action (IPCC 2018, 2021; Geels et al. 2017). World leaders gathered in Glasgow in 2021 confirmed the Paris Agreement goal of pursuing efforts to limit the temperature increase to 1.5 C above pre-industrial levels (Glasgow Climate Pact 2021). This requires global emissions to peak as soon as possible, reaching net-zero by 2050 (IPCC 2021). All pathways to net-zero will require active state engagement (IPCC 2018). Technological and behavioural changes alone will not suffice. However, even though getting to net-zero represents an unprecedented governing challenge, an analytical framework specifying and explaining the role of the state in accelerating climate action does not yet exist. ***The main objective of ACCELZ is to enhance our understanding of how states can design public organizations, practices, and policies, to accelerate climate action towards net-zero emissions.***

Due to radical differences in domestic conditions, one-size-fits all solutions are unlikely to work across all countries and political systems. Rather, our project aims to identify some common patterns and general causal mechanisms. We will examine how governments organize climate into their administrative and legislative bodies, establish governing procedures and adopt policy mixes to facilitate acceleration. We recognize that states consist of many organizations with multiple roles that may act in incoherent ways. Drawing on a mix of political science methods, in combination with quantitative analysis of emission trends, ACCELZ will specify the relative importance of the state in acceleration processes. Quite a lot is already known about the short-term effects and effectiveness of single climate instruments, such as carbon taxation, regulations, and state aid (Stavins et al. 2014, Boasson et al. 2021, Peñasco et al. 2021). What is lacking is systematic comparative research on the full array of states' engagement in acceleration of climate action, including how climate issues are organized into state structures and how this affects policy-mix development. Many studies of domestic climate policy aim at explaining why governments fail to govern climate action effectively, specifying causes for non-action, characterizing climate as 'a malign issue' (Underdal 1987) or 'a super wicked problem' (Levin et al. 2012)', or identifying mechanisms that hinder climate governance, such as 'veto-point density' (Harrison & Sundstrom 2010) or 'the logic of double [fossil fuel] representation' (Mildenberger 2020).

We need new knowledge about how barriers and bottlenecks can be overcome to accelerate climate action. ***ACCELZ focusses on the complexity of state engagement and how states may succeed in spurring acceleration of climate action.*** The project will capture and explain cross-country differences in how climate action is organized within the state apparatus. This research field is in its infancy, as the first major publication on the topic came in 2021 (Dubash 2021). We will map how decision-making procedures, ministerial structures, agency capacities and committee structures in the legislature have developed over time, establish a new database with quantitative data, and conduct comparative case studies. Governments have never done more to combat climate change, with almost all countries adopting complex climate policy mixes, and many committing to elaborate climate mitigation strategies, objectives and climate laws (Iacobuta et al. 2018). ACCELZ will profit from this, as it allows us to perform empirical research not possible a few years back. Several countries and regions have seen recent emission reductions in parallel to the upscaling of climate policies (Le Quéré et al. 2019), but this has been far from sufficient to put the world on a path to net-zero emissions.

In the literature there is no consensus on how to conceptualize acceleration of climate action. ACCELZ defines 'climate action' as activities and practices that deploy low carbon technologies, reduce emissions or remove carbon from the atmosphere. ***'Acceleration of climate action' refers to processes that increase action in terms of breadth (range of activities and sectors cutting emissions), depth***

(size of cuts/uptake/carbon removal) or speed (rate of change). ACCELZ will examine the role of the state in these processes, aiming primarily to understand acceleration of climate action.

Strategies for governing climate issues vary across countries and over time, and different societies will probably require the state to act in varying ways (Boasson et al. 2021, Le Quéré 2019). Our project assumes states deploy different climate governing strategies. Based on thorough literature reviews, we identify three ideal models that states may follow in their efforts to govern acceleration of climate action: **1) correcting market failure, 2) spurring technological change, and 3) spurring public support.** We will examine whether the three models can describe and explain differences across states, but also investigate whether hybrid models have emerged.

ACCELZ has two secondary objectives. **First, establish the study of the state’s role in accelerating climate action as a research frontier within climate research.** Few political science communities are engaged in climate research, and only recently have high-level political science journals started to publish climate articles (see review in Boasson & Tatham, forthcoming). ACCELZ will mobilize public administration and comparative politics scholars, in addition to public policy researchers, but also enable climate researchers at large to better understand the most pressing issue of climate research: how to accelerate action to achieve the challenging 1.5 C target. **Second, specify how governments, and Norway in particular, can design its political-administrative apparatus and climate policy mix to ensure acceleration of climate action.** Drawing on well-established insights from public administration studies (e.g. Egeberg 2003), we will develop concrete, well-founded advice to governments. If we succeed, ACCELZ may ease the processes of combating climate change. This will be a significant positive impact, not only for Norway, but also beyond.

1.2 Research questions and hypotheses, theoretical approach and methodology

The Table below shows the research questions and how they relate to the work packages. We now turn to the theoretical background, before presenting the WPs and project management.

RQ 1	How is climate organized into the governmental apparatus, and what explains differences across countries and over time?	WP 1 WP2
RQ 2	What is the inter-relationship between how climate is organized into the state apparatus and climate policy mixes?	WP 2
RQ 3	How have the climate governing of states translated into GHG emission developments?	WP 3
RQ 4	How can states design public organizations, policies and practices to spur acceleration of climate action and reach net-zero?	WP 4

Theory framework: Three ideal models of the state’s role in accelerating climate action

Climate governance literatures have primarily focused on climate policy, not organizational issues or acceleration. Our three models are rooted in these understandings, but we also aim to capture how states may organize to succeed in spurring acceleration of climate action. First, the **correcting market failure model** draws on environmental economics and highlights cost-effective emissions reductions (Stavins et al. 2014). Here, climate change is perceived as a market failure, so measures that correct this failure are needed. Economic incentives are seen as the prime driver of mitigation, and carbon pricing is the key governmental activity (Nordhaus 1994). If scientific findings dictate deeper emissions cuts, states are expected to raise carbon taxes enough to change polluters’ behaviour (Nordhaus 1991). Originating in the 1990s, this market failure model strongly influenced policy design in ensuing decades (Stavins et al. 2014). Under this model, we assume that governments will target emissions in all sectors with carbon taxes, creating a uniform carbon price across sectors. We expect countries dominated by this model to have strong and autonomous environmental-economic expert bodies, for instance strong ministries of finance with high environmental economics competence and/or independent climate-change committees (as in the UK). Strong domestic communities of environmental economists may

also underpin emergence of this approach. Decision-making procedures will admit only narrow participation, with legislators playing a minor role.

Second, the ***spurring technological change model*** highlights the role of industrial innovations and socio-technological change to climate mitigation, and the inter-relationship between business and the state (Köhler et al. 2019). Originating in engineering and institutional economics, this model has attracted transition scholars from human geography, sociology and political science. Portraying climate change as a result of fossil-fuel ‘lock-in’ within a range of socio-technological systems (Hughes & Urpelainen 2015), it sees mitigation as requiring major changes in infrastructure, industry practices and technology (Geels 2014). Fundamental changes are needed in many socio-technological systems, especially energy, but also transport, energy-intensive industry and land use (Geels et al. 2017). For this model, we assume that governments will start by targeting one or a few sectors with complex policy mixes – involving, for instance, support schemes (Boasson et al. 2021), regulations, siting policies (Hochstetler 2020) and state ownership of corporations (Boasson 2015). More and more sectors will be targeted, and thus the policy mix will become increasingly complex over time. Carbon pricing may be applied, but the actual economic incentive level will vary significantly across sectors. Governments favouring this model will have strong environmental ministries and agencies with high in-house energy- and climate transition competence, but also sectoral ministries with clear and specific climate responsibilities. Further, decision-making will be characterized by corporative procedures, with repeated negotiations between governmental and corporate actors. A broader range of economic actors may take part in decisions, but legislators will play a less pro-active role.

Finally, several recent publications place politics and democratic processes at the core of decarbonization challenge (Lægreid & Povitkina 2018; Boasson et. al 2021; Dubash 2021); drawing on these, we construct a third ***spurring public support model***. Here, the role of the government is seen as constrained and enabled by popular sentiment, support from civil society, and election results. This model is less focused on particular policy types, but centres on procedures that can secure democratic legitimacy and increasing support for climate policy. The dynamics of climate policy development are closely linked to various other issues, such as social welfare, health, economic development and other environmental issues (Dubash 2021). If climate issues are politically salient, elected officials will play a major role in determining climate policies, and how climate issues are organized into the state apparatus (Boasson 2015; Dubash 2021). Politicians, in the executive government and legislators, will have a major say in adopting climate policies, but they will also influence how climate action is perceived and implemented (Boasson, Pulver & Burns 2021). Political protests for or against climate action will directly influence climate policy and how climate is organized into public-administrative structures (Dubash 2021). For this model, we expect countries to adopt complex climate-policy mixes, mixing regulations, and economic carrots and sticks (Meckling et al. 2015). However, climate issues will be closely linked to many other societal issues, and measures aimed at boosting support, such as information campaigns and educational initiatives, will be crucial. Carbon prices will vary across sectors, and revenues from these schemes will be applied strategically to boost support for climate transitions. Governments adhering to this model will have legislative assemblies with wide formal responsibilities over climate policy, but regional and local governments will also have significant importance. Civic actors have good access to decision-making, and elections may cause abrupt shifts in state actions (Boasson 2015).

ACCELZ will identify which of the three models dominates in the countries studied, whether they co-exist, whether they exist in ‘pure’ or in hybrid versions, and whether we can identify shifts from one model to the other. The ACCELZ approach is inspired by several comparative politics works that apply ideal models in explaining why the role of the state varies systematically across countries – for example, the ‘varieties of capitalism’ literature (Hall & Soskice 2001).

We will gather longitudinal data for the period 1992–2022 on how climate is organized into a) central administration (through ministries, agencies, the office of the prime minister, sub-units in existing ministries, special task-forces or climate committees, or outsourcing to consultancies or public–private partnerships); b) committee structures in the legislatures; c) the procedures for developing climate targets and climate action plans, including Nationally Determined Contributions

(NDCs); and d) climate budgeting, in relation to the state budget or otherwise. For the three complex political systems, we also map the division of responsibility between the central administrative level and the member state/state level. All these factors, a, b, c, and d, will be mapped in the six cases in WP1; WP2 will create a data-base of (a) and (b) in a much larger sample.

Work packages

WP1 Comparative case studies of Scandinavia and large complex political systems (EU, USA, India)

Two sets of different comparative case studies will be conducted. *First, Norway will be compared with its Scandinavian neighbours, Denmark and Sweden.* They are similar in many respects: all have national governments with high capacity and competence; all adopted climate policies already in the early 1990s; and all have encompassing policy mixes. However, they follow differing emissions paths: Denmark had almost 40% lower domestic emissions in 2019 than in 1990, Sweden has had almost a 30% reduction – and Norway only 2% domestic reductions (EEA 2021). From previous research, we expect the ‘spurring technology change’ model to be stronger in Denmark and Sweden, while Norway will be more dominated by ‘overcoming market failure’ (Dyrhaug 2019; Boasson 2015; Boasson et al. 2021). Moreover, we expect to find traces of the spurring public support model in all countries. To our knowledge, no studies have systematically compared and explained climate governing across these three countries. *Second, we will compare the EU, the USA and India.* The EU is a regional organization and not a federal state, but it carries the international climate commitments of its member states. Thus, it makes sense to compare it to federal countries. From prior research, we expect the EU to align more to the ‘spurring technological change’ model (see Boasson & Wettestad 2013; Boasson et al. 2021). Also India seems likely to align more with this model, but we also expect strong hallmarks of the ‘spurring popular support’ model (Aamodt, 2018). Lastly, the USA is a deviant case, as the climate administration in the federal government is under-developed (Mildenberger 2021).

WP1 will conceptualize the mechanisms that shape how climate is organized into the political-administrative apparatus, combining inductive and deductive strategies. Boasson and colleagues (2015, 2021) have shown that how governments deal with climate policy on the degree of segmentation in the organizational fields involved, and whether climate change is a salient political issue. They find that when political salience is low, governments will deal with climate policy rather independently of politics. In contrast, Dubash (2021) holds that climate politics will tend to influence, rather directly, how climate is organized into the state apparatus. We will examine these differing arguments, and expect the political-administrative structures and procedures to align with:

H1a: *The correcting market failure model* if the political system has a strong ministry of finance, linked to a strong community of environmental economists.

H1b: *The spurring technological change model* if the political system has strong sectoral ministries, embedded in corporate decisions making procedures.

H1c: *The spurring popular support model* if climate tends to be politicized, and legislative assemblies (nationally as well as regionally) have significant decision-making power in most issues.

In addition to these relationships, we will explore path-dependencies and feedback mechanisms. We will apply both within-case and comparative case-study methods. Data will come from semi-structured interviews, fieldwork, governmental webpages and governmental documents. Conceptualizations developed in WP1 will inform WP2. Moreover, causal relationships revealed in WP2 may produce indications of which mechanisms to conceptualize and test in WP1.

WP2 Quantitative studies of the state apparatus and climate-policy mixes

WP2 examines the interrelationships between how the policy development process is organized and the policy output. We will establish a database on how climate is organized into the political-administrative apparatus in all EU member-states (including data from WP1), as well as at the state level in the USA and India. These data will be coupled with information from existing databases over climate policy mixes, adding new data as appropriate. Causal hypotheses as to variance in climate policy mixes will be rooted in the three models. We will examine the following hypotheses:

H2a, correcting market failure: States with strong and autonomous environmental-economic expert bodies will tend to have climate policy mixes dominated by carbon pricing, providing similar economic incentives for emissions reductions across sectors and technologies.

H2b, spurring technological change: States where sectoral ministries and agencies have clear and specific climate responsibilities will tend to have complex sector-specific climate policy mixes, where the economic incentives for emissions reductions will vary across sectors and technologies.

H2c, spurring popular support: States where the president's cabinet or the office of the prime minister have overarching climate responsibility, and where citizens' assemblies or other broad consultative bodies are established, will tend to have complex and distributional policy mixes, with carbon pricing playing a minor role.

These hypotheses will be improved and operationalized in dialogue with advisors and WP1 researchers. We will develop and test hypotheses on how differing ways of organizing climate into legislative and parliamentary committee structures may influence climate policy development.

WP3 Quantifying the importance of the state in shaping accelerated climate action

WP3 examines causal patterns between state governing and climate action through emissions reductions or clean technology deployment, in the six countries and regions identified in WP 1. While the Scandinavian countries share many similarities, their emissions reduction patterns differ (EEA 2021). The USA and the EU have had relatively similar emission reductions in the past decade but differ greatly in state organization. As a developing country, India has had increasing emissions, but has also had rapid deployment of solar and wind power. WP will examine what differentiates progress in these political systems, and the role of the state in this respect.

The analysis will build on earlier decomposition analysis (Le Quéré et al. 2019; Peters et al. 2017) but take a more sectoral focus. Where possible, we will link changes to key domestic or international economic drivers (e.g., cost declines) or policies (e.g., renewables targets). We aim to gain new insights into how the role of the state may be sequenced over time, by considering delays between accelerated climate action and delay in the quantifiable effect. The 'emissions endowment' of a country may also matter, as each country has a different starting point depending on national circumstances: Norway has a decarbonized electricity system (hydropower), so decarbonization is ruled out in that sector. The USA offers an interesting contrast: the federal government has attempted the deceleration of policy implementation, and sufficient data are now available to assess the effectiveness of this and help quantify the role of the state.

We expect domestic sectoral emissions reduction trajectories and technology deployment to vary depending on which of the three climate governing modes dominate, and how they are sequenced. Our analysis will combine data gathered in WPs 2, 3 and 4, with energy and emissions data from the Global Carbon Project and our monthly analysis (e.g. Andrew 2020; 2021). We will perform sectoral decomposition studies for the period 1992–2022. Further, we will build on updated current policy scenarios in the EU project Paris Reinforce and in the recently funded EU project IAM COMPACT. We will test the following hypotheses:

H30, no state intervention: emissions reductions and low-carbon technology deployment result from trends in national and international economic drivers: no effects of domestic state interventions.

H3a, correcting market failure: initial small improvements in all sectors, but gradually deeper reductions (or deployments) in all sectors, gradually gaining speed.

H3b, spurring technological change: initially steep emissions reductions (or deployments) in one or few sectors; gradually more sectors become involved, with uneven progress over time.

H3c, spurring public support: initial lack of emissions reductions (or deployment), and with inconsistent reductions over time.

These hypotheses will be improved and operationalized in dialogue with researchers in all the WPs. We will also develop scenarios for how domestic emissions trajectories may develop in the future, in the context of net zero, and how they depend on the dominant governing style.

WP4 Conclusions, generalizations and bolstering of the new research frontier

WP4 aims at creating internal coherence and learning across all WPs, as well as linking the activities of ACCELZ research to larger scientific and societal discussions. We will specify and improve the three ideal models, relating to causal relationships within the three models and how the three models relate to each other. We will systematically review the relevant literatures, with a special focus on literatures that have inspired the three models, but also public administration literatures and literatures on path-dependencies and disruptions, such as ‘ambition loops’, feed-back effects, sequencing, spillover, leapfrogging or tipping points (see Jordan & Moore 2020 for a review). We will facilitate method discussions within the whole ACCELZ research group, producing a working paper that explains the ACCELZ method. We will engage in dialogue with other research groups specialized in related issues, for instance through two workshops with broad participation, a special issue in inter-disciplinary journal, and panels at scientific conferences. Towards the end of the project period, we aim to produce general insights drawing on work in all WPs. See the Impact section for further details.

Interdisciplinarity, stakeholder knowledge, risks, ethical issues and gender

ACCELZ gathers political scientists with differing methodological backgrounds, while also involving inter-disciplinary collaboration with integrated assessment modellers. At least three articles will be based on novel method combinations. This will facilitate the innovative research programme, but also entails some risk. To reduce these risks, we can draw on the project’s advisory board. Key researchers will meet for workshops four times (1-2 physically) a year, ensuring that people get to know each other, and creating ample opportunities to discuss and develop new ideas and perspectives. WP leaders have long experience with cross-disciplinary work and have collaborated with each other before: for instance Boasson and Tosun collaborated in the steering committee of the COST action INOGOV, Peters and Tosun have been co-authors (Le Quéré et al. 2019), and Peters and Boasson have collaborated in the IPCC (IAR6 WG III Mitigation report). The project also involves researchers who have not worked together previously. We see this combination as conducive to spurring and testing novel ideas and techniques with a suitable mix of early- mid-, and late-career researchers. We will have six meetings with the reference group of Norwegian civil servants, not least to ensure that we stay focused on real-world challenges and that new ideas and perspectives feed into the group. The project will adhere to all rules concerning data collection and storage. As no sensitive data and little individual-level data are involved, any related ethical issues are manageable. Although the scientific work does not focus explicitly on gender issues, there is a sound gender balance in the project group.

1.3 Novelty and ambition

By establishing the study of the state’s role in accelerating climate action as a strong research frontier, ACCELZ aims to create lasting change within the larger climate researcher community. The novelty of ACCELZ primarily lies in its focus on political-administrative organizations and procedures, the inter-disciplinary mixed-method approach, and its efforts to combine political science research with modelling-based scenario research to explain climate acceleration. ***The project will contribute to the emerging research frontier on how climate concerns are organized into the state-apparatus.*** There have been a few recent publications on this theme (Dubash 2021; Dubash et al. 2021), but this work has been dominated by single case-studies, with few systematic comparisons (for a rare exception, see Tosun 2018). ACCELZ will be the first project of this kind that involves experienced public administration scholars (Tosun, Bach, Povitkina and Steinebach), and that performs systematic qualitative as well as quantitative comparisons within the same project. In particular, the political science part of ACCELZ is innovative, as relatively few climate-politics research projects combine the methods to be applied in ACCELZ. Moreover, it is rare to ***combine advanced political science methods with integrated assessment modelling, like we will do in ACCELZ.*** Ontological and epistemological differences have inhibited collaboration between scenario modelers and political scientists in the past (see Geels et al. 2016). In 2019, a first publication indicated that it was possible to bridge these differences (Le Quéré 2019). Building on this experience, we seek to find ways to ensure that emissions reduction scenarios build on explicit, realistic assumptions about the role of the state. Whereas earlier

publications present only historical modelling, ACCELZ will also model more realistic emissions scenarios for 2050.

2. Impact

2.1 Potential for academic impact of the research project

We will submit articles from WP1 and 2 to major political science and public administration journals, such as *Governance*, *Journal of Politics*, *Journal of Public Administration Research and Theory* and *Journal of European Public Policy*, as well as more specialized journals such as *Scandinavian Political Studies*, *Environmental Politics* and *Global Environmental Politics*. Articles from WPs 3 and 4 will be submitted to leading inter-disciplinary climate science journals, such as *Science*, *Nature Climate Change* and *Climate Action*. Further, we aim to produce at least one inter-disciplinary special issue. We will organize at least three panels at major international conferences relating to political science, including those of the American Political Science Association and the European Consortium for Political Research. We will also participate at more specialized gatherings, including the Environmental Politics and Governance annual conference and Nordic Environmental Social Science Conference. We will host two cross-disciplinary workshop on the role of the state in accelerating climate action, spurring scientific dialogue with research communities working on related issues.

2.2 Potential for societal impact of the research project

ACCELZ aims to ***specify how governments, and Norway in particular, can design its political-administrative apparatus and climate policy mix to ensure acceleration of climate action.*** Conclusions will be gathered in a report towards the end of the project, but throughout the entire project period we will work strategically to tap the large potential for societal impact, targeting policymakers, stakeholders, students and journalists. As the intention is for the ACCELZ project to be funded by the Research Council of Norway, the project will follow Norwegian developments closely and provide inputs to the government and the Storting, as relevant. For instance, we aim to provide inputs to Norwegian White Papers and public consultations on climate policy. Several ACCELZ researchers, not least project leader Boasson, already serve frequently as media commentators in Norway and are in demand as public speakers, providing the project an excellent starting point for societal impact. Moreover, key researchers are currently engaged in rolling out new climate transition teaching initiatives at the University of Oslo, providing an excellent platform for training future policymakers. Our good connections to the Intergovernmental Panel on Climate Change (IPCC; Boasson, Peters and Frank are lead authors in AR6, WG III) provide an excellent starting point for international impact, particularly through influencing future IPCC reports. Boasson has organized several well-attended conferences in Brussels and will draw on this experience. Similarly, Aamodt will draw on her contacts and experiences with outreach activities in New Delhi. Several advisors, including Mildenerger, have experience with stakeholder events in the USA. We will use social media to engage in dialogue with international scientific communities, as well as journalists and stakeholders. Glen Peters already has 42 000 followers on Twitter; other project participants have some two to five thousand followers.

2.3 Measures for communication and exploitation

The ***reference group*** will consist of representatives from the ***Norwegian Ministry of Climate and Environment, Ministry of Foreign Affairs and the Ministry of Finance.*** The group will meet six times; at least two will be digital events where public officials from Denmark, the EU, India, Sweden and the USA will be invited. In Oslo, we will host ***3-4 breakfast seminars, mid-term and final conferences.*** We will also submit at ***least 4 op-eds to major Norwegian media sites.*** Further, we will produce a final report for Norwegian policymakers. We will host at least ***one side-event*** at a Conference of the Parties to the UNFCCC. Results will be presented at major climate governance conferences in the Nordic capitals, such as the Zero conference in Oslo. During the project, we aim to host (digital or physical)

events for policymakers in **New Delhi, Brussels and Washington DC**. We plan to publish **two op-eds in international newspapers**, such as the ‘Monkey cage’ of the *Washington Post*. We will target undergraduate students by developing a new course at the University of Oslo and **publish a textbook**.

3. Implementation

3.1 Project manager and project group (see Table 3.2 for further details)

WP	WP leader	Researchers	Deliverables
WP1	Elin Lerum Boasson	Solveig Aamodt, Elin Lerum Boasson, Bård Lahn, Merethe D. Leiren and 2 PhD-students	4 journal articles
WP 2	Jale Tosun	Tobias Bach, Marina Povitkina, Yves Steinebach, Jale Tosun and research assistants	3 journal articles 1 database
WP 3	Glen Peters	Elin Lerum Boasson, Robbie Andrew, Ida Sognaes, Jale Tosun and Marina Povitkina	1 journal article
WP 4	Elin Lerum Boasson	All researchers.	2 journal articles 1 special issue (SI) 1 WP on method 1 textbook 1 report on Norway

ACCELZ has a team of highly competent researchers, a mixture of senior, mid- and early career scholars. Principal Investigator is Professor *Elin Lerum Boasson*. She has broad research leadership experience from heading several major research projects, serving as vice-head of her department, and acting as IPCC lead author. She has published extensively on domestic and EU-level climate policies and is a recognized expert on domestic climate policy and governance. She has long experience with inter-disciplinarity and is well connected to international research communities working on climate governance and climate action. Further, Boasson has significant experience as a book and special issue editor, and is currently editing an issue for *Journal of European Public Policy*.

Boasson has long experience with qualitative comparative case studies, and will herself lead **WP1**, where this methodology is crucial. In addition to Boasson, Bård Lahn and Merethe D. Leiren are experts on Norwegian climate policy and government, and all three have published on Denmark and Sweden. Boasson and Leiren have long experience as EU climate policy scholars, while Solveig Aamodt is an expert on Indian climate policy and currently heading a large project on India. Two PhD students will also contribute to WP2, one in Oslo and one in Heidelberg. The UiO student will be fully financed by ACCELZ, while the PhD-student in Heidelberg will get half of the funding from the University of Heidelberg. Advisors Karin Bäckstrand, Helene Dyrhaug, Matto Mildemberger and Manish Kumar Shrivastava provide additional expertise on Sweden, Denmark, the US and India.

Professor Jale Tosun will lead **WP2**. She has published extensively on climate policy and public administration issues, and is a leading expert on the quantitative methods applied in WP2. If ACCELZ receives funding, Tosun will become Professor II at the University of Oslo, where we will work together with a highly qualified team of quantitative public administration and comparative politics scholars. Marina Povitkina comes from comparative politics and democracy studies, and Yves Steinebach from implementation and public administration studies. Professor Tobias Bach is a leading public administration scholar. All four have extensive experience in setting up and developing databases. A group of research assistants will facilitate setting up the database. Advisor Shrivastava will follow up data-collection in India, and Mildemberger will advise in relation to the data gathered on US states.

Research Director Glen Peters will lead **WP3**. He is a leading researcher on climate mitigation, covering both historical trends and future pathways. He is on the executive team of the Global Carbon Budget and is a lead author of the scenario chapter (Ch3) and contributing author of the trends chapter (Ch2) of the upcoming IPCC AR6 WG3 report. Robbie Andrew, who leads the emission component of the Global Carbon Project, and Ida Sognaes, an early-career researcher in emissions scenarios and

background in political science, will also work on WP3. Boasson and Tosun will give political science inputs to this research, and make sure that this work links well to other parts in the project. Professor at the University of Oxford Charlie Wilson will be an advisor to this WP. He is a leading expert on scenarios and modelling of net-zero transformations.

Boasson will lead the cross-cutting **WP4**, take the lead in refining the analytical framework, as well as the other cross-cutting deliverables from the project. All project participants will take part, although in varying degrees. This WP will create coherence and good dialogue across WPs, and run from the beginning of the project period to the end. Throughout the project period, leading climate governance and transitions scholars and professors Frank Geels, Jon Hovi, Andy Jordan and Karin Bäckstrand will serve as a sounding board for maximizing the scientific and societal impact of ACCELZ and linking up with other adjacent research projects. They will all act as internal reviewers and participate in three or four workshops and conferences (some digital). Because the textbook, in addition to ACCELZ research, draws on work Boasson and others have performed as IPCC authors, it is possible to submit it to an international publisher already at the end of 2025. To ensure good co-ordination across WPs, Boasson, Peters and Tosun will have short meetings once a month.

The chart below presents key milestones for the project, indicating that WP1 and 4 will run for the whole project period, while WP2 and 3 have more limited duration. It specifies that we will do the qualitative and quantitative political science work in parallel, but that WP3 starts later. Moreover, one WP4 article will be submitted for publication early, another towards the end of the project period.

	2023			2024				2025				2026				2027	
	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
WP1																	
PhD UiO																	
PhD Heidl.																	
Articles																	
WP2																	
Database																	
Articles																	
WP3																	
Art.																	
WP4																	
Articles																	
Special iss.																	
Working p.																	
Textb.																	
Report																	

References

Andrew, R.M., 2020. Timely estimates of India’s annual and monthly fossil CO₂ emissions. *Earth System Science Data* 12 (4), 2411–21.

Andrew, R.M. 2021. Towards near real-time, monthly fossil CO₂ emissions estimates for the European Union with current-year projections. *Atmospheric Pollution Research* 12 (12): 101229

Boasson, E.L. 2015. *National Climate Policy: A Multi-Field Approach*. London: Routledge.

Boasson, E.L. & J. Wettestad 2013. *EU Climate Policy: Industry, Interaction and External Environment*. Farnham: Ashgate

Boasson, E.L., M.D. Leiren & J. Wettestad (eds.). 2021. *Comparative Renewables Policy: Political, Organizational and European Fields*. London: Routledge.

Boasson, E.L. & M. Tatham, forthcoming. Climate policy: from complexity to consensus. *Journal of European Public Policy*.

Boasson, E. L., S. Pulver & C. Burns 2021. The politics of domestic climate governance: Making sense of complex participation patterns. Paper under review in *Journal of European Public Policy*.

Dubash, N. 2021. Varieties of climate governance: the emergence and functioning of climate institutions. *Environmental Politics* 30 (1): 1–25.

- Dyrhaug, H. 2020. Political myths in climate leadership: the case of Danish climate and energy pioneership. *Scandinavian Political Studies*, 44(1): 13–33
- Egeberg, M. 2003 How bureaucratic structure matters: an organizational perspective, pp. 116–126 in B.G. Peters & J. Pierre (eds), *Handbook in Public Administration*. Thousand Oaks, CA: Sage.
- EEA 2021. Greenhouse gas. European Environment Agency (europa.eu) Prod-ID: DAS-270-en. Published 13 Apr 2020.
- Geels, F. 2014. Regime resistance against low-carbon transitions: Introducing politics and power into the multi-level perspective. *Theory, Culture & Society* 31(5): 21–40.
- Geels, F., F. Berkhout & D.P. van Vuuren 2016. Bridging analytical approaches for low-carbon transitions. *Nature Climate Change* 6: 576–81
- Geels, F., B. K. Socacool, T. Schwanen & S. Sorrell 2017. Sociotechnical transitions for deep decarbonization. *Science* 357 (6357): 1242–44.
- Glasgow Climate Pact 2021. Decision -/CP.26. Glasgow, UK.
https://unfccc.int/sites/default/files/resource/cop26_auv_2f_cover_decision.pdf
- Harrison, K. & L. M. Sundstrom (eds) 2010. *Global Commons, Domestic Decisions*. Cambridge, MA: MIT Press
- Hall, P.A. & D. Soskice. 2001. *Varieties of Capitalism: The Institutional Foundations of Comparative Advantage*. Oxford Univ. Press.
- Hochstetler, K. 2020. *Political Economies of Energy Transition. Wind and Solar Power in Brazil and South Africa*. Cambridge: Cambridge Univ. Press.
- Hughes, L. & J. Urpelainen. 2015. Interests, institutions and climate policy: Explaining the choice of policy instruments for the energy sector. *Environmental Science & Policy* 54(1): 52–63.
- Iacobuta, G., Dubash, N. K., Upadhyaya, P., Deribe, M., & Höhne, N. 2018. National climate change mitigation legislation, strategy and targets: a global update. *Climate Policy*, 18(9), 1114–32.
- IPCC 2018: Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, et al. (eds.)] Available at:
https://www.ipcc.ch/site/assets/uploads/sites/2/2019/06/SR15_Full_Report_High_Res.pdf
- IPCC 2021: Summary for Policymakers. In: *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [Masson-Delmotte, V., P. Zhai, A. Pirani, S. L. Connors, et al. (eds.)]. Cambridge University Press. Available at:
https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM_final.pdf
- Jordan, A. & B. Moore 2020. *Durable by Design? Policy Feedback in a Changing Climate*. Cambridge Univ. Press.
- Le Quéré, C., Korsbakken, J.I., Wilson, C. et al., 2019. Drivers of declining CO₂ emissions in 18 developed economies. *Nature Climate Change* 9, 213–17
- Levin, K., B. Cashore, S. Bernstein & G. Auld. 2012 Overcoming the tragedy of super wicked problems: constraining our future selves to ameliorate global climate change. *Policy Sciences* 45: 123–52.
- Lægreid, O.M. & M. Povitkina 2018. Do Political Institutions Moderate the GDP–CO₂ Relationship? *Ecological Economics* 145: 441–50.
- Meckling, J., N. Kelsey, E. Biber & J. Zysman 2015. Winning coalitions for climate policy. Green industrial policy builds support for carbon regulation. *Science* 349 (6235): 1170–1171.
- Mildenberger, M. 2020. *Carbon captured. How business and labor control climate politics*. Cambridge, MA: MIT Press.
- Matto Mildenberger (2021): The development of climate institutions in the United States, *Environmental Politics*, 30 (1): 71–92.
- Nordhaus, W. 1991. To slow or not to slow: The economics of the greenhouse effect. *Economic Journal* 101(407): 920–37.
- Nordhaus, W.D. 1994. *Managing the global commons: The economics of climate change*. MIT Press, Cambridge, MA.
- Peters, G., Andrew, R., Canadell, J. et al. 2017 Key indicators to track current progress and future ambition of the Paris Agreement. *Nature Climate Change* 7, 118–22.
- Peñasco, C. L. D. Anadón & E. Verdolini. 2021. Systematic review of the outcomes and trade-offs of ten types of decarbonization policy instruments. *Nature Climate Change* 11, pages257–265
- Roberts, C. & F.W. Geels. 2019. Conditions for politically accelerated transitions: Historical institutionalism, the multi-level perspective and two historical case studies in transport and agriculture. *Technological Forecasting and Social Change* 140(C): 221–40.
- Roberts, C., F. Geels, M. Lockwood, P. Newell, H. Schmitz, B. Turnheim & A. J. Jordan. 2018. The politics of accelerating low-carbon transitions: towards a new research agenda. *Research and Social Science*, 44, 304–11.
- Stavins R., J. Zou, T. Brewer, M. Conte Grand, et al. (2014). International Cooperation: Agreements and Instruments. In: *Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press.
- Sognaes, I. A. Gambhir, D. van de Ven et al. 2021 A multi-model analysis of long-term emissions and warming implications of current mitigation efforts. *Nature Climate Change* 11 (12):1055–62.
- Tosun, J. (2018) Investigating Ministry Names for Comparative Policy Analysis: Lessons from Energy Governance, *Journal of Comparative Policy Analysis: Research and Practice*, 20 (3):324-335,
- Underdal, A. 1987 International cooperation: transforming 'needs' into 'deeds'. *Journal of Peace Research* 24 (2): 167–83