Representative democracy and climate change

Climate policy preferences and congruence between citizens and elected representatives

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UNIVERSITY OF BERGEN

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Year: 2023

Title: Representative democracy and climate change

Name: Mari Skåra Helliesen

Print: Skipnes Kommunikasjon / University of Bergen

Scientific environment

Mari Skåra Helliesen has been a PhD candidate at the Department of Comparative Politics at the Faculty of Social Sciences, University of Bergen. Helliesen has been affiliated with the research group Citizens, Opinion, Representation (CORE) at the Department of Comparative Politics and the thematic research unit of Climate and Environment (KM) in The Norwegian Citizen Panel (NCP). Yvette Peters has supervised the PhD project, and Helliesen has been affiliated with the Politics of Inequality project led by Peters and funded by the Trond Mohn Foundation (grant no. 811309).

Acknowledgements

The biggest thank you to my supervisor, Yvette Peters, for cheering me on from the very beginning. You saw something in me that I at times did not, and you helped me along with such enthusiasm and motivation even before I started working on my PhD project proposal. In addition to all your crucial input on my work, I am thankful for your guidance and support in everything else that matters as well – outside of work. Importantly for the thesis, tagging along on the set up and development of PER (the Panel of Elected Representatives) was very instructive and rewarding. Thank you for including me in that important work and giving me the opportunity to design my own survey questions and experiments (in PER and beyond) and for being so inclusive with your research project.

A warm thank you to Michaël Tatham and Endre Tvinnereim for the final reading of my thesis, and for providing me with such valuable comments and suggestions as well as motivation for the final push. You were the perfect people for that task.

I am lucky to have been affiliated with the Department of Comparative Politics at the University of Bergen since my very academic beginning as an undergraduate student in 2009. I had no clue at the time that I would get the pleasure of having my lecturers as colleagues. That research spark and the idea of doing a PhD was ignited by my MA supervisor, Elisabeth Ivarsflaten, to whom I am grateful. Thank you for introducing me to the Norwegian Citizen Panel and what became DIGSSCORE. Both the data and the people there have contributed plenty to my experience. When meeting for my first MA supervision back in 2014, I had no clue what I wanted to do – except for "something about climate change". That little certainty came from the MA course on climate change taught by Siri Gloppen and Erla Løvseth. The most exciting course I attended during my seven years of BA, MA, and DIV, prior to the PhD. Thank you for introducing me to the broad field of climate change in social sciences. That is where it all started. I am very thankful for the great interdisciplinary climate and environment group at NCP / DIGSSCORE, the researchers there have been both inspiring and supportive.

Thank you to Cornelius Cappelen for always being available as PhD coordinator, temporary supervisor during my first year, and all in all just an encouraging colleague. And of course, for contributing to making the biannual PhD seminars at Solstrand (sometimes also on Zoom, and in Bekkjarvik) so fruitful and fun. I also want to thank the head of department, Leiv Marsteintredet, for always being available to talk about issues of importance to group B at the department, and issues of importance to me. I appreciate your door always being open –literally

and figuratively. Thank you for all encouragement and positive feedback. Thank you also to everyone in the administration led by Charlotte Lillefjære-Tertnæs for doing so much to make my employment – with everything it entails – as smooth as possible.

To all colleagues I have worked with on different tasks during the years at the department, I am very thankful for the experiences. I am grateful for the research group MOR, the co-coordinators and members. For interesting seminars, a safe place to present my work, and valuable feedback. Most of all, I am so glad for our "group B". For the PhD-seminars at Solstrand, of course. And for the Iceland trip after years of pandemic restraints, absolutely. Definitely also for kubb in the park and beers after work. But importantly, just for being a community during the day to day. Thank you to all my office mates – I've had quite a few before I managed to snatch a solo office. A special thank you to Troy, who has been there since the MA, and who always is ready to help with some nice figs and just R in general, even from afar (the North). I also want to thank Jana, for being both such a great team player and someone leading the way. Since way back to my time as a research assistant, you have always been so inclusive and encouraging. Thank you for reading one of the papers toward the final stages and pushing it and me further.

Though legend has it that the PhD is a marathon and not a sprint, and all that, I am indebted to my collegial and familial proof-readers for stepping it up and helping me in the final stretch and making sure I crossed the finish line in style. Thank you, Jana, Kristen, Madina, and Jens!

Outside of work, I am so grateful for the people – family and friends – who support me through it all. Who check in, listen to my struggles, sincerely ask about my project and process, encourage me, and celebrate my triumphs. Importantly, who also let me have some free time and space to unwind, and who appreciate me no matter how my work and the PhD goes. Thank you to my walking buddies, my yoga buddy, my workout buddies, my beer buddies, my dinner buddies, my long-phone-call buddies, my wine buddies, and my cabin buddies throughout these PhD years. Shout out to BNN, who just might be my number one fans (as I am their). I cannot imagine these last years without you.

Finally, a big thank you to honorary doctor Swift, for knowing exactly when I needed a new album the most. In the final stages, Midnights became my afternoons, but they were better spent with you.

Abstract

This thesis deals with two important aspects in politics today. First, the linkage between citizens, elected representatives, and public policy, which is an essential topic for the functioning of representative democracy. Second, the global challenge that is climate change. I combine two important research fields, (1) issue congruence and (2) public opinion on climate change, and analyse how well democracy functions in terms of representing climate policy preferences.

I analyse congruence and the degree to which citizens and elected representatives align on their policy preferences in Norway. I employ novel survey data from the Norwegian Citizen Panel and the Panel of Elected Representatives, asking identical questions to citizens and representatives. The main questions I pose are whether elected representatives are congruent with the electorate, whether some groups are better represented than others, whether some parties are better at representing climate policy than others, how to move policy support, and whether mechanisms to move policy support vary between citizens and representatives, as well as between specific policies.

Norway makes for an ideal case to study congruence because of the Norwegian political system and its egalitarian society, a highly educated public, strong levels of social trust, and social mobility. As a highly salient issue, climate change makes for a good policy domain to focus on. In addition, the issue is pressing and demand for policy action is rising. However, Norway is a paradoxical case when it comes to climate change. Tensions and stakes are high as Norway desires to be an international leader in climate politics while simultaneously being economically dependent on the oil industry.

This thesis consists of three articles, all dealing with aspects of climate policy support and congruence. In the first article (A1), "Unequal Representation of Women and Youth on Climate Policy Issues", I explore whether descriptively underrepresented groups also are substantively underrepresented on climate issues. I study issue congruence between the public and elected representatives on climate policies in Norway and find high levels of overall congruence. However, when divided into sociodemographic groups, representatives are less congruent with women and youth, than they are with men and older age groups, linking descriptive and substantive representation. Women and youth support climate policies to a larger extent than their counterparts, and they are underrepresented in formal politics. Men and older representatives tend to represent the preferences of their matched groups better than

women and younger representatives. However, the preferences of women and young citizens are (slightly) better represented by their own sub-groups, than by all representatives.

In the second article (A2), "Party-voter congruence: Representing climate policy preferences", I examine the same policy issues as A1, but instead of descriptive characteristics and sociodemographic groups, the lens is turned to political parties. When comparing voters to representatives in the party they vote for, issue congruence varies. The parties that do best in terms of representing climate policy preferences of their voters are the larger mainstream parties that tend to 'catch all' voters. The least congruent parties, on the other hand, are smaller, and more niche. Representatives from the right-wing Progress Party (FrP) are the least congruent with their voters, while the social democratic Labour Party (Ap) representatives are the most congruent with their voters. The Green Party (MDG) has the most issue ownership on climate issues and average levels of congruence.

In the third article (A3), "Framing Climate Policy: Moving the public and elected representatives", I shift the focus to how policy support can be moved by the framing of the issues, and the extent to which framing effects differ between citizens and representatives. The main findings are that framing does matter for policy support. Framing effects are conditioned on both types of policies as well as the audience. Framing policy issues works best for less controversial issues, and it impacts citizens more than politicians. I find that framing policy issues can strengthen general opinions. The same frames decrease support on a policy issue with generally low support (carbon tax on food) while simultaneously increasing support on a policy issue with high support (public spending on cycle lanes). Frames have more effects on citizens than representatives, subsequently making citizens more aligned with representatives, and increasing congruence between the two groups.

Sammendrag (Norwegian)

Denne avhandlingen tar for seg to viktige aspekter ved politikken i dag. For det første, koblingen mellom innbyggere, folkevalgte og offentlig politikk, som er essensielt for funksjonen til et representativt demokrati. For det andre, den globale samfunnsutfordringen klimaendringer. Jeg kombinerer to viktige forskningsfelt, (1) kongruens (samsvar) mellom folk og folkevalgte og (2) offentlig mening om klimaendringer, og analyserer hvor godt demokratiet fungerer når det gjelder å representere klimapolitiske preferanser.

Jeg analyserer kongruens og i hvilken grad folk og folkevalgtes politiske preferanser samsvarer i Norge. Jeg bruker spørreundersøkelser fra Norsk medborgerpanel og representantpanel og stiller identiske spørsmål til innbyggere og representanter. Forskningsspørsmålene mine er hvorvidt folkevalgte er kongruente med velgerne, om noen grupper er bedre representert enn andre og om noen partier er flinkere til å representere klimapolitikk enn andre. Videre undersøker jeg hvordan støtte til politiske tiltak kan flyttes, og om mekanismer for å endre politisk støtte varierer mellom innbyggere og representanter, samt mellom spesifikke tiltak.

Norge er et ideelt land å studere kongruens i grunnet det politiske systemet, et egalitært samfunn, høyt utdannede borgere, høy grad av sosial tillit og sosial mobilitet. Klimaendringer er en svært viktig og fremtredende sak. I tillegg er det tidskritisk og en økende etterspørsel etter politisk handling. Norge er imidlertid et paradoksalt tilfelle når det gjelder klimaendringer med et ønske om å være en leder i internasjonal klimapolitikk, samtidig som økonomisen er avhengig av oljeindustrien.

Avhandlingen består av tre artikler som alle omhandler aspekter ved støtte til klimatiltak og samsvar mellom folk og folkevalgte. I den første artikkelen (A1), «Uequal Representation of Women and Youth on Climate Policy Issues», undersøker jeg om deskriptivt underrepresenterte grupper også er underrepresenterte på klimaholdninger. Jeg analyserer kongruens mellom folk og folkevalgte på klimapolitikk i Norge og finner at det generelt er bra samsvar. Når folket deles inn i sosiodemografiske grupper derimot, er folkevalgte mindre kongruente med kvinner og unge enn de er med menn og eldre aldersgrupper. Dette viser en sammenheng mellom deskriptiv representasjon og representasjon av holdninger. Kvinner og unge har mer støtte til klimatiltak enn menn og eldre, og de er underrepresentert i formell politikk. Mannlige og eldre representanter representerer preferansene til deres samsvarende

grupper bedre enn det kvinnelige og unge representanter gjør. Preferansene til kvinner og unge borgere er imidlertid bedre representert av deres egne grupper enn av alle representanter.

I den andre artikkelen (A2), «Party-voter congruence: Representing climate policy preferences», ser jeg på de samme klimatiltakene som i A1, men i stedet for sosiodemografiske grupper, vendes linsen mot politiske partier. Jeg sammenligner preferansene til velgere og representanter i partiet de stemmer på. Partiene som best representerer sine velgeres klimapolitiske preferanser er større og såkalte «mainstream-partier» som i stor grad fanger opp alle velgere. De minst kongruente partiene er derimot mindre og mer nisje. Representanter fra Fremskrittspartiet (FrP) har minst samsvar med sine velgere på klimatiltak, mens representanter fra Arbeiderpartiet (Ap) har mest samsvar med velgerne. Miljøpartiet De Grønne (MDG) har størst sakseierskap i klimasaken, men et gjennomsnittlig nivå av kongruens.

I den tredje artikkelen (A3), «Framing Climate Policy: Moving the public and elected representatives», flytter jeg fokus til hvordan støtte til politiske tiltak kan endres ettersom hvordan politikken formidles og rammes inn, og i hvilken grad slike effekter varierer mellom innbyggere og representanter. Hovedfunnene er at hvordan tiltak formidles og rammes inn har betydning for støtte. Effektene er betinget av hva slags tiltak som presenteres, så vel som publikummet det presenteres til. Innramming av tiltak fungerer best for mindre kontroversielle saker. Jeg finner at måten tiltakene rammes inn og formidles på kan styrke allerede eksisterende meninger om sakene. De samme rammene reduserer støtten til et tiltak med generelt lav oppslutning (karbonskatt på mat) samtidig som de øker støtten til et tiltak som allerede har høy oppslutning (utbygging av sykkelveier). Innramming har mer effekt på folk enn på folkevalgte. Dette fører til at meningene til folket flyttes nærmere representantene og dermed øker kongruensen mellom dem.

List of Articles

Helliesen, Mari S. 2022. "Unequal Representation of Women and Youth on Climate Policy Issues." *Representation.* https://doi.org/10.1080/00344893.2022.2133001

Helliesen, Mari S. "Party-voter congruence: Representing climate policy preferences."
 Manuscript

Helliesen, Mari S. "Framing climate policy: Moving the public elected representatives."
 Under review in *European Journal of Political Research*.

Contents

1 Introduction

Democracy is uniquely characterized by forging a 'necessary connection' between public preferences and public policy (May, 1978; Saward, 1998). In his discussion on the requirements of democracy, Dahl (1998) emphasizes responsiveness, citizenship, and political equality. Public opinion is a driving force in democracy. A potential democratic deficit – a gap between preferences of the people who vote and the parties and representatives they vote for – can threaten the function of representative democracy.

Hanna Pitkin (1967, p. 209) defines representation as "acting in the interest of the represented, in a manner responsive to them". Consequently, policymakers should reflect the policy preferences of citizens in a representative democracy. According to Powell (2004, p. 274) "Virtually all research on citizens, elections, and policy making in contemporary democracies is relevant to democratic representation broadly conceived." My research builds around congruence, one important aspect of the link between public opinion and public policy. Focusing on *congruence* builds on the idea that unequal responsiveness originates before decisions are made, based on the composition and preferences of elected representatives (Weber, 2020).

In broad terms, congruence can be defined as "the quality of being similar to or in agreement with something" ("Congruence," 2023). In this thesis, congruence is understood in terms of opinion and preferences, studying the degree to which representatives and citizens are aligned. The way I conceptualize congruence is closely related to the data I employ. I use novel survey data where citizens and representatives have been asked identical questions about their opinion on policy issues. Issue congruence here is understood as a match between policy preferences of the public and policymakers. It can be viewed as a cross-sectional picture of a larger process of responsiveness, where preferences are translated into actual policies.

Congruence is an important aspect of representative democracy that has received increasing attention in political science research the past few decades. Moving from ideology as the main focal point of this research field to issues and policy preferences has been an important step as to examining and understanding how well citizens are represented by their elective bodies. While congruence on policy preferences, issue importance, and similar are overall important, I argue that studying congruence on climate policy issues specifically, is particularly pertinent. Climate change is one of the largest global challenges in modern time and immediate action is essential to limit serious consequences. Scientists agree on this;

however, implementation of necessary measures and policies have proved to be slow and lacking.

As one of the greatest global challenges of our time, climate change is also one of the greatest challenges facing democracies today. Public opinion and policy change are closely linked in democratic countries. It has been argued that one of the main issues that needs to be tackled regarding climate change is making people understand the scope and seriousness of it. The lack of broad public support is argued to prevent implementation of effective climate policies and is thus seen as a major barrier to realizing a transition to a low-carbon economy (Wiseman, Edwards, & Luckins, 2013). Some argue that policy makers are reluctant to implement climate policies if they expect public opposition. Policies are implemented by governments who need the trust of their citizens (Drews & Van den Bergh, 2016). Another major challenge to necessary climate policy implementation is the short horizon of elected representatives and parties, operating in short electoral cycles. Major effective policies are costly in the short-term, but its benefits will mostly be proven in a long-term. Furthermore, climate change is inherently long termed. Mitigation measures that will have the most effect will likely be costly. Not only in monetary terms at the political administrative levels, but also when it comes to required behavioural changes for individuals. These more visible policies are difficult to get both citizens and policy makers behind. Another crucial aspect is therefore how to gain support for climate policies.

The climate policy issues I analyse in this thesis cover important sectors in the climate and transition debate and deal with extraction of oil and gas, wind power, electric vehicles, cycle lanes, and meat reduction. All policy issues are mitigation measures intended to reduced greenhouse gas (GHG) emissions.

Aspects of the Norwegian political systems as well as political culture should make it a most likely case for congruence and least likely case of unequal representation. When it comes to climate change, however, Norway is a paradoxical case. On the one hand, the Norwegian economy is heavily dependent on the petroleum industry, and on the other hand the country is ambitious in international climate politics and has been portrayed as a leader.

The aim of this thesis is to explore and explain (unequal) issue congruence on climate policy in Norway. From the start of this project, I have worked within two different research fields, and combined them. Namely (1) public opinion on climate change and policy preferences and (2) representation and congruence. Speaking to two different fields at the same time has proven to be quite challenging. I saw the lack of these two important and growing fields communicating with each other as a research gap where I could contribute. However,

while working on this thesis, I have struggled to convince the two research fields of the combined contribution. The feedback has very often been that this is interesting, however, maybe I should consider talking to the other field instead. When addressing a "climate audience" the sentiment has often been that the approach is more in the representation field. And vice versa. At the same time, this has been an opportunity. I have been invited in to two different fields and learned a great deal from both of them. I have also been able to bring something new to the table. And there are exceptions of course, both in terms of researchers being open and interested in including the "other" field, as well as a few researchers that already to some extent have focused on climate policies and (unequal) representation. Still, I see it as my job to convince the reader that studying representation and congruence on climate issues specifically is a contribution to both research fields. This is what I aim to show through this synopsis. Further, that the Norwegian case is both interesting and applicable in terms of representational aspects as well as concerning climate change.

In the thesis, I look at (climate policy) issue congruence from different angles, both through descriptive representation and political parties. As analytical steps of the study, I measure representatives' climate policy preferences, which have only been captured to a limited extent thus far. I further compare the preferences of citizens and representatives, asking whether elected representatives congruent with citizens and voters on climate policy preferences. From there, I examine whether some groups are better represented than others, and if there are inequalities in whose preferences are represented (A1). I also ask whether some parties are more congruent than others, and hence if parties matter for (climate) issue congruence (A2). Finally, I look at mechanisms explaining climate policy preferences, how framing issues can affect policy support, whether these mechanisms are different or the same for citizens and representatives, and how they affect congruence (A3). These approaches and questions contribute to the overarching question, how representative democracy is, and how well it functions when it comes to the issue of climate change. Summaries of the articles are presented in Table 1 below.

The main contribution of this thesis is empirical. Combining survey data from both the general public and elected representatives is especially valuable. Furthermore, I have asked citizens and representatives identical questions about their preferences on policy issues. Included in the data are also novel survey experiments, which rarely are posed to elected representatives, let alone comparing them to the public. Thematically, the focus is on one overarching issue – the global challenge that is climate change – which contributes to a theoretical expansion.

I find that overall, citizens and representatives are fairly congruent on climate policy issues in Norway. However, descriptive representation matters for issue congruence and substantive representation (A1). The youth and women are underrepresented in formal politics and on their climate policy preferences. They also support climate policies to a larger extent than older age groups and men, respectively. An implication of this finding is that better descriptive representation of women and youth can be an important step towards increased climate action. Congruence also varies by political party (A2). Looking at party-voter congruence, the radical right Progress Party is the least congruent with its voters on climate issues. They also have the lowest levels of climate concern and salience. The large mainstream Labour Party is the most congruent with its voters. While the Green Party has the most issue ownership on climate and are the most climate concerned, they are average in terms of issue congruence. There is a correlation between how congruent parties are with their voters in terms of climate concern, but not ideological concerns. This implies that issue congruence (on climate policies) captures something other than just the left-right placement (ideology). When comparing congruence in sociodemographic groups (A1) and parties (A2), citizens' climate policy preferences are generally better represented by elected representatives who share characteristics with them, than by the parties they vote for. Finally, policy support can be moved by framing the policy issues (A3). Framing effects vary by the specific policies, the frames applied, and between citizens and representatives. One implication of the findings on framing is that framing controversial policy issues can backfire and that some audiences are more receptive than others. Policy makers and advocates should therefore be cautious when framing policy issues to gain support.

This synopsis is constructed to provide the reader with an overall understanding of the two broad research fields, representation and congruence, and climate change. In addition, it places the Norwegian case in context, both when it comes to the political system and representation and climate change perceptions and climate policy. Thereafter, I present and discuss the methods and data used in this thesis, before outlining main findings. Finally, the findings, contributions, and implications of the thesis are discussed.

Table 1: Summary of Articles

#	Article	Approach	Summary
1	*Unequal Representation of Women and Youth on Climate Policy Issues*	Descriptive representation; congruence between citizens and representatives in sociodemographic sub-groups	Issue congruence is high. When divided into sociodemographic groups, representatives are less congruent with women and youth, than they are with men and older age groups, linking descriptive and substantive representation. Women and youth support climate policies to a larger extent than their counterparts, and they are underrepresented in formal politics.
2	*Party-voter congruence: Representing climate policy preferences*	Party representation, party-voter congruence	The radical right Progress Party is the least congruent with its voters, while social democratic Labour Party is the most congruent. The parties that do best in terms of representing voters' preferences are larger mainstream parties that seem to catch all voters. The least congruent parties are smaller, and more niche. The Green Party, which has the most issue ownership on climate issues, has average levels of congruence.
3	*Framing climate policy: Moving the public and elected representatives*	Effects of framing on policy support, differential effects between citizens and representatives	Framing matters. Framing effects are conditioned on both the types of policies as well as the audience. Framing policy issues works best for less controversial issues, and it impacts citizens more than politicians. The same frames decrease support on a policy issue with generally low support (carbon tax on food) and simultaneously increase support on a policy issue with high support (cycle lanes). Frames have more effects on citizens than representatives, subsequently moving citizens towards representatives, and increasing congruence between the two groups.

2 Representation & congruence

In this chapter, I will give an overview of the development of research on political representation. First, I will discuss normative aspects of democracy. I provide a brief review of responsiveness, before discussing more in-depth the concept of issue congruence, the (mis)match of policy preferences of citizens and representatives. In terms of differential congruence, I base my discussion on the two approaches to representation applied in this thesis: (1) descriptive representation, which focuses on sociodemographic characteristics of citizens and representatives, and (2) party representation, connecting voters to representatives of the parties they vote for. Finally, I will touch upon mechanisms of explaining and moving policy support (among both citizens and policymakers), specifically in terms of framing. The aim of this chapter is to provide the reader with the theoretical framework and a brief literature review of the main concepts that are the backbone of my research.

2.1 Democracy

In a paper in *Political Studies*, John D. May (1978) proposed a short definition of democracy, which he labelled responsive rule: "necessary correspondence between acts of governance and the wishes with respect to those acts of the persons who are affected" (May, 1978, p. 1). He argued that this conceptualization identified democracy as government *by* the people, and not *for* the people. Further, that it ascribed popular control over *policies* rather than procedures or personnel.

Robert A. Dahl (2007) argues that the ideal of democracy presupposes the desirability of political equality. Therefore, if democracy is the ideal, then political equality is also an ideal. Further, that democracy is "the only political system for governing a state that derives its legitimacy and its political institutions from the idea of political equality" (Dahl, 2007, p. 6). According to Dahl (2007), an ideal democracy requires (at minimum): effective participation; equality in voting; gaining enlightened understanding; final control of the agenda; inclusion; and fundamental rights. In a *representative* democracy, important and necessary political institutions are: elected representatives; free, fair, and frequent elections; freedom of expression; alternative sources of information; associational autonomy; and inclusion of all members of the demos (Dahl, 2007, p. 14).

2.2 Representation

Political representation and policy congruence are two basic principles of modern democracy (Rosema, Denters, & Aarts, 2011). In a representative democracy, the public (s)elects legislators to represent them. The linkage between the public and elected representatives is consequently an essential topic for the function of representative democracy (Dalton, Farrell, & McAllister, 2011). What it means to be represented in a democracy, and the degree to which representation works, has been addressed from different angles in the literature.

Arguably the most influential contribution to representation literature was made early on by Hanna Pitkin. In *The concept of representation*, she defined representation as "acting in the interest of the represented, in a manner responsive to them" (1967, p. 209). Wolkenstein and Wratil (2021) refer to the literature from this millennial as the "new wave" of conceptual research on political representation, starting with the seminal work of Jane Mansbridge (2003). In the article "Rethinking Representation", Mansbridge (2003) made a distinction between four ideal-typical forms of representation: promissory, anticipatory, gyroscopic, and surrogate. Promissory and anticipatory representation are two different versions of a sanction model where principals reward or punish agents in elections, either prospectively or retrospectively. In gyroscopic representation, principals chose their agents based on self-motivation and interests. The representatives then act on the basis of their own beliefs and principles. In surrogate representation, there is no clear principal-agent relationship and no electoral relationship. Rather, there is a relationship between contributors (of money or other goods) and the representative through campaigns. In the view of Saward (2010), representation is a claim put forward by an actor. This actor claims speak or act on behalf of certain groups of people. Those who the actor claims to represent may or may not accept the representation. According to Saward (2010), representation does not need to be based on electoral relationships, or even governmental decision making. Representation can in this sense be across society or even countries.

So, how is representation studied empirically? The study of representation ranges from the formation of citizen's preferences to policy outcomes (Belchior, 2010), where the latter is linked to the former through elected representatives. Early on, the focus in representation studies was on the link between a representative elected from a district and its constituency, building on trustee-delegate models of representation, mainly in the US (e.g. Miller & Stokes, 1963). The seminal work by Miller and Stokes (1963) used survey data to establish citizens'

issue positions in congressional districts in the US, and linked these to district representatives' perceptions, preferences and behaviour.

As research grew outside of the US, and specifically in European states, the focus shifted to the link between voters and their preferred parties, building on representation theories of responsible party government (Dalton et al., 2011). The party government model was seen as more relevant for parliamentary systems, where parties are the main political actors, and not candidates, as is common in European states (e.g. Barnes, 1977; Converse & Pierce, 1986; Dalton, 1985). A presumption by the responsible party government model is that party members in a parliamentary delegation act in unison with a cohesive voting bloc (Bowler, Farrell, & Katz, 1999). This led European studies to focus on the collective legislative party as the agent of the principal party voters (Powell, 2004). Rather than a direct (personal) link between a politician and their constituents, representation is here channelled through party organizations. Around the turn of the millennium, comparative substantive representation studies emerged. These studies added the examination of system-level effects on substantive representation, such as party systems, election rules, and historical context (Powell, 2004).

According to Achen and Bartels (2017), the expressed views of voters during election campaigns often do match those of the party they vote for. But this match is mostly due to parties and candidates teaching their voters what to say, and not the other way around, they claim. Other scholars argue that representation should be viewed as a dynamic process, as democracy is not a single event (Dalton et al., 2011). According to Stimson, MacKuen, and Erikson (1995, p. 543), public opinion moves meaningfully over time, government officials sense this movement, and those officials alter their behaviour in response to this sensed movement. Voting can thus be both prospective and retrospective, and public opinion does not necessarily affect policy output in a straightforward manner. Rather than simply elected representatives and parties shifting their policy stands due to citizens' and voters' preferences, and consequently policies being implemented, public opinion can also be caused to shift responding to cues from representatives and parties, or even adapt to policy output.

Powell (2004) further distinguishes between two large bodies of research in the citizens-elections-policy making nexus. *Procedural* representation starts with citizens' party votes in elections, which is then linked to party representation in legislatures, which leads to policy aggregation. The starting point of *substantive* representation, on the other hand, is the preferences of citizens. These are linked to the preferences and behaviour of elected representatives through the vote choice of the citizens (Powell, 2004).

In this thesis, citizens' *preferences* are the main focus, as well as the preferences of the elected representatives. The linkage of public opinion and policy output is complex and studying it can be complicated. Therefore, this thesis concentrates on assessing and measuring the degree of (in)congruence between policy preferences of the public and elected representatives.

2.3 Responsiveness

Research has examined the match between citizen's policy preferences and policy outputs (Branham, Soroka, & Wlezien, 2017; Soroka & Wlezien, 2004; Soroka & Wlezien, 2005; Wlezien & Soroka, 2007). This approach is sometimes referred to as policy congruence, and other times responsiveness, depending on how static or dynamic the studies are. Strictly speaking, these are different aspects. While one looks at the match between public opinion and public policies, another looks at changes in public opinion and implementation of new policies. In the literature, different definitions are applied. For the sake of clarity, I will refer to these approaches as responsiveness, to distinguish them clearly from congruence, as defined in this thesis. Manza and Cook (2002) stress that the impact public opinion has on public policy is at the centre of scholarly interest in public opinion. They distinguish between three distinct images that emerged from the literature on the opinion-policy linkage. First, the perception of public opinion exerting significant enduring effects, second, the perception of small, insignificant, or declining effects, and third, the emphasis on historical and institutional variation in responsiveness (Manza & Cook, 2002, p. 17).

Representative democracy should consist of governments that are both responsive and responsible. According to Mair (2009), these two characteristics are becoming increasingly incompatible. He argues that there is a growing gap between what citizens want and what governments are obliged to do. Part of this growing gap is related to international commitments and economic interdependence. However, Linde and Peters (2018) argue that when governments are seen as responsive, they build a reservoir of good will, which allows them to make decisions that are responsible, though not necessarily responsive at later times. In this sense, responsiveness and responsibility can complement each other (Linde & Peters, 2018).

An important discussion in responsiveness research is causality. From there, which direction the causality has. The question becomes whether policy implementation is a response to (shift in) public opinion, or rather whether public opinion shifts in response to policy.

An emerging section of the responsiveness literature covers political inequality and examines the extent to which some groups have more influence on public policy than others. Among the first and most influential studies in this literature was that of Gilens (2012), analysing influence by affluence in the US. While most of the unequal responsiveness studies have been done on the American case, recent research shows that political decisions are biased in favour of affluent citizens also in Europe (Mathisen et al., 2021), including Norway (Mathisen, 2022), the Netherlands (Schakel, 2021), and Germany (Elsässer, Hense, & Schäfer, 2020).

2.4 Congruence

Congruence and responsiveness can be seen as two sides of the same coin (Beyer & Hänni, 2018). Within the range of representation studies is the analysis of how the policy preferences of citizens and elected representatives align. This the definition of congruence applied in this thesis. Congruence is seen as an important characteristic of representative democracy and can be a valid instrument in assessing representation, where representation occurs if elected representatives share policy preferences of the citizens who voted for them (Belchior, 2010).

While responsiveness assumes a direct process of causality, congruence does not. Studying congruence in the context of representative democracy concerns the degree to which elected representatives and the public align. In this thesis, I do not try to explain any causal chains – whether public opinion affects the opinion of elected representatives, or public opinion is affected by the opinion of elected representatives, or even if opinion shifts parallelly. While this is an important and interesting question of analysis, it is not what I try to answer here. Rather, I am interested in how well preferences of the electorate, and groups of the electorate, are represented by the representatives they have elected – to represent them. Congruence is thus *one way* of measuring the state of representative democracy at *one point* in time.

Much research in the field of political congruence has focused on ideological congruence, typically measuring mass-elite distance through self-placement on the left-right scale (Golder & Stramski, 2010; Huber & Powell, 1994; McDonald, Mendes, & Budge, 2004; Powell, 2009). Public opinion studies have shown that citizens' preferences tend to be weakly structured, even in educated societies with developed partisan discourse (Powell, 2004). Further, the ability to predict citizens' opinions on one issue by their opinion on another issue, is limited. This also applies to inferences of policy preferences on the basis of left-right scales. More recently, *issue congruence* has become an increasingly common approach of congruence

studies (Arnold & Franklin, 2012; Dalton, 2017; Rosset & Stecker, 2019). Rather than simply measuring political ideology on a general scale, issue congruence captures (mis)match between representatives and citizens on specific policy issues. One important reason for the shift to studying congruence of specific policy preferences, is that new cultural and social issues have cut across the traditional left-right dimension and party cleavages.

A main debate related to explaining (in)congruence, is whether electoral systems matter, comparing proportional representation (PR) and majoritarian electoral systems (Blais & Bodet, 2006; Dalton, 1985; Huber & Powell, 1994; Powell, 2009). According to Dalton (2020), traits of PR systems, such as a party's shared election platform, party organization in campaigns, and the fact that citizens vote directly for parties rather than individual candidates, should increase party-voter congruence, relative to majoritarian systems. Powell (2004) argues that one would expect PR systems with large magnitudes and multiple political parties to be able to represent multi-dimensional citizen preferences in the legislature. And that multidimensionality is more difficult to be reflected in systems with small magnitudes and few parties.

2.5 Differential congruence

In this thesis, I dissect issue congruence from different angles. I analyse differential congruence, and the degree to which some groups are better represented than others, from two perspectives. First, from the perspective of descriptive representation, I examine if the principle of equality is adhered to, by comparing citizens to representatives in sociodemographic groups. Second, from the party perspective, I ask if parties work to represent climate preferences, and if party choice matters by comparing voters and party representatives. The first approach deals with the extent to which people who 'look like you' are congruent with you, thus linking descriptive and substantive representation. The latter concerns how congruent the party you vote for is, and whether congruence varies by party characteristics.

2.5.1 Descriptive representation and inequality

Peters and Ensink (2015) argue that political equality is an important condition for democracy, in addition to responsiveness. For governments to respond to every citizen's preference all the time is an impossible task. However, from a democratic point of view, there should not be a systematic inequality in whose preferences are responded to. Descriptive representation deals with characteristics of the representatives, while substantive representation can be defined as

having one's policy views expressed by an elected representative (Hayes & Hibbing, 2017). Substantive representation and issue congruence are thus closely related. Achen and Bartels (2017, p. 313) argue that "issue congruence is not the heart and soul of democratic representation. Rather, voters primarily look for politicians who match their identities". In other words, that identity is more important than policy preferences. However, when sharing characteristics makes it more likely to also share policy views, descriptive and substantive representation can go hand in hand, with descriptive representation leading to substantive representation (Mansbridge, 1999). Therefore, members of the same sociodemographic groups are expected to be more congruent with each other, which I argue *is* an important aspect of democratic representation. Related, Arnesen, Duell, and Johannesson (2019) find through survey experiments that when citizens make a choice of which political candidate they prefer, they put more emphasis on knowledge about the candidates' issue positions than their sociodemographic characteristics. When citizens do not know the candidates' issue positions, however, they form beliefs about them based solely on their characteristics.

The underrepresentation of women has been given scholarly attention the last decades (Costa & Schaffner, 2018; Mansbridge, 1999; Phillips, 1995; Wängnerud, 2009). It is argued that women might represent women's preferences better than men. One explanation for this is a shared experience (Mansbridge, 1999), more specifically a shared experience of disadvantage, discrimination, and exclusion. An additional argument is that individuals that lack those experiences might not understand the concerns, interests, and perspectives of the groups with said experience (Phillips, 2020). At the same time, others stress the fact that men have also fought for women's rights, women's experiences and preferences also differ amongst themselves, and not all elected women wish to speak for women specifically (Celis, Childs, Kantola, & Krook, 2008; Phillips, 2020).

From a democratic point of view, any form of inequality can be seen as problematic, not just in cases of marginalized groups. According to Mansbridge (2015), a crucial factor concerning the importance of a group's descriptive representation, is how well the interests of the group are represented through other mechanisms in the larger representative system. The youth in politics is a far smaller and more recent research field than women's representation. However, the young are strikingly underrepresented in the political sphere (Fisher, 2012). While the age group of 20 to 39 make up over 40 percent among the world's voting population, they only account for only 17 percent of members of parliament (Belschner & Garcia de Paredes, 2020). Similarly, the age group 18–35 make up more than three times as many individuals globally, than the age group 60 and above. However, the older age group is

commonly two to five times more represented than the young age group in national parliaments, according to Stockemer and Sundström (2018). Compared to gender, which is stable and consistent over time for most people, age is inherently different, as it changes continuously by nature. Age representation is inherently different from gender or other marginalized groups by the shear fact that being young is temporary, and individuals' underrepresentation by age is therefore also temporary. From a group perspective, however, the presence of youth in legislatures is arguably crucial (Sundström & Stockemer, 2020; Young, 1990), and can provide unique perspectives. Some long-term policy decisions that are made today, including on climate change, will affect younger generations to a much larger extent in the future. Therefore, even if they can gain political influence with age, it may be too late for some important political decisions.

Other groups of importance to descriptive representation and congruence are educational and regional. Education is an important factor in political, social and economic divides recently seen in Western Europe (Schakel & van der Pas, 2020). It is also often used to explain voting behaviour and political attitudes. According to Elsässer et al. (2020), differences in education and occupational background attribute to descriptive misrepresentation in European parliaments. The distance from the political centre, in terms of peripheral regional location, is a distinct factor when explaining political systems and outcomes (Stein, Buck, & Bjørnå, 2021). This includes spatial identity and representation of specific regional interests, as well as a potential sense of exclusion from the political system and decisions made in the political centre (Eidheim & Fimreite, 2020).

Allern, Heidar, and Karlsen (2015: Chapter 3) argue that here has been a tendency toward declining descriptive representativeness in European national parliaments. MP profiles have turned more elitist and professionalized from the 1980s onwards. Simultaneously, there has been an increase in the presence of women. The mean age of MPs entering into parliaments has remained fairly stable. Educational level has seen a rise post WWII (Allern et al., 2015: Chapter 3).

The earlier works on the public opinion-public policy linkage looked at citizens collectively, either by constituency, party voters, or the entire electorate. Recent contributions have analysed issue congruence as an aspect of political inequality, by dividing the public into sociodemographic sub-groups. Lupu and Warner (2022a) find that legislators' preferences are consistently more congruent with those of affluent citizens, around the world. However, this inequality varies substantially by issue. The affluent are better represented on economic issues, while the poor are better represented on cultural issues. Lupu and Warner (2017) find that

elites' preferences in Argentina align most with citizens residing in the capital area and the wealthy. Rosset and Stecker (2019) find an underrepresentation of poor on redistribution, and an underrepresentation of lower educated on European integration in a study of 16 European states. They link these results to a representation gap in where governments are more congruent with privileged social groups. Warburton, Muhtadi, Aspinall, and Fossati (2021) show that Indonesian politicians are generally more congruent with upper-class voters. They stress that Indonesian politicians have much higher levels of education and income than citizens, in addition to being more likely to have professional backgrounds. Boas and Smith (2019) study congruence in Brazil in groups by gender, religion, and ethnicity. They argue that citizens from historically underrepresented social groups should vote for people who they share characteristics with, in order to elect representatives with whom they share preferences with on major policy issues.

Not all research on differential issue congruence demonstrate similar inequalities, though. Kissau, Lutz, and Rosset (2012) find relatively equal substantive representation of different age groups in the lower house of the Swiss parliament. Dingler, Kroeber, and Fortin-Rittberger (2018) compare 21 European countries and find that women's preferences tend to be more accurately represented in parliaments than those of men. They argue that the finding is driven by levels of women's turnout, indicating that who votes is more important than who represents. However, they also find that the policy fields of environment and multiculturalism are important exceptions, in which parliaments reflect men's preferences better than women's preferences.

2.5.2 Party representation

In parliamentary systems, political parties are the most important vehicle for aligning preferences between voters and representatives. Representative democracy and political parties are closely linked in their development. Political parties emerged toward late 1800s and brought about stronger organization and more formalized ties (Allern et al., 2015: Chapter 2). The delegation from voters to representatives, and from representatives to executives are facilitated through the parties. Aligning preferences between voters and politicians are a fundamental task of political parties.

According to the responsible party mandate model, political parties present policy alternatives to citizens before elections. Voters then vote for the party closest to their own policy views. Thereafter, parties should follow up on and implement the policy program.

Preference proximity between voters and party representatives is in this view a consequence of parties' electoral competition, advocating different policy packages (Allern et al., 2015: Chapter 2). According to Dalton (2020), voters being able to find a party that represents their interests is a requirement of democratic representation. Therefore, citizens' policy demands are what drives representation. Valen and Narud (2007) assume that voters prefer parties to take strong stands on issues of importance to them.

Achen and Bartels (2017) argue that voters choose political parties as a mechanism of social group alignment. Rather than calculating which party is closest to them on policy positions, citizens support a party because that particular party represents people like them. party choice is therefore closely tied to social identities (Achen & Bartels, 2017). Parties can be seen as a short cut for citizens, in which they do not need to have extensive knowledge on all political issues, or even preferences on all issues. This is one of the functions of political parties.

Research on party-voter congruence has identified characteristics in electoral and party systems that can play a role in how aligned parties' policy preferences are with their voters, including the difference between PR systems and majoritarian systems. A basic assumption is that more diverse party choices, that multi-party systems tend to bring, will increase party-voter congruence. While cross-national studies have found greater ideological congruence between voters and parties in countries with a higher number of parties, it is more varied across specific policy domains (Dalton, 2020). Research also suggests that party-centred systems lead to more congruence between voters and their party choice, as compared to more candidate-centred systems, typically single-member districts (SMD). Another related element is district magnitude, the number of seats elected in the electoral districts. Higher magnitude naturally provides more opportunities for smaller parties, which contributes to increasing party choice (Dalton, 2020). Finally, the disproportionality of an electoral system can affect party-voter congruence. This accounts for the distance between share of votes a party receives and the share of seats they end up with in the legislature (Dalton, 2020).

2.6 Moving public opinion and policy preferences

Connected to how congruent and responsive policy makers are to the electorate is also the question of how to move public opinion and increase policy support. It can be argued that political action sometimes is necessary, even if there is not (yet) public support. This can be seen in relation to the responsible versus responsive discussion mentioned earlier. Some

scholars argue that the average citizen holds only weak opinions or non-attitudes (Converse, 1964), and that these are subject to manipulation by political elites and in the media (Manza & Cook, 2002). According to Kammermann and Dermont (2018), citizens are less polarized and partisan than the elite, and therefore less opposed to new solutions and more likely to change their stands. Powell (2004) argues that the preferences of representatives generally are more structured than those of citizens, and that representatives' opinions often appear more extreme, due to a stronger link to their partisanship. Representatives also have more at stake than voters do, and to a larger extent need to consider long term effects of action versus short term costs and re-election. According to Zaller (1992), the public does not hold true attitudes on most issues that are relatively peripheral to their everyday concerns. Instead, attitudes are built on the most recent information that they have received, therefore elite cues play an important role.

An additional angle of this thesis deals with the concept of framing, which can be situated within the broader democratic process that links politicians and other opinion leaders to the public. According to Chong and Druckman (2007), framing effects are intrinsic to the formation of attitudes and opinions. As part of public opinion formation is the selective acceptance and rejection of competing frames that contain information about candidates and issues. Further, that discussions about the appropriate frames for conceptualizing an issue ultimately leads to common perceptions about policy consequences. Geer (1996) argues that well-informed policymakers and less well-informed citizens behave differently, even when their motivations align. Research has demonstrated that public opinion reacts to framing and cue effects (Bechtel, Hainmueller, Hangartner, & Helbling, 2015). Frames can be used to communicate why an issue might be a problem, who or what might be responsible, what should be done about it, or motivations to deal with the issue. Policy makers and activists alike may want to move public opinion in order to gain support for desired policies and political action. Entman (1993) argues that framing essentially involves selection and salience. Frames select and highlight some aspects of information about an item that is the subject of a communication and makes it more salient.

3 The Issue of Climate Change

Climate change is one of the greatest global challenges of our time. It is all-encompassing, converging with other pressing global challenges, including migration, food security, and health issues, such as heat-related deaths and spread of infectious diseases (Romanello et al., 2022). This chapter situates the issue of climate change, which is the policy domain at centre stage of the thesis. I lay out important challenges that hinder climate action, and that need to be tackled to deal properly with climate change, to explain why climate policy is moving at a significantly slower pace than scientific knowledge. Thereafter, I briefly present current knowledge of public opinion on climate change, followed by a short review of the inclusion of climate change in political science research, specifically related to democracy and representation. Finally, I discuss existing climate policies, including targets and recommendations from the IPCC.

3.1 Dealing with climate change

Climate change is a highly salient issue. However, the policy domain has not been given that much attention in the field of representation and congruence. In addition, climate change perceptions and policy preferences of elected representatives are understudied. This thesis provides an important contribution in these regards.

"It is unequivocal that human influence has warmed the atmosphere, ocean and land", according to the Intergovernmental Panel on Climate Change[1] (IPCC, 2021, p. 4). Further, that human influence has warmed the climate at an unprecedented rate in at least the last 2000 years. "[G]lobal surface temperature has increased faster since 1970 than in any other 50-year period over at least the last 2000 years" (IPCC, 2021, p. 8). It has recently been reported that the extent and magnitude of climate change impacts are larger than previously estimated and that climate change already has caused "substantial damages, and increasingly irreversible losses, in terrestrial, freshwater and coastal and open ocean marine ecosystems" (IPCC, 2022b, p. 9). According to leading scientists in the latest reports from the IPCC, there is a need of immediate action if we are to avoid further serious consequences on human and ecological systems.

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[1] The Intergovernmental Panel on Climate Change (IPCC) is the UN body for assessing climate change science. It was established by the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO) in 1988. The aim is to provide political leaders with periodic scientific assessments concerning climate change, its implications and risks, as well as to put forward adaptation and mitigation strategies. IPCC has 195 member states.

Including, but not limited to, impacts from hydrological changes resulting from the retreat of glaciers, and changes in Arctic ecosystems driven by permafrost thaw (IPCC, 2022b, p. 9). All modelled pathways that limit global warming to 1.5°C or 2°C, involve rapid and deep, and in most cases immediate, GHG emission reductions in all sectors (IPCC, 2022a, p. 28).

Still, an important issue that remains to be tackled regarding climate change is making people understand the scope and seriousness of it. A dominating assumption in the social science field of climate change research was earlier the information deficit model: that a lack of knowledge was the main cause of climate change scepticism among the public (Austgulen & Stø, 2013). Increased dissemination about climate change was considered a solution, assuming that providing information about climate change would lead to increased public concern and willingness to act (Kellstedt, Zahran, & Vedlitz, 2008b). Hence, the public not demanding action was not due to them not caring enough about climate change, but rather that they did not know enough about it. Following, the more people knew about climate change, the more they would feel personally responsible for it (Kellstedt et al., 2008b). As scientific evidence on climate change has accumulated at a much faster pace than attitudinal change, the information deficit model has been deemed inadequate (Van Boven & Sherman, 2021).

Scepticism and denial have been persistent obstacles on the way to political action on climate change. But the denial has not been rooted in the scientific community, at least not in the recent decades, and not to a large extent. In fact, there is virtually consensus among climate scientists regarding anthropogenic climate change (Cook et al., 2013). However, this consensus is not being successfully communicated to neither the political nor to the public arena. Climate change denial has been rather present in the public sphere, with a handful of contrary scientists, the fossil fuel industry, and conservative media, politicians and organizations making the wheels turn (Dunlap & McCright, 2011; Oreskes & Conway, 2011). The very successful framing of this issue was built on the scientific basis of climate change, exploiting the uncertainties of science and undermining the scientific basis of climate policies. Climate scientists face a major challenge in explaining risks and uncertainties surrounding potential changes over time to non-specialists (Pidgeon & Fischhoff, 2011, p. 35).

Lorenzoni and Pidgeon (2006, p. 80) claim that even though most Europeans are aware of the potential risks of climate change and the adverse consequences, they tend to attenuate the risks that apply to themselves personally. Whether this is a form of denial is difficult to say. It can be that they understand it in theory but not in practice, or close to home. But it might also just be an indicator of them being knowledgeable and having understood the global risks

and consequences of climate change, while also knowing that the most vulnerable to climate change are not the western, industrialized and wealthy.

More recently, explanations for climate sceptic attitudes and lack of behavioural change have shifted more towards psychological aspects. Wood and Vedlitz (2007, p. 556) explained how, when people have limited knowledge of an issue and are exposed to ambiguous information, they "process information about issues through a filter containing a range of variables relating to their predispositions". Motivated reasoning has become an increasingly ascribed theory (Druckman & McGrath, 2019). The main idea is that motivation affects reasoning through relying on a biased set of cognitive processes, forming impressions, determining beliefs and attitudes, evaluating evidence, and making decisions (Kunda, 1990). Relevant to climate change is reasoning driven by directional goals. This version of motivated reasoning lead to applying choice of beliefs and strategies to a given problem that are considered most likely to yield the desired conclusion, and thus has motivated directional biases (Kunda, 1990). Motivated reasoning is considered a mechanism to avoid cognitive dissonance. When beliefs and behaviours are contradictory, this causes cognitive dissonance, which is easily reduced by altering beliefs. This could be the dissonance between believing in anthropogenic climate change while acting in a way that contributes to said climate change. Because behavioural change is quite demanding, changing beliefs and attitudes can be desirable, to decrease cognitive dissonance. This can be achieved through directional motivated reasoning. With accuracy motivated reasoning, on the other hand, the motive is to arrive at an accurate conclusion, which leads to the use of beliefs and strategies considered most appropriate (Kunda, 1990).

Druckman and McGrath (2019) argue that the audience's motivation matters for how to effectively communicate about climate change. For accuracy motivated reasoning, it is important that communication relays evidence in which the audience finds credible, which may not necessarily be what science communicators deem credible. What the audience finds credible may not be scientific evidence, due to lack of trust (Druckman & McGrath, 2019). When it comes to climate change, attitudes are not built on experience, but rather on science. This sets climate change apart from other global challenges. Because it is not experienced, but told, it builds upon other people's knowledge, and the communication of said knowledge. Hence, there is an important element of trust in experts related to public opinion on climate change. When communicating to individuals with directional motivated reasoning, strategies might be to alter motivations, or framing (Druckman & McGrath, 2019), the ways in which the story of climate change is told to the public.

The Gateway Belief Model (GBM) is a recent dual-process theory of attitude change in response to normative cues about scientific agreement (van der Linden, 2021). According to the model, communicating the scientific consensus on climate change can change individual's perception of consensus, which then acts as a gateway to other important attitudinal changes, such as the belief that climate change is happening, and human-caused, which again can lead to support for action and policy (van der Linden, 2021). Due to public misperceptions of the scientific consensus on climate change, or lack of awareness, there is an opportunity to correct people's perception of the norm, which is easier than changing deep-rooted worldviews. It can also help elicit accuracy motivated reasoning (van der Linden, 2021). While directional motivated reasoning is commonly seen in relation to political ideology, it is argued that perceived consensus can neutralize politicization when the source of the consensus message is nonpartisan (Van der Linden, Leiserowitz, & Maibach, 2019), and trusted, such as climate scientists are in the context of information about climate change (Ding, Maibach, Zhao, Roser-Renouf, & Leiserowitz, 2011). However, campaigns of disinformation and politicization about the scientific consensus on climate change can cancel out the positive effects (Bolsen & Druckman, 2018; Cook, Lewandowsky, & Ecker, 2017; van der Linden, 2021).

3.2 Climate change perceptions and preferences

Research has shown systematic variations in climate change perceptions and policy preferences between men and women, age groups, and educational attainment in Western democracies, including Norway (Ballew, Pearson, Goldberg, Rosenthal, & Leiserowitz, 2020; Hornsey, Harris, Bain, & Fielding, 2016; Poortinga, Whitmarsh, Steg, Böhm, & Fisher, 2019). Women, the youth, and higher educated are generally more concerned about climate change, and more pro-climate action, than men, older, and lower educated, respectively. Ideology (e.g. left-right self-placement), values and world-views are found to be among the most consistent predictors of climate perceptions and preferences (Hornsey & Fielding, 2020; Hornsey et al., 2016). Other factors that increase belief in climate change are knowledge, trust in scientists, and related, perceived scientific consensus on climate change (Hornsey et al., 2016). Perceptions of climate change also significantly affects support for public policies and pro-environmental intentions (Hornsey et al., 2016).

Climate change divides other groups than for example issues of the economy and redistribution. The preferences and actions of youth specifically stand out. Through demonstrations and the use of social media, youth have taken issue ownership over climate

change, as witnessed through the movement lead by climate activist Greta Thunberg. They are, however, not as visible in formal politics. The youth not only vote less than older age groups, but they are also less likely to run for election, and thus becoming elected representatives (Belschner & Garcia de Paredes, 2020). The preferences of the youth should be well known though, through their higher levels of participation in unconventional forms (Lorenzini, Monsch, & Rosset, 2021). Those who demand action on climate change, specifically youth, but also women, are underrepresented in formal politics, which might explain why implementation of climate policies is moving at such a slow pace.

While research on public opinion on climate change is extensive, perceptions and preferences among elected representatives have not been thoroughly mapped. This gap in the literature is slowly starting to be filled. Studies suggest though, that the preferences of representatives are generally more structured than those of citizens, and that representatives' opinions often appear more extreme, supposedly due to stronger partisan links (Powell, 2004). People with stronger partisan identities tend to have more deep-seated climate change beliefs, according to Benjamin, Por, and Budescu (2017). These crystalized beliefs are less easily moved. According to Kammermann and Dermont (2018), the elite might be more ideologically polarized due to the need for politicians and political parties to have distinct positions in order to capture citizens' support. Individuals, however, are more ambivalent regarding specific issues, unless immediately impacted. Representatives also have more at stake than voters do and need to consider long term effects of action versus short term costs and re-election.

Among existing studies on elected representatives' climate and environmental attitudes and behaviour, gender has been a main focus. Sundström and McCright (2014) found a consistent pattern of gender differences in environmental concern, with women being more concerned than men, in Sweden in the general public and municipal and county councils. However, the gender gap was not present in the national parliament. When looking at attitudes towards nuclear power specifically, Sundström and McCright (2016) find the same gendered pattern among citizens and elected representatives at all levels. In a recent study, Ramstetter and Habersack (2020) investigated the environmental gender gap at the elite level and found that Members of the European Parliament did not differ in their environmental attitudes by gender. However, they did find a difference in their behaviour, with women being significantly more likely to support environmental legislation than men. Earlier studies have found that women emphasize environmental issues more in their campaigns (Kahn, 1993) and favour stricter environmental policies (Fraune, 2016) than men in the US.

3.3 Climate change in democracy and representation literature

Even though climate change is one of the most pressing global issues today, and politics is essential for the necessary interventions and solutions, the issue is a startlingly small part of political science literature. While public perceptions and preferences have been thoroughly mapped, and more attention has been given to international climate politics in recent years, climate change is nearly a non-existent topic in representation literature.

How well democracy works in tackling climate change has been given attention, though (see, e.g., Burnell, 2012). There is a tension between democracy and climate change in the sense that something needs to be done to tackle this global challenge, but there is a lack of public support and government action. In this regard, a discussion that can be raised is whether congruence and responsiveness should always trump the need for action. If there is a lack of public demand and lack of necessary policies, then parliaments and governments might be both congruent and responsive, but not necessarily responsible. The lack of action can also signal to citizens who are not convinced about the extent of anthropogenic climate change as well as the seriousness and scope of it, that it might not be that necessary to implement all these changes and transition after all. Inaction from policy makers might feed back into the loop of motivated reasoning, assuming that if climate change actually was big of a threat, action would surely be taken. This makes the relationship between representative democracy and climate change challenging. The question of how to move (increase) support also relates to this tension. In addition, there is the argument made by Mair (2013), that it has become increasingly difficult for governments to balance international commitments and promises to the electorate. In the context of climate change this is apparent in terms of commitments through the United Nations Framework Convention on Climate Change (UNFCCC) and the current Paris Agreement, and for Norway and other European countries also the EU Emissions Trading System (EU ETS).

Scholars have analysed the effect of democracy on environmental performance, looking at both outcomes and outputs, such as policies and emissions. Research has shown that democracies perform better than other regimes in terms of climate mitigation through cooperation in international environmental treaties, adopting stricter environmental policies, and curbing their CO2 emissions (Bättig & Bernauer, 2009; Li & Reuveny, 2006; Povitkina, 2018). A more nuanced view is that democracies do not perform better than authoritarian regimes when corruption is high, and the relationship between democracy and CO2 emissions is therefore moderated by corruption levels (Povitkina, 2018). A recent study asked whether different features of democracy are more or less prone to produce environmental policy outputs

(Povitkina & Jagers, 2022). They found that democracies with stronger social-liberal features adopt stricter and more effective policies. Democracies with stronger deliberative features, on the other hand, adopt more, but neither stricter nor effective, environmental policies (Povitkina & Jagers, 2022).

In the responsiveness and congruence literatures, climate change or other environmental issues has to some extent been included as part of multiple policy areas, but rarely been the focus of attention. Kübler and Schäfer (2022) analyse the degree to which the electoral success of radical right parties affects issue congruence in Germany. Among the twelve items they use to measure congruence is climate protection. They find an overall increase in congruence, but a decrease for climate protection. In a study on descriptive representation and opinion congruence in Brazil, Boas and Smith (2019) look at seven issue areas, including environment. Rosset (2013) also includes environmental protection as one of 13 issues in a study of unequal substantive representation of poor citizens in the Swiss parliament. In their study on representation of women's policy preferences in 21 European democracies, Dingler et al. (2018) look at environmental policy preferences, as part of seven policy areas.

In this thesis, I put emphasis on the pressing global challenge that is climate change, from the angle of representation and congruence. Focusing on one (overarching) issue enables me to go in depth and disentangle several aspects. This includes descriptive and substantive representation (A1), party representation (A2) and mechanisms of moving policy preferences (A3). Both fields of climate change and policy preferences on the one hand, and representation and congruence on the other hand, are important both societally and scholarly. There is great opportunity to connect these two larger fields and build on important knowledge from both perspectives moving forward.

3.4 Climate policies

The carbon intensity of the global energy system has decreased by less than one per cent since the UN Framework Convention on Climate Change (UNFCCC) was established 30 years go (Romanello et al., 2022). Fossil fuels still dominate global electricity generation, with the contribution of renewable energy only being 8.2 per cent of the global total. At the same time, the rise in total energy demand has led to an increase in energy-related emissions to a historical high in 2021 (Romanello et al., 2022). While improvements in energy intensity of GDP and carbon intensity of energy have led to some reductions of CO_2 emissions from fossil fuels and

industrial processes, increases in emissions from rising global activity levels in energy supply, agriculture, buildings, transport, and industry have been higher (IPCC, 2022a, p. 12).

When we talk about climate measures, we broadly distinguish between adaption and mitigation. Adaptation is defined, in human systems, as "the process of adjustment to actual or expected climate and its effects in order to moderate harm or take advantage of beneficial opportunities" (IPCC, 2022b, p. 5). Mitigation is defined as "a human intervention to reduce the sources or enhance the sinks of greenhouse gases" (IPCC, 2014, p. 4). In this thesis, I exclusively deal with mitigation related policy issues.

Mitigation options are divided by sectors in the mitigation report from IPCC (2022a): energy; agriculture, forestry and other land use; buildings; transport; and industry. Among mitigation options with substantial potential to reduce net emissions by 2030 are wind and solar energy, carbon sequestration in agriculture, reduced conversion of forest and other ecosystems, and ecosystem restoration, afforestation, reforestation, as well as fuel switching in industry (IPCC, 2022a, p. 42). The specific policy issues applied in this thesis are presented and discussed in the data section (chapter 6).

The IPCC (2022a) reports a consistent expansion of policies and laws addressing mitigation the past decade. In turn, this has led to avoidance of emissions and increased investment in low-emission technologies and infrastructure. However, climate finance flows towards Paris Agreement goals remains slow in progress and are distributed unevenly across both sectors and regions. Notably, over 20 per cent of global GHG emissions were covered by carbon taxes or emissions trading systems by 2020. In addition, climate laws on GHG reductions were present in 56 countries covering 53 per cent of global emissions (IPCC, 2022a, p. 17).

In climate politics, the national level has become increasingly important. In practice, with the Paris Agreement and a new focus on domestic policy through nationally determined contributions, moving towards a more bottom-up approach (Hermansen & Sundqvist, 2022). Mitigation policy instruments at the national and sub-national levels has grown consistently across sectors (IPCC, 2022a, p. 17). At the same time, the study of climate politics has seen a similar shift. Domestic politics and national governments play important roles in climate policymaking (Carter, Little, & Torney, 2019). Political parties play a critical role in reaching national climate change targets, and are important in ensuring climate policy stability and ultimate success (Farstad, 2019; Jensen & Spoon, 2011). Substantial low-carbon transformations cannot be achieved with single policy interventions, but rather through policy-mixes (Ćetković & Skjærseth, 2019). It is argued that the best evidence that researchers can

present to policymakers is under which conditions and with what elements specific policies are more likely to be supported (Kyselá, Ščasný, & Zvěřinová, 2019; Pawson & Wong, 2014).

Schulze (2021) dichotomizes climate policies into 'hard' and 'soft' policies. The former, which includes taxes and regulations, produce costs that are more visible and impose behavioral constraints or negative economic incentives. The latter, typically in the form of subsidies and informational instruments, on the other hand involve less visible costs and focus on positive economic incentives. In his study of national energy-related climate policies and measures in twenty-nine democracies between 1990 and 2016, Schulze (2021) finds that climate policy making tends to increase as an election gets closer. This is due to what he calls soft policies, which are introduced in greater numbers than hard policies, especially before elections.

Left wing governments generally introduce more climate policies than center and right governments, according to Schulze (2021). Further, left governments produce more hard (taxes, regulations, etc.), but not more soft (subsidies, information, etc.), climate policies than center and right governments, especially before elections. Schulze (2021) also argues that climate policy specifically, as compared to environmental policy more generally, is stronger aligned with the left-right dimension. Right-wing parties are typically more averse to state intervention and market regulation and tend to have weaker positions on climate change than parties on the left wing (Båtstrand, 2014; Farstad, 2019; McCright & Dunlap, 2011).

Farstad (2017) examines effects of party characteristics to explain variations of climate change salience in party manifestos. She finds that in general, parties have not made climate change a salient issue, though there are significant differences between parties. These differences are significantly explained by left–right ideology. Farstad (2017) argues the importance of ideology over "economic and policy preferences, size and strategic incentives and incumbency constraints". She further points towards the partisan nature of the climate change issue.

4 The Case of Norway

I study climate policy preferences and issue congruence in a single case, Norway. Norway is a most likely case for congruence due to the political system, relatively high levels of descriptive representation, salience of climate change, and a highly educated public. At the same time, it is a paradoxical case in terms of climate change with one foot in renewable energy resources as well as leadership in international climate policies, and the other foot deep in the oil and gas industry.

In this chapter the Norwegian case is contextualised. First, I discuss the case of Norway related to representation and congruence. I look at descriptive representation, as well as the party system and Norwegian political parties. Second, the Norwegian case is discussed concerning climate change. I review climate change perceptions in Norway before moving on to climate policy.

4.1 The Norwegian electoral system

Norway is a small and stable democracy characterized by a unitary structure, parliamentary government, multi-party system, and coalition governments (Lijphart, 2012). The Norwegian election system is based on proportional representation (PR) in 19 electoral districts following earlier county divisions (*fylker*). Elections are party centred, where voters vote for set party lists. According to Dalton (2020) traits of PR systems such as a party's shared election platform, party organization in campaigns, greater party choices, and the fact that citizens vote directly for parties rather than individual candidates should be beneficial in terms of party-voter congruence.

The national parliament (*Storting*) consists of 169 seats. In addition to 150 seats distributed within the districts, Norway has 19 levelling seats and an election threshold of four per cent. This means that a political party needs a minimum of four per cent share of the national vote to compete for the additional 19 seats.

Geographical representation is of importance in Norway and an included aspect of the electoral system. The distribution of parliamentary seats in the counties (constituencies) is based on a weighted sum of the number of inhabitants and the county's area, where area is weighted more than population (Føllesdal, 2010).

At the local and regional levels, citizens vote for party lists to the municipal (*kommune*) and county councils. Each municipality and county represent one electoral district in local

elections. The electoral term in all tiers is four years. Local and regional elections for municipal and county councils are conducted simultaneously, midway in the electoral term of the national parliament. The most recent national election was held in 2021, while the last local election was in 2019.

Even though elections are party-centred, they are also defined by open lists. Norwegian voters are able to make certain changes to the lists on the ballot when casting their votes. In national elections, the order of candidates on a list can be rearranged, athough impact is minimal. In local elections, voters have more influence on candidate selection. Candidates on a list can be given a personal vote in both municipal and county elections. Additionally, in municipal elections, candidates from other lists can be added to the ballot giving them a personal vote (Government, 2017). These personal votes are, however, weighed by the party's possibility to add supplemental shares of votes for a certain number of candidates on their pre-set list, to limit changes at the top of their lists (*Election Act*, 2002). The party lists also provide some information about the descriptive characteristics of the candidates. Gender is mostly easily identifiable through the name, though not explicitly stated. Age, or specifically year of birth, is explicit on the ballot. Place of residence can also be included (*Election Act*, 2002).

Characteristics of electoral systems identified in the party-voter congruence literature suggest that Norway is a most likely case of high levels of congruence between voters and the parties they vote for. This includes Norway's proportional representation, party-centred elections, and multi-party-system (Dalton, 2020). When it comes to district magnitude, the 169 seats are allocated in 19 electoral districts, currently ranging from four to twenty seats per district (Valg, 2022). This places Norway somewhere in the middle of district magnitude comparatively. In the 2021 election, the single-issue local party list *Pasientfokus*, ran only in the most Northern electoral district where they received 12.7 per cent of the votes. Their share of the national vote was 0.2 per cent, yet they won a seat in parliament (NRK, 2021). District magnitude is, however, higher in local elections with single districts in each municipality and county. The disproportionality between shares of national vote and seats in parliament is affected by the four per cent threshold and the levelling seats which favours larger parties. The added geographical aspect of representation in the Norwegian electoral system also comes into play, where a vote in the Northern region technically counts more than a southern vote. The largest discrepancy between vote share and seats for the 2021 election is found for the largest parties who have a higher seat share than vote share and for the smaller parties that were close to, but did not reach the threshold, and therefore have a higher vote share than seat share. For the ten parties elected to the national parliament, vote-seat difference ranges from -2.12 to 3.07.

Table 2: 2021 parliamentary election results

Party	English party name	Vote share	Seats	Seat share	Vote share-seat share
AP	Labour Party	26.30 %	48	28.40 %	2.10
H	Conservative Party	20.40 %	36	21.30 %	0.90
SP	Centre Party	13.50 %	28	16.57 %	3.07
FRP	Progress Party	11.60 %	21	12.43 %	0.83
SV	Socialist Left Party	7.60 %	13	7.69 %	0.09
R	Red Party	4.70 %	8	4.73 %	0.03
V	Liberal Party	4.60 %	8	4.73 %	0.13
MDG	Green Party	3.90 %	3	1.78 %	-2.12
KRF	Christian Democratic Party	3.80 %	3	1.78 %	-2.02
PF	Patient Focus	0.20 %	1	0.59 %	0.39
		96.60 %	*169*	*100 %*	*3.40*

4.1.1 Political Parties

Between 2013 and 2021, nine political parties were represented in the Norwegian national parliament, *Storting*. The 2021 election added the local party *Pastientfokus* (PF), resulting in ten parties represented at the national level. The Green Party (MDG) first entered parliament in 2013 and had one seat for two electoral cycles before gaining two additional seats in 2021. The two largest parties, Labour (AP) and Conservative (H), are on either side of the left-right spectrum and have been government coalition leaders and opposition leaders, interchangeably since 2005. Both parties are among Norway's oldest and were established in the late 19th century. Norwegian parties emphasize and prioritize different issues and present voters with different policy alternatives. Recent years have also seen some degrees of polarization for party competition for government (Allern et al., 2015: Chapter 4). On the left-right scale, the Red Party is the furthest to the left while the Progress Party is the furthest to the right among parties represented at the national level (see Figure 1). Candidate selection for party lists running for election happens at closed party conventions in districts. This nurtures high levels of party discipline in the legislature, which keeps MPs in line with their party's program. This in turn increases the probability of congruence between the policy views of voters, party members and MPs (Allern et al., 2015: Chapter 4).

Figure 1: Norwegian political parties along the left-right scale
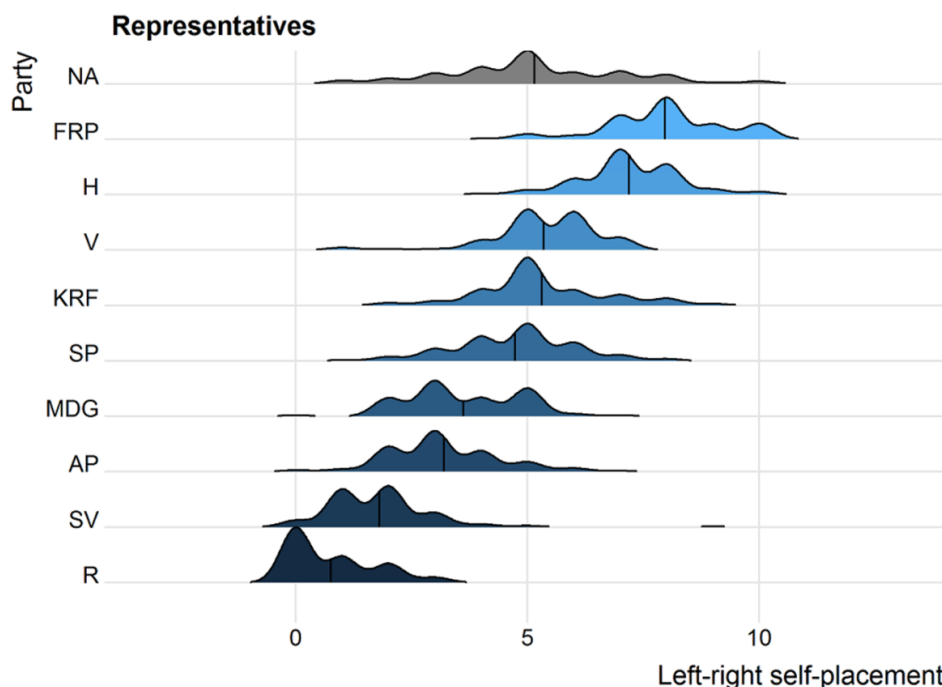
Note: Norwegian political parties along the left-right scale by distributions of representatives' self-placement on a 11-point scale. Data from the Panel of elected representatives, wave 5 (2021). Means are plotted as vertical lines.

4.1.2 Descriptive representation

Norway is a well-functioning representative democracy with a highly educated public and high levels of social and political trust. Though some groups are underrepresented in formal politics, representation is more equal than most countries. Together with the other Nordic countries, Norway is an egalitarian society with high levels of social mobility. Norway is one of the world's most gender-equal countries (WEForum, 2020). The proportion of women in Parliament is comparatively high. In the 2021 national election, women won 45 per cent of the seats (Stortinget, 2021). Women also hold around 40 per cent of the seats in local legislatures (SSB, 2020). According to IPU (2021), comparatively Norway has the highest share of MPs under 30 with 13.6 per cent of the seats. In addition, the share of MPs under 40 is 34.3 per cent. In Norwegian local and regional legislatures, the age group between 18 and 39 years makes up around 28 per cent of elected representatives. The lower educated are descriptively

underrepresented. However, in the European context, Norwegian legislature is relatively representative when it comes to education (Gaxie & Godmer, 2007). The geographical aspect of vote-seat aggregation actually leads to the most Northern peripheral regions being descriptively *overrepresented* in Parliament. Party lists running for election are balanced on criteria such as experience from government at local levels, geography, gender, age, and social background (Allern et al., 2015: Chapter 4). Some of this information is also easily available to voters by being included in the ballot.

4.2 Climate Change Perceptions in Norway

The 2021 national election can be seen as a testimony to the salience of environmental issues including climate change. This is evident by both the presence of issues in the electoral campaigns and voters reporting on their most important issues. In addition, the share of votes to parties with the clearest environmental profiles (the Red, Liberal, Socialist Left, and Green parties) saw a small but significant increase compared to the previous national election in 2017. Individually, all four of these parties gained a larger vote share. Combined they had an increase of 4.8 percentage points (NRK, 2021). Though the expected turnout for the Green Party failed to manifest itself and the party did not reach the important four percent electoral threshold, this was the party's highest vote share in a national election to date. Time series data from the Norwegian Election Research show that climate and environment was *the* most important issue for voters in 2021, for the first time since 1989 (Valgforskning, 2022). The data capture vast subtopics under the issue umbrellas and "climate and environment" includes climate issues and environmental protection such as Norwegian emission cuts, climate policy, conservation of nature, biodiversity, and public transport. In 1989, the issues mainly concerned environmental protection and the election is often referred to as the first "environmental election" (Hesstvedt, Bergh, & Karlsen, 2021). While the share of voters that report climate and environmental issues as the most important has increased steadily since 1993, there was a shift in importance from 2005 to 2009 (see Figure 2). Since then, climate and environment has been ranked among the three most important issues. In 2009 it was the second most important issue after school and education; in 2013 it was the third most important issue following health and social policy and school and education; and in 2017 it was the second most important issue after immigration, which was particularly salient due to the refugee crisis (Valgforskning, 2022).

Figure 2: Norwegian voter's most important issues: climate and environment

Climate and environment as the most important issue for voters in Norwegian national elections

Inglehart (1995) found, early on, that the Norwegian public was amongst those with the highest support for environmental protection and willingness to make sacrifice for it. Environmental concern is reported higher in wealthier countries (Franzen & Meyer, 2010) and Norway is among the wealthiest countries in the world. In a comparative study of Norway, Germany, France and UK, *European Perceptions of Climate Change* (EPCC), Steentjes et al. (2017) found that belief in climate change is high in all countries, but highest in Norway. However, the share of respondents who believe climate change is mainly or completely caused by human activity (as compared to natural processes) is the lowest in Norway. At the same time, the share of respondents who believe in the scientific consensus is highest in Norway. Climate change and the environment were more often mentioned as the most important issue facing the country in Norway (ranked 4th and 2nd respectively) compared to the other countries (Steentjes et al., 2017). Another recent comparative study on public perceptions of climate change that includes more European countries point to Norway as a fairly climate sceptic country. Poortinga et al. (2019) use data from the European Social Survey Round 8 (2016) and find a surprisingly high
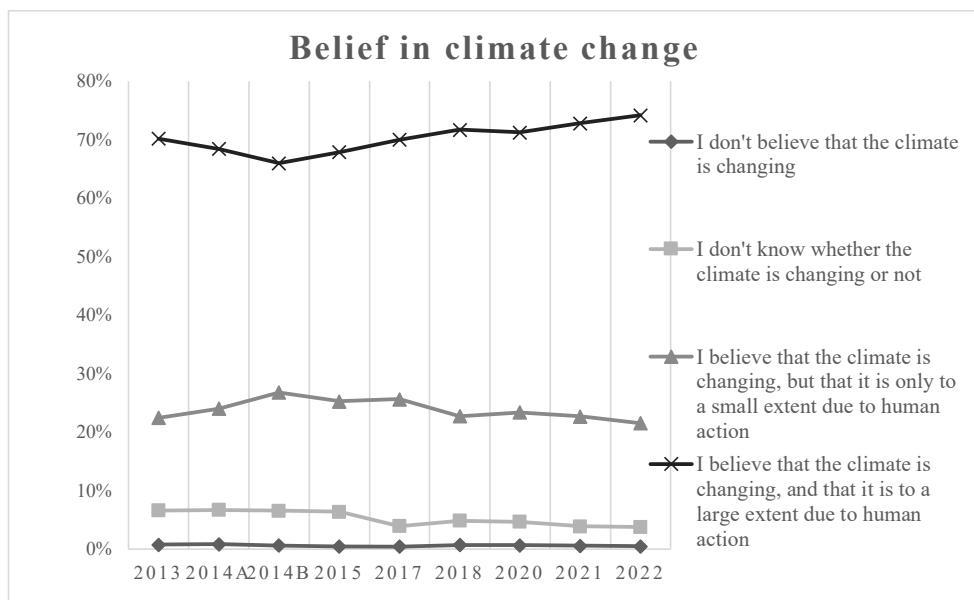
level of attribution scepticism in Norway, a mid-sized level of trend scepticism, and a just-above average level of concern about climate change. Compared to eleven other Western or Northern European countries attribution scepticism, which measures belief in anthropogenic climate change, is significantly higher in Norway. The only countries in the study with more attribution sceptics are in Central and Eastern Europe. Even for trend scepticism, measuring belief that the climate is changing, only one country in Western or Northern Europe, namely Austria, has a higher level than Norway.

Nationally representative survey data from the Norwegian Citizen Panel (NCP), however, show that *most* Norwegians believe that the climate is changing and a majority believes that the changes are mainly anthropogenic. In addition, most people believe that climate change is a serious threat, but also that it is possible to do something to prevent harmful changes (Mari Skåra Helliesen, 2015). Climate change perceptions have been fairly stable the last decade according to time-series data from NCP. Belief in (anthropogenic) climate change and climate concern are two of the most commonly used measures of perceptions. Both of these have been measured yearly in NCP since the first wave in 2013. There have been some fluctuations, but they are limited. The share of respondents that believe that climate change is happening *and* mainly caused by human action (anthropogenic climate change) has consistently been between 66 and 74 percent. More recently, belief in anthropogenic climate change seems to be on the rise in Norway. However, the increase from the first data point to the most recent (2022) is limited. At the same time, the share of respondents that believe the climate is changing *but* only to a small extent due to human action has been around 22 to 27 per cent throughout the period. See Figure 3 below. Climate concern is measured on a 5-point scale from not at all concerned (1) to very concerned (5). Throughout the data period, the most common responses are concerned (4) and somewhat concerned (3). See Figure 4 below.

Comparing perceptions from these three data sources, EPCC with four countries; ESS with 23 countries; and NCP over time, there are both overlaps and inconsistencies. Based on data from all three sources leads to the conclusion that there is a relatively high level of attribution scepticism in Norway. A substantial amount of people do not believe in anthropogenic climate change. However, EPCC and NCP both show small levels of trend scepticism. Virtually everyone believes that climate change is happening. ESS data, on the other hand, places Norway in the middle. The question wording differs between these survey panels which can explain the discrepancy. In EPCC and NCP trend scepticism is measured as not believing the climate is changing, while ESS includes the belief that it is "probably not changing".

Figure 3: Norwegians' climate change belief (2013 – 2022)

Belief in climate change

Legend:
- I don't believe that the climate is changing
- I don't know whether the climate is changing or not
- I believe that the climate is changing, but that it is only to a small extent due to human action
- I believe that the climate is changing, and that it is to a large extent due to human action

Note: Data from the Norwegian Citizen Panel, waves 1-23.

Figure 4: Norwegians' climate concern (2013 – 2022)

Climate concern

Legend:
- Very concerned
- Concerned
- Somewhat concerned
- Not particularly concerned
- Not at all concerned
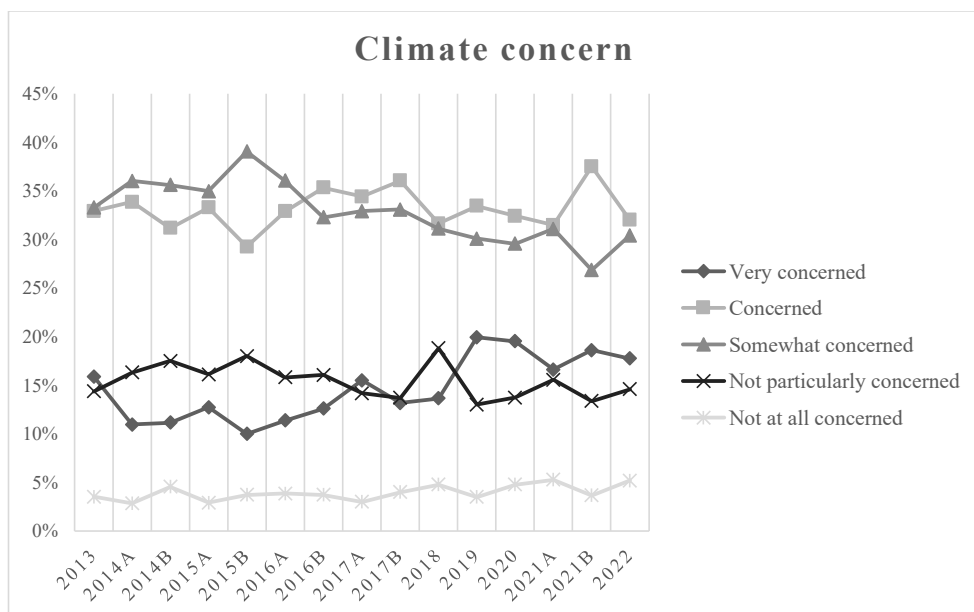
Note: Data from the Norwegian Citizen Panel, waves 1-23.

As previously stated, elected representatives' climate change perceptions have not been thoroughly mapped. I have, however, recently posed the questions discussed above about belief and concern to the Panel of Elected Representatives (PER) in Norway. In Figure 5, data from 2022 show the belief in climate change for both citizens and elected representatives. Among the representatives, 79 per cent believe that the climate is changing and that it is largely due to human activity. Representatives are slightly less sceptic to anthropogenic climate change than citizens with 17 per cent believing that the climate is changing, but only to a small degree caused by human activity. Similarly to what we see in the citizen panel, one per cent of the representatives do not believe that the climate is changing.

Figure 5: Elected representatives' and citizens' climate change belief
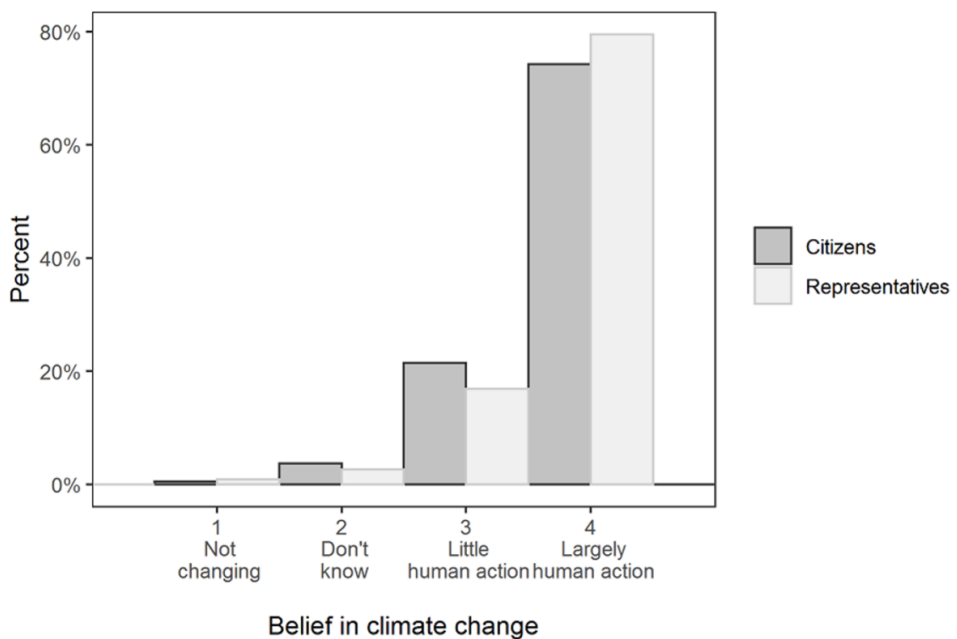
Note: Data from the Norwegian Citizen Panel (NCP) wave 23 (2022) and the Panel of Elected Representatives (PER) wave 7 (2022). N = 11,992 (NCP), 1,160 (PER).

Figure 6 presents climate concern in NCP and PER from 2022. Representatives are more concerned about climate change than citizens. Among the representatives, 22 per cent of the are very concerned, while three per cent are not at all concerned.
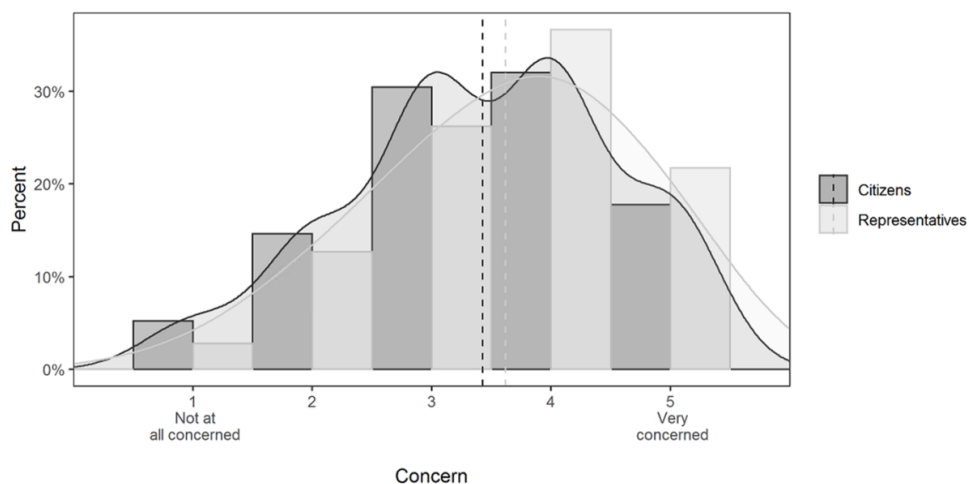
Figure 6: Elected representatives' and citizens' climate concern

Note: Data from the Norwegian Citizen Panel (NCP) wave 23 (2022) and the Panel of Elected Representatives
(PER) wave 7 (2022). N = 12,050 (NCP), 1,152 (PER). Means presented in the dashed lines.

4.3 Norway in responsiveness and congruence literature

To the best of my knowledge, there is no pre-existing research on congruence on climate
change in Norway. This thesis contributes to this. There are, however, some congruence and
responsiveness studies in Norway covering other issues. This includes the effect of descriptive
representation of women on child care coverage (Bratton & Ray, 2002), unequal policy
responsiveness by income groups (Mathisen, 2022), and unequal congruence on democratic
assessment by education (Mayne & Peters, 2022). Norway is also included in some cross-
country studies that cover multiple policy issues, including a study on gender and opinion-
policy congruence in 31 European countries (Reher, 2018) and two recent studies on the
unequal representation of the poor around the world (Lupu & Warner, 2022a, 2022b).

4.4 Norwegian Climate Policy

Research has found a relatively weak relationship between environmental concern and pro-
environmental behaviour (Kulin & Johansson Sevä, 2020). A question is whether Norwegians
are willing to pay the price of climate change action. Although impacts of climate change are
not particularly visible in Norway yet, expected climate changes will expose nature and society
in Norway to large and complex negative effects (Aamaas et al., 2018). Expected changes
include warmer temperatures, heavier rainfall, rising sea levels and more landslides, floods,

and mudslides. The main focus of national policies is mitigation measures. Countries with high levels of economic prosperity, democratic quality, and cross-party consensus on climate change, often experience more stable and ambitious climate policies (Farstad, 2019).

When it comes to climate policies, Norway is an interesting case. Its particularity lies in what is referred to as the Norwegian paradox with the oil dependence on the one side and the climate leadership ambitions on the other side. Norway simultaneously holds a considerable share of responsibility for driving global climate challenge, through its large petroleum sector and has strongly expressed its commitment to mitigate climate change (Ćetković & Skjærseth, 2019).

The Norwegian political discourse recognises climate change as one of the most pressing global challenges and the IPCC is treated as authoritative. In addition, the responsibility of developed states to lead in mitigation, adaptation, and climate finance is accepted (Eckersley, 2016). Norway is ahead when it comes to renewable energy sources with essentially zero emissions from power production (Steentjes et al., 2017), which is largely derived from hydroelectric power. Norway follows Germany as the second highest renewable energy producer in Europe and ninth highest in the world (IEA, 2017). Through the United Nations Framework Convention on Climate Change (UNFCCC) and active participation in the various Conferences of the Parties (COPs), Norway has been seen as a pioneer country for international agreements to reduce greenhouse gas emissions. The country is committed to cut emissions by 50 - 55 per cent by 2030 through the 2015 Paris Agreement. A carbon tax was introduced in Norway already in 1991, and doubled in 2012 (Farstad, Hermansen, Grasbekk, Brudevoll, & van Oort, 2022).

At the same time, Norway's wealth is largely due to its large oil resources. Norway ranks as number 14 on a list of countries by oil production, while as number 118 over countries by population (IEA, 2017). Oil and gas extraction is the largest emission source in Norway (SSB, 2017) and the sector employs a substantial share of the workforce (Tvinnereim & Ivarsflaten, 2016). There is no doubt that Norway faces a significant societal transition if the emission goals are to be achieved. This means that implementation of climate policies is pressing. Companies, the central government bureaucracy, business and labour associations, and NGOs all try to influence the debate over the future of fossil fuel exports versus renewable energy and climate protection (Steentjes et al., 2017, p. 10).

Carter et al. (2019) argue that Norway has achieved a remarkably stable climate policy consensus and continuously encourages environmental improvements in the oil and gas sector. At the same time, the country has failed to formulate a plan for phasing out oil and gas

extraction and reduce the economic dependence on oil and gas exports. Nonetheless, pressure to live up to its 'green' reputation has motivated the country to undertake some more structural reforms, including the extensive promotion of electric vehicles. Smaller social-investment economies like Norway might be more inclined to increase their climate policy efforts in the face of external pressure than larger and more liberal-market oriented economies, according to Carter et al. (2019). The reason being their more prominent dependency on stable international agreements and a progressive self-image. There is considerable flexibility for Norway to fulfil its climate commitments without engaging in stronger emission cuts at home within existing international and EU climate governance (Ćetković & Skjærseth, 2019). A cross-party climate settlement (*Klimaforliket*) was reached in 2008, supported by all parties except for the Progress Party. The settlement was further strengthened in 2012. This has contributed to stability and predictability around climate change policy.

Historically, efforts have been made to separate climate and petroleum policy into two domains in Norway. This to continue with both roles as a climate leader and a major petroleum producer (Lahn, 2019). The separation between the two domains was enabled by the international climate regime. Norway could meet relatively ambitious targets through carbon trading and parallelly place responsibility for greenhouse gas emissions on consumption of fossil fuels rather than production. In recent years, this separation has been increasingly challenged and the political discourse on climate policy and oil and gas production is now interconnected. This has led to an increase in political controversy around the future of the Norwegian oil and gas industry (Lahn, 2019). The tension between climate leadership and the petroleum-dependent economy has also been one of the most prominent challenges for the last few governments on both sides of the left-right spectrum (Eckersley, 2016). There is an ongoing political debate concerning whether petroleum should be phased out, and if so, when. At the same time, the Government (2023) continues to grant new licenses for oil and gas exploration in yearly search rounds. In the 2023 licensing round, the proposed number of exploration blocks announced for public consultation reached a record since the Awards in Predefined Areas (APA) were introduced 20 years ago. The proposal adds new areas in the Norwegian Sea and the Barents Sea to the APA. According to the Minister of Petroleum and Energy, "facilitating new discoveries in the north is important both for Europe, for Norway, and for the region" (Government, 2023).

Between 1990 and 2021 domestic GHG emissions have only been reduced by 4.7 per cent (SSB, 2022). Norway has largely met its climate targets by purchasing credits under the Clean Development Mechanism from the Kyoto Protocol and the EU Emissions Trading

Scheme (Farstad et al., 2022). This illustrates how the country generally has been more occupied with meeting climate targets at the international level than domestically. More recently, the government has made commitments to reducing domestic emissions not covered by these systems including targeting the agricultural sector for the first time (Farstad et al., 2022).

5 Methodological considerations

In this chapter I present some methodological considerations relevant for the thesis. First, I review how congruence has been measured and discuss how it should be measured. Thereafter, I present the applied congruence measure in this thesis, the Earth Mover's Distance (EMD). Second, I discuss challenges and limitations in the use of survey data, before going more specifically into the use of survey experiments (A3).

5.1 Measuring Congruence

As part of the methodological discussion of studying congruence, is to clarify the issue of causality. There is an important and relevant scholarly debate about whether preferences of citizens affect preferences of representatives, or the other way around. However, the way congruence is conceptualized and measured in this thesis does not take causality into account. It is not my intention to analyse cause and effect, but rather the degree to which preferences match at a certain point in time and whether some groups' preferences are better represented than others.

Andeweg (2011) argues that, to measure congruence, we ideally need to compare the policy preferences of voters with the policy preferences of representatives. Surveys have been the common approach to studying public opinion the last decades. However, the development from using self-placement on the left-right scale or party preference to estimate policy positions, to asking more specific policy preferences is more recent. The preferences of representatives have not been as readily available. Among the first studies of representatives' positions linked to those of citizens, was the work of Miller and Stokes (1963). Research on preferences of representatives, including that of Miller and Stokes, have often used proxy measures through parties' election programs or by using expert surveys to measure political parties' policy positions. Both approaches inaccurately assume that all representatives in one party agree with every proposal in the program of said party (Andeweg, 2011). Less common, but increasingly applies, representatives themselves have been surveyed and asked both about their left-right self-placement and preferences of specific policy issues.

Earlier research that measured congruence on the left-right scale found strong alignment. J. Thomassen (2012) criticised some of this work for presenting an exaggerated optimistic view of political representation. Dalton (2020) argued that the fit between voters and the parties they vote for is weaker on more specific policy questions. Achen (1978) was early

to call for measures of citizens and representatives to be on the same scale to capture absolute distances. This has typically been interpreted as the necessity of using the same question wording for both citizens and representatives. However, uncertainty remains as to the degree to which citizens and representatives differ in their interpretation of the questions posed to them. Researchers argue that the likelihood of guesses and error are much higher for citizen responses on an aggregate level, than for elite responses (Powell, 2004).

An important consideration is how valid and reliable the congruence measures are. Lesschaeve and Padmos (2021) argue that both the number of issues and topic diversity increases the reliability of congruence estimates when comparing preferences on policy statements. They further suggest that topic diversity can increase validity as well.

Another issue is whether congruence should be measured by looking at individual actors as a single representative or the government or rather a collective of all actors, comparing the electorate and parliament as systemic properties (Andeweg, 2011; Pitkin, 1967; Weissberg, 1979). Additionally, the two collectives that are compared: the voters; electorate; or constituency and the party: parliament; or government, do not act unitarily. They consist of individuals with a variety of preferences (Andeweg, 2011). When measuring these group preferences, the variation has commonly been reduced to central tendencies such as the mean or the median. Congruence studies have typically compared the position of the median voter to the position of the median legislator. A problem with this approach is the loss of information by reducing a distribution to a central tendency. Two groups, or samples, can have the same mean but different distributions on an issue scale, and therefore not be congruent.

Golder and Stramski (2010) distinguish between different representational relationships: one-to-one, many-to-one, and many-to-many. The first and second relate to the concept of dyadic representation with a single representative and either one or many citizens. The one representative could be either an individual MP, a party, or a government. The latter relates to collective representation with a collective body of both citizens and representatives. The representative body could be a party, a legislature, or another group of representatives. In this thesis, I am concerned with group representation either by socio-demographic features or parties. I therefore study many-to-many congruence.

Lupu, Selios, and Warner (2017) discuss three different and common measures for congruence and their limitations. The first is the difference-in-means approach, which was commonly used in the early works. The other two approaches measure overlap between distributions in different manners. The approach of Golder and Stramski (2010) is to compute the nonoverlap of empirical cumulative distribution functions (CDFs). The final approach uses

the empirical probability density function (PDF) overlap, and the Bhattacharyya coefficient. In many-to-many congruence measures using distributions, congruence "is high when the distributions of citizen and representative preferences are similar; it is perfect when the two distributions are identical" (Golder & Stramski, 2010, p. 96). In this thesis, I use survey data with policy issues on Likert scales. This is a particularly good fit for congruence measures using the whole distribution and not just a parameter.

5.1.1 Earth Mover's Distance

I use the Earth Mover's Distance (EMD), a measurement of what Golder and Stramski (2010) coined many-to-many congruence. Lupu et al. (2017) introduced this new congruence measure to political science. It measures the extent to which responses of two different groups are similar. It does so by comparing the distributions of the groups, measuring the distance between them, and calculating how much effort it takes for the two to become identical. In other words, by "computing the cost of transforming one statistical distribution into another" (Lupu et al., 2017, p. 102). Importantly, the EMD measure requires that citizens and elites are surveyed on identical scales. It further utilizes this identical scale. In addition, it is possible to use EMD for multiple dimensions.

Lupu et al. (2017, p. 96) argue that other congruence measures throw out valuable information in the data by excluding variance or variation and explain how. The difference-in-means approach collapses each distribution of responses into a single summary statistic and therefore loses information about differences between the variances of the samples. Overlap measures require scholars to "bin" data into histograms and hence eliminate within-bin variation. They also ignore the data in bins that do not overlap. The EMD, on the other hand, includes both the amount and location of all the data. The EMD computes the minimum work that is required to transform two distributions to become identical. It works with variable-size signatures or generalized histograms, eliminating the need for binning (Lupu et al., 2017). The EMD is especially valuable when using Likert scales. It indicates the distance between two samples on the scale of the original response (Lupu et al., 2017), which makes the interpretation straightforward. The lower the EMD value, the smaller the distance between the two groups, and the less effort it takes for the two distributions to match. Hence, the lower the EMD value, the more congruent the two groups are. For a thorough review and demonstration of the EMD, see Lupu et al. (2017).

In this thesis, the EMD measures the distance or similarity between the distribution of preferences of citizens and representatives on the 7-point scales of each policy issue. The EMD

in this case theoretically ranges from 0 to 6, with 0 being a perfect score. An EMD of 0 would occur if the two distributions were identical. An EMD of 6 would occur if all respondents in one sample were located at one end of the scale and all respondents in the other sample were located at the other end of the scale. The EMD is calculated using the "emdist" package in R (Urbanek & Rubner, 2012).

Another common approach of measuring congruence is dyadic analysis, usually with legislator-voter dyads. This approach is more common for measuring one-to-many congruence, however it is possible to adapt it to many-to-many congruence by examining all possible pairings of elites and masses for a specific group (Boas & Smith, 2019). Dyadic regression analyses are arguably a useful approach when including a broader set of independent variables to explain congruence. However, when the focus is mainly in comparing congruence in different groups that are matched, as I do in this thesis, I will argue that EMD is a good choice.

One important limitation of the EMD is that it is descriptive in nature and does not provide any test of statistical significance. However, researchers have included EMD scores as variables in regression analyses, and thus overcome this limitation (see, e.g., Lupu & Warner, 2022b). While this is especially applicable for cross-country studies, I also use this approach. I utilize the EMD as a dependent variable in regression analyses to explain differential congruence by sociodemographic groups (A1) and party characteristics (A2).

5.2 Survey data

In this thesis, I use survey data. Surveys are designed to allow us to make both descriptive and causal inferences. However, in the contemporary era of survey research, there are numerous threats to our ability to do this. In almost every case, to be able to study any population, we need to take a sample of that population. The goal is to get a representative sample that reflects variations in the population. Normally, this sample should be random. Another goal is to make reliable and accurate inferences based on the sample to the population. Inference is "the process of using facts we know to learn about the facts we do not know" (King, Keohane, & Verba, 1994, p. 46).

There are many issues that need to be dealt with in regard to making inferences from survey data. These need to be considered both when designing and analysing our own research, and when reading other researcher's work. One of the most important ways to address these issues is perhaps our ability to be aware of and reflect upon the limitations and weaknesses of the data and analyses, as well as the many choices and possibilities. Every aspect of the design

and modelling of the study that can lead to limitations and weaknesses in the analysis and conclusions should be reported in the dissemination of research. The results can be presented through different models and with robustness checks. And of course, with a strong theoretical grounding and reasoning for the choices made.

5.2.1 Making descriptive and causal inferences

Descriptive inference uses the sample to estimate the state of the larger population, while causal inference uses the sample to explain why something occurs and what factors produce certain outcomes. Descriptive inference depends on simple random sampling (SRS). Survey experiments are often used for causal inference, where a treatment leads to an outcome.

Reliability and validity are very important aspects in all research, including surveys. The reliability of the study depends on the reproduction by subsequent independent studies to achieve the same result. The validity of the study is the extent to which the data is relevant, sufficiently accurate and complete to the conclusion being drawn, or whether you are measuring what you want to measure.

For survey data to be reliable and valid, it needs to be free from significant error. There are different forms of errors, biases and threats to our ability to make inferences with survey data, and ways to deal with these. Biemer (2016, p. 122) defines survey errors as "any error arising from the survey process that contributes to the deviation of an estimate from its true parameter value". These errors can arise from "frame deficiencies, sampling, the questionnaire design, translation errors, missing data, editing, and many other sources". According to Biemer (2016, p. 122), survey errors diminish the accuracy of inferences derived from the survey. We want to avoid making type I or type II errors; incorrectly rejecting a true null hypothesis or failing to reject a false null hypothesis, respectively.

5.2.2 Survey experiments

In the third article, the effect of framing on climate policy support is measured through a novel survey experiment. Population-based survey experiments draw on the power of random assignment to establish unbiased causal inferences (Mutz, 2011, p. 3).

In recent years, survey experiments have become more common. Some argue that this is the only way to make causal inferences with survey data. However, experimental methods have been criticized due to the prevailing view that "they only yield estimates of causal effects and fail to identify causal mechanisms" (Imai, Keele, Tingley, & Yamamoto, 2011, p. 785).

When designing survey experiments one needs to balance two considerations, namely external and internal validity. Often, increasing one of them will decrease the other. If the experiment manipulated and measured what it was intended to do, and every aspect was controlled for, internal validity is high. When it comes to external validity, there is a debate as to whether the experiment should reflect conditions that were realistic or be able to be replicated if conditions are largely changed.

An issue in survey experiments is confounding, in which manipulation (through treatment) may change subject's beliefs in unintended ways, confounding causal inferences (Dafoe, Zhang, & Caughey, 2015). In particular with framing experiments, caution is needed. Both issue-specific and contextual-level factors might play a role in how effective frames are in altering citizens' opinions (Fesenfeld, Sun, Wicki, & Bernauer, 2021). In a survey experiment, we cannot necessarily control for previous knowledge or strength of opinion on the issues. We also cannot know from surveying respondents at one point in time how stable their opinions are after being exposed to framing. The framing experiment might be effective there and then, but the frames may lose effect over time and opinions alter back to the original point of view. In a framing experiment, respondents are confronted with simple information treatments. This might involve them in unrealistic settings of low validity. In reality, counter-framing and competing arguments typically take place, which together with framing can cancel each other out (Fesenfeld et al., 2021).

Mutz, Pemantle, and Pham (2017) address how the scrutiny of statistical practises followed by concern over the credibility of published results has led to frequent use of balance tests for inference in experimental data. They argue that balance tests can destroy the basis on which scientific conclusions are formed, leading to erroneous and fraudulent conclusions. This is an example of how tools to ensure that we can use survey data to make strong inferences can work against itself.

6 The Norwegian Citizen panel & Panel of Elected Representatives

In this chapter I introduce the two survey panels utilized in the thesis. I discuss representativity of the samples, the timing of the study, and the emphasis on local representatives. Finally, I present and discuss the specific policy issues the respondents are asked about.

6.1 Introducing the panels

In this thesis I utilize individual level data from the web-based surveys the Norwegian Citizen Panel (NCP) and the Panel of Elected Representatives (PER). NCP is a representative sample of the Norwegian population, surveying opinions toward important societal matters. PER invites all elected representatives at all political levels (local, regional, and national) in Norway to participate and deals with matters that are important to society, representation, and democracy. The elected representatives in PER are specifically asked about their personal opinions. The data used in this thesis was collected in the between 2018 and 2021.

When studying issue congruence, there is a high value of asking identical questions to citizens and representatives. Instead of using proxy measures or being limited to ideological placement of parties, which both rely on assumptions, I can measure congruence on specific policy issues between groups of representatives and citizens, increasing validity. Another strength of the data in this thesis is the use of primary data analysis. I have been involved in designing the policy issues, either from scratch or by proposing earlier questions from NCP to be included in PER.

6.2 Methodological aspects of the panels

PER is initiated and run by political science researchers at the University of Bergen, while NCP is run by social science researchers at the University of Bergen and the research institute NORCE. Both panels are part of the Digital Social Science Core Facility (DIGSSCORE) at the University of Bergen. The social science institute ideas2evidence carry out the surveys and prepare the data sets using the web-based data collection tool Confirmit.

The surveys go through small-N and large-N pilot testing before data collection. The surveys are also tested extensively during the development phase by researchers involved in the project and ideas2evidence. The latter is responsible for the panel recruitment, the

administration of the panel, and the technical solutions regarding data collection and computing (Skjervheim, Høgestøl, Bjørnebekk, Eikrem, & Wettergreen, 2020). Both panels have received ethical approval from the Norwegian Centre for Research Data (NSD) and follow the EU GDPR. Relevant for the survey experiments (A3), randomization procedures are executed live in the questionnaire, and are mutually independent (Skjervheim, Høgestøl, et al., 2020).

The first wave of data collection in NCP took place in 2013 with a gross sample of 25,000 individuals randomly drawn from the Norwegian National Population Registry, leading to the recruitment of 4,870 respondents and a 20 per cent response rate. The National Population Registry includes everyone born in Norway as well as former and current inhabitants (Skjervheim, Høgestøl, et al., 2020). Recruitments have continued regularly since and the panel consisted of around 12,000 respondents in wave 19 (2021).

The first wave of PER was fielded in 2018. All elected representatives at all administrative tiers in Norway were invited. This includes municipal councils, county councils, the Storting (parliament) and the Sami Parliament. The contact information was collected through Kommuneforlaget AS, as well as public information from the websites of municipals, counties, the Storting, and the Sami Parliament. 11,362 representatives were invited leading to the recruitment of 4,535 respondents and a response rate of 38 per cent (Skjervheim, Høgestøl, & Bjørnebekk, 2018). After a local and regional election in 2019, about half of the respondents were excluded and 7,000 new representatives were invited for the third wave. This wave ended up consisting of 2,557 respondents and a response rate of 33 per cent (Skjervheim, Eikrem, & Bjørnebekk, 2020). An additional 4,388 representatives were invited for the fifth wave, adding 407 new respondents and a total of 2,351 (Skjervheim, Eikrem, Bjørnebekk, & Wettergreen, 2021). Importantly, a vast majority of the respondents are local representatives in municipal councils. While there are currently around 9,000 elected representatives at the local level in Norway, there are 575 representatives at the regional level, and 169 representatives in the Storting.

In terms of representativity of the samples, the composition of gender, age, and education is discussed in methodology reports. In the Citizen Panel, women and men are (close to) perfectly represented. Higher educated are strongly overrepresented and conversely lower educated are strongly underrepresented. There are also biases in terms of age. The youngest age group (born in 1990 or later) are the most underrepresented while the oldest age group (1959 or earlier) are the most overrepresented. (Skjervheim, Høgestøl, et al., 2020). Weights are calculated in NCP to compensate for the observed bias. However, weights are not applied to all analyses. Where applicable, education, age, and gender are controlled for.

In PER, representativity compares the composition of respondents in the panel to the composition of all elected representatives in their administrative tier. The representativity varies by recruitment wave and administrative tier. Generally, women are somewhat underrepresented, while men conversely are somewhat overrepresented. The sample is more biased in terms of age. The oldest age group is overrepresented while the young are underrepresented. The largest bias is found for education. Higher educated are overrepresented, while lower educated are underrepresented. In terms of party affiliation, representativity at the municipal level is quite good. No party is systematically over- or underrepresented on all political levels. Biases along the classic left-right party axis are not observed. There are some differences between the different recruitments in the panel, but in general the same biases occur (Skjervheim, Eikrem, et al., 2020; Skjervheim et al., 2021; Skjervheim et al., 2018). I will briefly present more nuances of representativity in the third wave based on the methodology report (Skjervheim, Eikrem, et al., 2020). This wave includes four out of the nine policy issues analysed in the thesis. When it comes to gender, women are somewhat overrepresented among county council representatives while there is no substantial bias in the municipal and national levels. In terms of age, older representatives are overrepresented in both local and regional tiers, although this is more pronounced for county council representatives. Regionally, Western Norway is overrepresented at all political levels while Northern Norway is underrepresented. Looking at political parties, the Centre Party is underrepresented on the municipal and county levels. At the national level the Labour Party is underrepresented while the Progress Party is overrepresented. The Progress Party is at the same time underrepresented at the regional level.

6.3 Timing

As stated earlier, the Norwegian 2021 national election was characterized by high salience of environmental issues including climate change. However, the data applied in this thesis are collected in the period 2018 – (early) 2021 during the previous electoral period. In the 2017 election, climate and environment was less important, with much emphasis on immigration in the context of the refugee crisis. Still, climate and environment was listed as the second most important issue by voters, according to the Norwegian National Election Studies (Valgforskning, 2022). During the data collection period, a local election took place in 2019, electing representatives to the municipal and county councils in Norway. This is particularly noteworthy as a large share of the respondents surveyed in the Panel of Elected Representatives (PER) are municipal representatives. In the 2019 local election, the Green party gained a 2.6

percentage point increase in vote share from the previous local election in 2015. The Red party and the Socialist Left party also saw an increase in vote shares. The only party with an environmental profile that experiences a decrease in vote share was the Liberal Party. Further, climate and environment was, by far, the most important issue for voters in the 2019 local election (Saglie, Segaard, & Christensen, 2021).

6.4 Local representatives

Municipal representatives make up a large share of the Panel of Elected Representatives. The overall focus in this thesis is on climate policies on a national level. Climate policy making in Norway is, however, not limited to the national level. There are different areas of responsibility at the three administrative tiers. Municipalities have general responsibilities in local planning. In addition, climate change affects most sectors where municipalities have responsibilities and accordingly affects local authorities (Wejs, Harvold, Larsen, & Saglie, 2014). Local governments also play important roles in national policy implementation. Within political parties, central and local governments are integrated. Specifically for the policy domain of climate change, many local governments await national regulations before taking action and adapt their policies accordingly. Municipalities gained more power in environmental policy making in the 1980s and 1990s, and the recent decades have seen an increase in focus on local climate change (Wejs et al., 2014).

In terms of unequal representation, local representatives can be expected to mirror the electorate to a larger extent than representatives at higher administrative levels. Putnam (1976, p. 33) coined the law of increasing disproportion, stating that "the higher the level of political authority, the greater the representation of high-status social groups". Being a local representative is also seen as an important stepping stone to national politics (Cirone, Cox, & Fiva, 2021). In addition, the same political cleavages runs through the local, regional, and national levels in Norway (Fiva, Hagen, & Sørensen, 2021).

6.5 Specific policy issues

In this thesis I look at specific climate policy issues that cover major aspects of the climate and transition debate, both domestically and internationally: fossil fuel; renewable energy; transportation; agriculture and food. See Table 3 for an overview of the policy issues. The issues applied in this thesis are comprehensible and specific enough for respondents to understand and be able to make up an opinion. Although the extent to which the different policy

issues have been debated in media and the public sphere varies, the overarching topics are well known and less abstract. Other policies that can be considered more effective and larger in the grand scheme of GHG emissions, such as carbon capture and storage, fossil tax, etc. would surely be of interest. However, complex issues can demand more from respondents.

Table 3: Overview of policy issues

Policy issue	Statement	Panel waves	Field period	Approach	Article
Electric cars	All new passenger cars from 2025 should be electric, hydrogen-powered or similar	PER1 NCP12	March-April 2018 June 2018	Congruence, EMD	A1 & A2
Oil and gas extraction	We should not allow oil and gas extraction in Lofoten, Vesterålen and Senja	PER2 NCP14 PER3 NCP17	January-February 2019 January-February 2019 February-April 2020 January-February 2020	Congruence, EMD	A1 & A2
Meat and dairy production	Norway should halve today's meat and dairy production by 2050	PER2 NCP15 PER3 NCP18	January-February 2019 May-June 2019 February-April 2020 June 2020	Congruence, EMD	A1 & A2
Onshore windmills	More land-based windmills should be built in Norway	PER3 NCP16	February-April 2020 October-November 2019	Congruence, EMD	A1 & A2
Offshore windmills	More sea-based windmills should be built in Norway	PER3 NCP16	February-April 2020 October-November 2019	Congruence, EMD	A1 & A2
Carbon tax	A carbon tax should be introduced on foods with high emissions such as meat and dairy products	PER5 NCP19	January-February 2021 November 2020	Framing, survey experiment	A3
Cycle lanes	More public funding should be spent on the development of cycle lanes in Norway	PER5 NCP19	January-February 2021 November 2020	Framing, survey experiment	A3

Carter, Ladrech, Little, and Tsagkroni (2018, p. 734) define climate policy as 'pro-climate' content when it "indicates support for policies that would, if implemented, reduce GHG emissions or enhance GHG sinks". All policy issues in this thesis fit with this conceptualization. Although the issue of onshore wind power is a little complicated due to the aim of emission reduction being contrasted with other environmental issues such as the protection of nature and ecosystems, it can still be considered a pro-climate issue. Most policy issues in the thesis are mentioned in the recent mitigation report from the IPCC. Related to electric cars: "Electric vehicles powered by low-emissions electricity offer the largest decarbonisation potential for land-based transport, on a life cycle basis" (IPCC, 2022a, p. 36). It is projected that the global use of oil declines with about 60 per cent compared to 2019 while

gas declines with about 45 per cent in modelled pathways that limit warming to 1.5 degrees (IPCC, 2022a, p. 28). Reducing emissions in the energy sector will require major transitions, including a substantial reduction in fossil fuel use (IPCC, 2022a, p. 32). Meat is not mentioned specifically, but how shifting to diets that feature plant-based foods can contribute to reducing emissions in the agriculture sector is discussed (IPCC, 2022a, p. 37). Wind energy is among the most cost effective mitigation efforts (IPCC, 2022a, p. 41). Related to cycle lanes, investments in "public inter- and intra-city transport and active transport infrastructure" such as bicycle pathways can support the transition in the transport sector (IPCC, 2022a, p. 36).

Some of the included policy issues can be easier to relate to individual behaviour, such as meat and dairy, bicycle lanes, and electric cars. The remaining policy issues concern energy, which is highly salient. In particular, the debates about oil and gas extraction in vulnerable areas and developing wind power have been prominent both in the public debate and in political parties' manifestos and election campaigns the last years. The agricultural sector can contribute significantly to the transition to a low carbon economy, including reducing emissions of greenhouse gases other than CO2 (such as methane). The most emission intensive product in the sector is meat and dairy production due to ruminant methane emissions, but with large internal variations (Alnes et al., 2021). In 2019, emissions from road transport constituted almost 17 per cent of total Norwegian emissions (Alnes et al., 2021).

The degree to which the policy issues are included in the party programs from the 2017 national election varies (see Table 4). In some cases, the policy issue is not specifically mentioned, but the general topic is covered, implying rather than stating the party's stance. There was general support for electric cars, apart from in the Progress Party (FRP). On the oil and gas issue, the Conservative Party (H) and Progress Party took stances against, while there was (varying) support in the remaining seven parties. For meat and dairy, no party supported the specific policy of reduction of Norwegian meat and dairy production, but some parties mentioned support for reduction of meat consumption (SV and MDG) or emission reduction in meat production (V). The other six parties all mentioned increasing national food production. For onshore wind, there was some opposition from the Red Party, MDG, and SV. This was specifically related to protection of Sami land (indigenous people of the North) and reindeer herding. There was at the time no opposition towards offshore wind, although this shifted in the 2021 election. In Table 5, party stances on the policy issues ahead of the most recent national election in 2021 are reproduced.

Table 4: Party stance on policy issues from party programs 2017 – 2021

	Electric cars	*Oil and gas restrictions*	*Meat and dairy*	*Wind power*	*Cycle lanes*	*Carbon tax on food*
AP	Support	Some support	Meat and dairy is not mentioned, but talk about general increase in national food production	Support (vague)	Support	Not mentioned, but strengthening climate taxes by polluters pay principle
FRP	Nothing specific, but generally oppose	Oppose	Meat and dairy is not mentioned, but talk about general increase in national food production	General support for increase in energy production (wind mentioned as one of many sources)	Some support	Not mentioned
H	Support	Oppose	Talk about general increase in national food production	Support (vague)	Support	Not mentioned, but reviewing taxes in agriculture to reduce emissions
KRF	Nothing specific, but generally support	Support	Talk about general increase in national food production	Support (vague)	Support	Not mentioned, but green tax shift making environmentally friendly choices cheaper and polluting solutions more expensive
MDG	Support	Support	Support of reducing meat consumption, production not specifically mentioned	Some opposition (restrictive policy) for onshore wind; support for offshore wind	Support	Support for increasing VAT on meat
R	Nothing specific, but generally support	Support	Talk about general increase in national food production	Some opposition (Sami land and reindeer) for onshore wind; support for offshore wind	Support	Not mentioned. Support using taxes to ensure a sustainable environment and prevent climate change
SP	Some support	Support	Talk about general increase in national food production	Support (vague) for offshore wind; onshore wind not mentioned	Support	Vague opposition
SV	Support	Support	Support of reducing meat consumption	Some opposition (Sami land, reindeer, biodiversity) for onshore wind; support for offshore wind	Support	Not mentioned, but support for using the tax system to promote environmentally friendly behaviour
V	Support	Support	Some support, talk about emission reduction in meat production	Some support	Support	Not mentioned, but support for using the tax system to promote environmentally friendly behaviour

Note: Author's own interpretation of party programs produced by the parties ahead of the 2017 national election.

Table 5: Party stance on policy issues from party programs 2021 – 2025

	Electric cars	Oil and gas restrictions	Meat and dairy	Wind power	Cycle lanes	Carbon tax on food
AP	Support	Support (vague)	Meat is not mentioned, but general talk about sustainable food production	Some support for onshore wind; support for offshore wind	Support	Not mentioned, but focus on climate in tax policy
FRP	Oppose	Oppose	No support	Oppose onshore wind; support offshore wind	Support	Opposed taxing meat production
H	Support	Oppose	No support	Vague support for onshore wind; support for offshore wind	Support	Not mentioned, but support using the tax system to promote environmentally friendly behaviour
KRF	Support	Support	Meat is not mentioned, but general talk about sustainable food production	Some opposition (restrictive policy) for onshore wind; support for offshore wind	Support	Not mentioned, but green tax shift making environmentally friendly choices cheaper and polluting solutions more expensive
MDG	Support	Support	Support of reducing meat consumption, and sustainable meat production	Some opposition (restrictive policy) for onshore wind; support for offshore wind	Support	Support increase of taxes on meat, and increasing VAT on meat.
R	Support	Support	Talk about general increase in national food production, less import	Oppose	Support	Not mentioned. Support using taxes to ensure a sustainable environment and prevent climate change
SP	Support	Support	Talk about general increase in national food production	Some opposition (restrictive policy) for onshore wind; support for offshore wind	Support	Vague opposition
SV	Support	Support	Support for gradual reduction of specific productions	Some opposition (restrictive policy) for onshore wind; support for offshore wind	Support	Support for environmental taxes and using the tax system to promote environmentally friendly behaviour
V	Support	Support	Support of reducing meat consumption	Support	Support	Mentions climate taxes. Support using the tax system to promote environmentally friendly behaviour

Note: Author's own interpretation of party programs produced by the parties ahead of the 2021 national election.

7 Findings

In this chapter I present the main findings from the articles in this thesis. Some of the findings are derived directly from one of the three articles, while others come from examining the articles combined, and the thesis as a whole. First, I give a brief overview of the preferences of citizens and representatives on the climate policy issues. Thereafter, I go into issue congruence, first overall, second by sociodemographic groups, and third by political parties. Finally, I look at how policy support is moved by framing issues.

7.1 Citizens and representatives' opinions on climate policy issues

Among the policy issues analysed in this thesis, there are variations in terms of support. Overall, both citizens and representatives have the highest support for building more offshore wind farms, spending more on developing cycle lanes, and protecting specific vulnerable Northern areas from oil and gas extraction. The policy issues representatives and citizens have the least support for are related to meat and dairy reduction. This includes both introducing a carbon tax for high emission food such as meat and dairy, and halving Norway's meat production. Around the middle of the scale, we find the remainder policy issues, building more onshore wind farms and new passenger cars being powered by renewable energy sources.

Representatives consistently hold stronger opinions, placing themselves more at the ends of the scale than citizens do. Not only is this observed for the overall panels, but also when divided into groups, both by sociodemographic characteristics and political parties.

In general, women, the youth, and those with higher education have higher support for climate policy issues than men, older age groups, and lower educated, respectively. Political parties with clear environmental profiles support policy, while the radical right Progress party consistently shows lower support than other parties.

7.2 Climate issue congruence

Overall, citizens and representatives are fairly congruent. While congruence does vary by policy issue, when comparing all citizens to all representatives, the distances are generally quite small. Because support for policy issues is measured on a 7-point Likert-scale from strongly disagree (1) to strongly agree (7), the Earth Mover's Distance (EMD) theoretically will go from 0 (perfect congruence) to 6 (incongruence). For all policy issues analysed in this thesis,

including in the framing experiments, the EMD never reaches 1 (see Table 5). The highest EMD, and thus least congruence, is measured on meat and dairy (.63 & .68), followed by onshore wind and carbon tax. The lowest EMD, and hence most congruence, is on offshore wind (.04). Interestingly, the most congruent policy issue is also the one with the highest support. At the same time, the least congruent issues are simultaneously those with least support.

Table 5: Overall congruence between representatives and citizens on policy issues

Electric cars	Oil and gas (1)	Meat and dairy (1)	Onshore wind	Offshore wind	Oil and gas (2)	Meat and dairy (2)	Carbon tax	Cycle lanes
.15	.29	.63	.49	.04	.19	.68	.44	.31

Note: Earth Mover's Distance (EMD) between citizens and representatives. EMD scores theoretically range from 0 (perfect congruence) to 6 (incongruence).

7.3 Unequal issue congruence

In Article 1, I find that descriptive representation matters for substantive representation. Women and youth support climate policies to a larger extent than their counterparts. They are also underrepresented in formal politics. The study shows that the youth and women are substantively underrepresented on climate policy issues. Older citizens and men are better represented than youth and women, respectively. Both by the entire representative group, but also by their "own". However, the preferences of youth and women are better matched with their own, than by older and men, respectively.

7.4 Party-voter congruence

When looking at party-voter congruence in Article 2, the Progress Party is the least congruent. It is also the party with lowest salience, the furthest from issue-ownership, the overall lowest support for climate policies, and the least climate concerned. On the other hand, the Labour party is the most congruent. It is also the largest party, one of the oldest parties, and the longest governing party since WWII. The Green Party has the most issue ownership on climate and environment and are the most concerned about climate. Still, the congruence level is on average.

There are two additional findings related to party-voter congruence which are worth addressing. First, I include in A2 a sub-analysis of ideological congruence between party representatives and party voters. I do not find a correlation between ideological and issue

congruence, indicating that ideological congruence does not capture the full extent of representation, and is not sufficient when analysing how aligned elected representatives are with the public.

Second, I use the same data with the same policy issues and congruence measure when analysing issue congruence in sociodemographic sub-groups (A1) and in political parties (A2), which enables me to also compare congruence levels from these two approaches. From this, I find that issue congruence on climate policies is higher for descriptive representation (A1), than party representation (A2) in general.

7.5 Moving policy support

The framing of policy issues is an approach to increase support for emission-reducing policies. In Article 3, I show that framing effects on policy support varies by the nature of the policies, the frames used, and between citizens and representatives. Moving public and political opinion on climate policy issues that are more controversial and unpopular like meat and dairy reduction, is difficult and can backfire. In the two policy issues included in the experiment (carbon tax on food and public spending on cycle lanes), the same frames both lead to a decrease in support on a policy issue with generally low support (carbon tax on food) and an increase support on a policy issue with high support (cycle lanes). Benefit frames are the most effective, increasing support for cycle lanes. Thus, framing climate policies in terms of health benefits can increase policy support. However, it might also "boomerang", when framing policy issues with low support, leading to consequences opposite of the intention. Representatives have more extreme opinions than citizens, leaning more towards the ends of the 7-point agree/disagree scales. When support is low (carbon tax), it is lower among representatives than citizens, and when support is high (cycle lanes), it is higher among representatives than citizens.

8 Conclusions

In this final chapter of the synopsis, I discuss the findings and main contributions of the thesis. I also discuss limitations of the study, and avenues for future research.

8.1 Main lessons

My overarching research question was how well democracy functions in terms of representing climate policy preferences. To address this question, I analysed whether elected representatives are congruent with the electorate. Generally, they are quite congruent on the climate policy issues. I then asked whether some groups are better represented than others where I found inequalities. Men and older age groups are both better descriptively and substantively represented on climate issues than women and youth. I also analysed the degree to which parties represent their voters on climate policy, and whether some parties do it better than others. While party representatives are somewhat congruent with their voters, they are less so than matched sociodemographic groups. The Green Party, with the highest issue salience and most issue ownership on climate change is just as congruent as the average. The larger mainstream Labour Party is clearly the most congruent party, while the radical right Progress Party is the least congruent. Finally, I analysed how to move policy support, and asked whether mechanisms vary between citizens and representatives as well as between policies. Policy support can be moved by framing of the issues, and the effects do vary between both citizens and representatives as well as policies.

Because descriptive representation affects substantive representation, via sociodemographic groups being more congruent with representatives from the same groups, better descriptive representation of women and the youth can be an important step towards climate action. In addition, issue congruence on climate policies is higher when citizens are matched with representatives that share descriptive characteristics with them, than with the party they vote for. This adds to the argument of the importance of descriptive representation for substantive representation.

In congruence research, moving from ideology to issues and policy preferences has been an important step in mapping and understanding how well citizens are represented by their elective bodies. While issue congruence and the larger linkage between public opinion and public policy is important as a whole, it is especially pressing to uncover congruence on policy issues of major global challenges that democracies are facing today. Because climate

action is necessary and urgent to meet the changes that are rapidly affecting the world, studying climate policy preferences and climate issue congruence is pertinent. The finding in A2 that there is no correlation between ideological congruence and issue congruence adds to the argument that studying congruence on policy preferences is important and can tell us something else than simply relying on left-right self-placement to diagnose how well voters are represented.

If policy makers or advocates aim to increase policy support, issue framing provides opportunity. However, framing already controversial policies may also backfire, igniting the opposition even more. How policies are framed affects groups differently, which makes the process more complicated. Still, citizens may become more congruent with representatives through framing, as seen in A3.

8.2 Main contributions

I argue that there is a large benefit of only looking at one overarching issue when studying congruence, to be able to do in-depth analyses. It is especially relevant and important to study issue congruence on climate change, due to the pressing need for action. There is tension between representative democracy and climate change, which is specifically interesting to dissect. This thesis contributes to two important research fields, representation and congruence as well as climate change in the social sciences. It also contributes specifically by connecting these to large research fields, which thus far have remained fairly separated. An important empirical contribution of the thesis is the use of the Panel of Elected Representatives, providing the opportunity to ask the same specific questions about policy issues to citizens and a large group of elected representatives at the same time. Using survey data is beneficial in congruence studies, because I do not need to rely on proxy measures or experts' evaluations, but rather go straight to the source. While framing experiments have commonly been applied in social science and psychology research on climate change, including elected representatives to this form of experiment is a methodological innovation. In addition to being able to study the mechanisms of moving politicians' policy support, is the added benefit of comparing them directly to citizens and including a measure of congruence to framing experiments.

8.3 Limitations of the study

This is a single-country study, and questions of transferability and generalizability of the results arise. I have argued that Norway is a most likely case for congruence and a least likely case for

inequality due to the political system, comparatively high levels of descriptive representation, egalitarian system, a highly educated public, and the salience of climate issues. At the same time, there is the Norwegian climate paradox of international leader in transition versus economic dependence on the oil industry. In this regard, Norway may serve as a more critical case. The results might be transferable to other Western European states, due to aspects of the political system and - culture. In terms of the climate paradox, the study might be more applicable to countries with (previously) large fossil fuel industries such as Germany and the Netherlands.

Studying issue congruence does not provide us with any causality. Using survey data to analyse policy support tells us about attitudes and preferences but does not give any indication about actual implementation of policy support.

8.4 Future research

One obvious path for future research is to build on the findings in this study and expand the scope by including more countries. This way, the robustness of the findings can be tested, as well as analysing variations in climate congruence.

It could also be feasible to include more policy areas and explore weather tendencies and mechanisms are the same across policy areas, or if they differ. This could be especially interesting in terms of studying framing effects on policy support among citizens and representatives.

Building on this study of issue congruence, the policy issues could be followed further in the political process. Roll call data could add nuances to the self-reported policy preferences. Furthermore, the issues could be studied in terms of policy outputs and responsiveness.

There is undoubtedly room for more research on representative democracy and climate change. As time goes on, the need for action will become even more pressing. Both action and inaction from elected representatives and policymakers will receive reactions. On one side, there are activists and people who feel like they are not being heard and that climate change is not being taken seriously enough. On the other side, there is a considerably large group that does not believe that climate change is mostly due to human action, and therefore does not support invasive measures. A possible avenue for future research on the representative democracy-climate change nexus thus departs from congruence, and rather asks how well-equipped representative democracy is to tackle the climate crisis. One angle here is to pose this question more directly to survey respondents. This can be connected to political trust and

satisfaction with democracy, but with a specific focus on climate politics. Both citizens and elected representatives can be included in such a study, adding to the analysis of congruence.

Another relevant and important aspect of representation of climate preferences specifically, is the focus on children, adolescents, and future generations. Impacts of climate change will be distributed asymmetrically, both spatially and temporally. Generations that will bear the greatest costs are either not yet able to vote or are not even born yet. This leads to an important discussion of whether policy makers should represent the interests of these groups especially. From here, a research approach can be to explore and examine attitudes and willingness among elected representatives to do so, and the extent to which the consideration of children, adolescents, and future generations should be given at the expense of the voting population.

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Mari S. Helliesen

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ABSTRACT

Women and youth support climate policies to a larger extent than their counterparts, and they are underrepresented in formal politics. This paper explores whether descriptively underrepresented groups also are substantively underrepresented on climate issues. I study issue congruence between the public and elected representatives on climate policies in Norway and find high levels of overall congruence. However, representatives are less congruent with women and youth than they are with men and older age groups, linking descriptive and substantive representation.

Introduction

Policymakers should reflect the policy preferences of citizens in a representative democracy (Pitkin, 1967). A gap between the preferences of the people who vote and the representatives they vote for can threaten the function of representative democracy. Focusing on congruence builds on the idea that unequal responsiveness originates before decisions are made, based on the composition and preferences of elected representatives (Weber, 2020).

Research in the field of political congruence has focused on ideological congruence, typically measuring mass-elite distance through self-placement on the left-right scale (Golder & Stramski, 2010; Powell, 2009). More recently, *issue congruence* has become an increasingly common approach (Arnold & Franklin, 2012; Dalton, 2017; Rosset & Stecker, 2019), capturing the distance between representatives and citizens on specific policy issues. Moreover, scholars (Boas & Smith, 2019; Lupu & Warner, 2017) have connected issue congruence with inequality, showing that some groups' preferences are better represented than others.

I follow that line of work by studying unequal issue congruence on climate policy, an understudied topic, though being one of the greatest global challenges of our time. Differential representation requires differences in public preferences, at minimum (Soroka & Wlezien, 2008). Women and youth are more concerned with climate change and support climate policies more than men and older age groups do (Poortinga et al.,

2019). These pro-climate groups are also underrepresented in formal politics. A potential substantive underrepresentation of climate issues might suggest that better descriptive representation of women and youth can lead to more climate action.

I study climate issue congruence in Norway, a wealthy and well-functioning representative democracy with a highly educated public concerned with climate change. Salience and an informed public are important conditions for congruence (Kyselá, 2018). Generally, these conditions are met on the climate issue in Norway, which makes it a *most* likely case, and I expect to find high levels of congruence. In addition, as an egalitarian democracy, Norway is a *least* likely case for inequality. I do not expect to find large differences in congruence between sociodemographic groups. However, women and youth are descriptively underrepresented in politics, which might lead to substantive underrepresentation.

I use survey data from the Norwegian Citizen Panel (NCP) and the Panel of Elected Representatives (PER), with representatives at the local, regional, and national levels in Norway. I first establish differences in climate policy preferences between sociodemographic groups. Thereafter, I compare preferences of citizens and representatives and examine whether some groups' preferences are better represented. I focus on women and young, who's climate preferences stand out.

I find that representatives are less congruent with younger citizens than they are with older age groups. The young are underrepresented at all political levels, and I argue for a connection between descriptive and substantive representation. Representatives are also less congruent with women, another descriptively underrepresented group. Men and older representatives tend to represent the preferences of their matched groups better than women and younger representatives do. However, the preferences of women and young citizens are (slightly) better represented by their own sub-groups, than by all representatives.

Representation and Equality

Democracy is uniquely characterised by forging a 'necessary connection' between public preferences and public policy (May, 1978; Saward, 1998). Issue congruence, here understood as a match between the preferences of the public and policymakers, can be viewed as a cross-sectional picture of a larger process of responsiveness, where preferences are translated into actual policies.

Peters and Ensink (2015) argue that, in addition to responsiveness, political equality is an important condition for democracy. There should not, from a democratic point of view, be a systematic inequality in whose preferences are responded to. While descriptive representation deals with the characteristics of the representatives, substantive representation can be defined as having one's policy views expressed by an elected representative (Hayes & Hibbing, 2017). If someone who shares characteristics with you is more likely to also share policy views with you, descriptive and substantive representation can go hand in hand, and the former lead to the latter (Costa & Schaffner, 2018; Mansbridge, 1999). If simultaneously policy views differ between sociodemographic groups, descriptive representation can be crucial for policy preferences to be expressed by representatives.

Traditionally, men, older, higher educated, and affluent, have been overrepresented in politics (Bartels, 2009; Peters, 2018; Soroka & Wlezien, 2008; Stockemer & Sundström,

2018). As policy preferences vary by characteristics such as gender and age, descriptive underrepresentation may have consequences of inequality beyond symbolically (Joshi & Och, 2019). Biases in the makeup of parliaments matter for substantive representation (Elsässer et al., 2020; Mansbridge, 2015).

A common explanation for why women might best represent women is that of a shared experience (Mansbridge, 1999). Especially that of disadvantage, discrimination, and exclusion. Further, that those lacking this experience might not understand the concerns, interests, and perspectives of these groups (Phillips, 2020). However, it is recognised that also men have fought for women's rights, that women differ in their experiences and preferences, and that not all elected women want to speak for women specifically (Celis et al., 2008; Phillips, 2020). Any form of inequality can be seen as problematic from a democratic stand point, not only in cases of marginalised groups. Mansbridge (2015) argues that a crucial factor in terms of the importance of a group's descriptive representation is how well the interests of a group are represented through other mechanisms in the larger representative system.

The underrepresentation of women has been thoroughly studied the last decades (Costa & Schaffner, 2018; Mansbridge, 1999; Phillips, 1995; Wängnerud, 2009). The youth in politics is a far smaller and recent research field. The young are, however, strikingly underrepresented in the political sphere (Fisher, 2012). Among the world's voting population, the age group of 20–39 make up over 40%, but account for only 17% of members of parliament (Belschner & Garcia de Paredes, 2020). Compared to gender, which is stable and consistent over time for most people, age is inherently different, as it changes continuously by nature. Being young is temporary, and individuals' underrepresentation in terms of age is therefore also temporary. However, from a group perspective, the presence of youth in legislatures is crucial (Sundström & Stockemer, 2020; Young, 1990), and they can provide unique perspectives.

Education is often used to explain voting behaviour and political attitudes and is an important factor in political, social and economic divides recently seen in Western Europe (Schakel & van der Pas, 2020). Elsässer et al. (2020) argue that descriptive misrepresentation in European parliaments mainly stems from differences in education and occupational background. A growing number of studies on representation have focused on affluence, demonstrating that political decisions are biased in favour of affluent citizens (Elsässer et al., 2020; Lupu & Warner, 2022; Mathisen et al., 2021).

In political science, the centre-periphery framework is well known. Peripheral regional location, the distance from the political centre, is a distinct factor when explaining political systems and outcomes (Stein et al., 2021). This includes spatial identity and representation of specific regional interests, as well as a potential sense of exclusion from the political system and decisions made in the political centre.

Lupu and Warner (2022) find that, around the world, legislators' preferences are consistently more congruent with those of affluent citizens. However, this inequality varies substantially by issue. While the affluent are better represented on economic issues, the poor seem best represented on cultural issues. Lupu and Warner (2017) demonstrate that preferences of Argentine elites resemble citizens residing in the capital area and the wealthy, on most issues. In a study of 16 European states, Rosset and Stecker (2019) find that the poor are particularly underrepresented on redistribution, while the lower educated are underrepresented on European integration. Boas and Smith (2019)

measure congruence in Brazil in groups by gender, religion, and ethnicity. They argue that voting for someone who looks like them might be a good way for citizens from historically underrepresented social groups to elect representatives who think similarly on major policy issues.

However, not all studies on issue congruence demonstrate inequalities. Kissau et al. (2012) show that different age groups are relatively equally represented in terms of policy preferences in the lower house of the Swiss parliament. Comparing 21 European countries, Dingler et al. (2018) surprisingly find that women's preferences tend to be more accurately represented in parliaments than those of men. Their finding is driven by levels of women's turnout, arguing that who votes is more important than who represents. However, they show that the policy fields of environment and multiculturalism are important exceptions, for which parliaments reflect men's preferences better than women's preferences.

Climate Policy Preferences

Higher levels of congruence are expected when issues are more salient and information is readily available (Kyselá, 2018). As one of the greatest challenges of representative democracies today, climate change is a highly salient issue with extensive information and accumulated knowledge. However, the short-term nature of representative democracy makes politicians unwilling to take necessary action for a long-term sustainable society (Hysing, 2013).

Research has shown systematic variations in climate change perceptions and policy preferences between men and women, age groups, and educational attainment in Western democracies, including Norway (Ballew et al., 2020; Hornsey et al., 2016; Poortinga et al., 2019). Women, young, and higher educated are generally more concerned about climate change, and more pro-climate action, than men, older, and lower educated, respectively. However, attitudes among elected representatives on these issues have not been thoroughly mapped. We could expect similar patterns among these sociodemographic groups, based on the descriptive representational argument that women tend to represent the preferences of women, and so forth. However, studies suggest that the preferences of representatives are generally more structured than those of citizens, and that representatives' opinions often appear more extreme, due to a stronger partisan link (Powell, 2004). Representatives also have more at stake than voters do, and need to consider the long-term effects of action versus short-term costs and re-election.

Climate change divides other groups than, for examples, issues of economy and redistribution. The preferences and actions of youth specifically stand out. Through demonstrations and the use of social media, youth have taken issue ownership over climate change, as witnessed through the movement led by climate activist Greta Thunberg. They are, however, not as visible in formal politics. The young not only vote less than older age groups, but they are also less likely to run for election, and thus becoming elected representatives (Belschner & Garcia de Paredes, 2020). The preferences of the young should be well known though, through their higher levels of participation in unconventional forms.

Those who demand action on climate change, specifically youth, but also women, are underrepresented in formal politics, which might explain why the implementation of

climate policies is moving at such a slow pace. Based on previous research, I expect the young and women to be underrepresented on climate policy issues. If other sociodemographic groups diverge in opinion *and* are descriptively underrepresented, I expect inequality in these groups as well.

The Case of Norway

I study climate issue congruence in Norway, a well-functioning representative democracy with a highly educated public. Together with the other Nordic countries, Norway is an egalitarian society, with high levels of social mobility. Though some groups, including those discussed above, are underrepresented in formal politics, representation is more equal than in most countries. Norway is one of the world's most gender-equal countries (WEForum, 2020). The proportion of women in Parliament in Norway is comparatively high, with 45% of the seats (Stortinget, 2021). Women hold around 40% of the seats in local legislatures (SSB, 2020). In terms of age, Norway has the highest share, comparatively, of MPs under 30, with 13.6% of the seats. The share of MPs under 40 is 34.3% (IPU, 2021). In Norwegian local and regional legislatives, the age group 18–39 makes up around 28% of elected representatives. Lower educated are descriptively underrepresented, but not especially so, compared to other European countries (Gaxie & Godmer, 2007). Geographical representation is important in Norway and included in the electoral system. The distribution of parliamentary seats in the counties (constituencies) is based on a weighted sum of the number of inhabitants and the county's area, where area is weighted more than population (Føllesdal, 2010). This leads to the most Northern peripheral regions actually being descriptively overrepresented in Parliament.

On the one hand, with Norway being egalitarian and a least likely case of inequality, I do not expect to find large differences in congruence between sociodemographic groups. However, because there is still some underrepresentation of certain groups, I might find substantive underrepresentation.

When it comes to climate policies, Norway is an interesting case. The country is ahead on renewable energy sources, with essentially zero emissions from power production (Steentjes et al., 2017), which is largely derived from hydroelectric power. Norway has been seen as a pioneer country for international agreements to reduce greenhouse gas emissions. The country is committed to cut emissions by 50–55% by 2030 through the 2015 Paris Agreement. Norway is, however, a paradoxical case. The wealth of the country is largely due to its large oil resources, and the Norwegian economy is heavily dependent on the oil industry. Oil and gas extraction is the largest emission source in Norway (SSB, 2017), and Norway faces a significant societal transition if the goals are to be achieved. Thus, the implementation of climate policies is pressing.

In a comparative study of Norway, Germany, France and UK, Steentjes et al. (2017) found that the level of climate acceptance is high in all countries but highest in Norway. A majority of respondents agreed that being environmentally friendly is an important part of being Norwegian, and that as a nation their country can make a difference when it comes to climate change. Climate change and the environment (ranked 2nd and 4th, respectively) had higher priority as national issues compared to other countries (Steentjes et al., 2017). However, research has found a relatively weak relationship between environmental concern and pro-environmental behaviour (Kulin & Johansson

Sevä, 2020). Still, considering the salience of climate issues, I expect a fairly high level of overall congruence, placing Norway as a most likely case in this context. In sum, Norway is a relevant case for studying (unequal) climate policy congruence. Due to Norway being a comparatively equal country, if there is inequality in issue congruence, we could expect the same in other countries as well, to an even larger extent.

Data

I use survey data from the Norwegian Citizen Panel (NCP) and the Panel of Elected Representatives (PER) collected between 2018 and 2020. NCP is a representative sample of the Norwegian population, while PER invites all elected representatives at all political levels (local, regional, and national) in Norway. A vast majority, 4019 out of 4321, of the respondents in the first wave of PER are local representatives in municipal councils. Norwegian local councils provide the majority of social services and public goods provision. The municipalities have some responsibilities in terms of climate policies. More generally, being a local representative is an important stepping stone into national politics (Cirone et al., 2021).

All questions used in this study (Table 1) have been asked to respondents in both NCP and PER. The elected representatives were specifically asked about their personal opinions on these issues. All statements suggest actions that can be considered pro-climate and concern emission reduction.

The policy issues cover major aspects of the climate and transition debate – energy, transportation, agriculture, and food. While the car issue has been debated the past years, and some related policy is in place, the meat and dairy production issue is relatively new in the public debate. It may be perceived as more controversial and polarising than the other questions. It is plausible that representatives do not know where their voters stand on this issue. Oil and gas extraction has been the subject of debate for many years but has recently more or less been put at rest. Wind power has become an increasingly salient issue, and the debate of onshore wind has created a divide.

The oil and gas and meat and dairy issues have been repeated over time in both panels and are therefore included twice in the analyses, increasing the number of policy issues to seven. This provides an opportunity to examine how stable issue congruence is, and whether representatives and citizens move closer to each other in their preferences over time. It is also beneficial for robustness, because representatives in PER were recruited twice, with a local and regional election between the two recruitments.[1] The second time the issues were fielded was after the second recruitment. Thus, repeated issues are asked to different samples of representatives. The policy issues were fielded

Table 1. Policy issues.

Policy issue	Statement
Electric cars	All new passenger cars from 2025 should be electric, hydrogen-powered or similar
Oil and gas extraction	We should not allow oil and gas extraction in Lofoten, Vesterålen and Senja
Meat and dairy production	Norway should halve today's meat and dairy production by 2050
Onshore windmills	More land-based windmills should be built in Norway
Offshore windmills	More sea-based windmills should be built in Norway

in the two panels at approximately the same time, with a maximum distance of three months.

The 7-point response scale runs from strongly disagree (1) to strongly agree (7).[2] Higher means in Table 2 indicate more agreement. Meat and dairy production has the least support, followed by onshore wind. Offshore wind, on the other hand, has the most support, followed by oil and gas extraction. Support is higher for citizens than representatives on most of the policy issues. Change over time on the repeated oil and gas and meat and dairy issues is limited.

The sociodemographic variables used in the analyses are gender, age, education, region, and income. Though the main focus is on gender and age, I include other factors commonly used in studies of both unequal representation and policy preferences. This provides a basis for comparison of the effects and differences between sociodemographic groups. Age is divided into three generational groups: those born in 1949 or earlier (senior), those between 1950 and 1979 (middle), and 1980 or later (young). All respondents are over 18, the voting age in Norway. For the sake of anonymity, the age variables in NCP and PER are coded in groups. The young are approximately 40 and younger, and the seniors are 70 and older. Up to 40 years is a common definition of youth in political representation (Belschner & Garcia de Paredes, 2020). Education is divided into two groups: those with higher education and those with lower education. Region is also divided into two groups: the central region surrounding the capital, Oslo and Eastern Norway (centre), and the rest of the country (periphery). Citizens are divided into three income groups: up to 300,000 NOK (low income), between 300,001 and 700,000 NOK (middle income), and over 700,000 NOK (high income). Information about income is not available in PER and therefore not included in the analysis of representatives. Both age and income are coded for approximately similar group sizes on the ends of the scale, to control for group size effects. Larger groups would and should, theoretically, be better represented. Increasing the size of the groups controls for skewed results due to sensitivities in analyses with smaller N, and makes the groups within sociodemographic variables more comparable to each other. A potential limitation would be to not capture the actual inequality caused by biases. However, if unequal congruence is still evident, this increases the robustness of the results.[3]

Table 2. Descriptive statistics of policy issues.

Policy issue	Representatives	Citizens	Fielded
Electric cars	3.93	4.06	PER1, 2018
	(2.02)	(1.96)	NCP12, 2018
Oil and gas extraction (1)	4.79	5.00	PER2, 2019
	(2.20)	(1.92)	NCP14, 2019
Meat and dairy production (1)	2.51	3.14	PER2, 2019
	(1.66)	(1.78)	NCP15, 2019
Onshore wind	3.43	3.92	PER3, 2020
	(1.96)	(2.02)	NCP16, 2019
Offshore wind	5.39	5.29	PER3, 2020
	(1.63)	(1.66)	NCP16, 2019
Oil and gas extraction (2)	4.92	4.90	PER3, 2020
	(2.12)	(1.99)	NCP17, 2020
Meat and dairy production (2)	2.49	3.17	PER3, 2020
	(1.73)	(1.77)	NCP18, 2020

Means of policy issues. Standard deviation in parentheses. Scale 1 (strongly disagree)–7 (strongly agree).

The representativity of the samples should be taken into account. In PER, women were slightly underrepresented in the first recruitment, while close to full representation in the second recruitment. In NCP, gender is (close to) perfectly represented. Higher educated are overrepresented in PER, and increasingly so from the first to second recruitments. They are even more overrepresented in NCP. Younger are underrepresented, while older are overrepresented in PER. The age bias is more substantial in the second recruitment than in the first. The youngest age group measured in the panel (born in 1990 or later) is the most underrepresented, while the oldest age group (1959 or earlier) is the most overrepresented. The same pattern is found in NCP (Skjervheim et al., 2018, 2019, 2020).

Earth Mover's Distance

Lupu et al. (2017) introduced a new congruence measure to political science, the Earth Mover's Distance (EMD). It measures the extent to which the responses of two different groups are similar. The statistical distributions of the groups are compared, calculating how much effort it takes for the two to become identical. The EMD is used as a measurement of what Golder and Stramski (2010) coined as many-to-many congruence, comparing many citizens to many representatives. Other congruence measures throw out valuable information in the data by excluding variance or variation. The EMD includes both the amount and location of all the data (Lupu et al., 2017), in contrast to, for example, a *t*-test, which only uses means. The EMD is especially valuable when using Likert scales. It indicates the distance between two samples on the scale of the original response (Lupu et al., 2017), which makes the interpretation straightforward.

In this study, the EMD measures the distance or similarity between the distribution of preferences of citizens and representatives on the 7-point scales of each policy issue. The EMD, in this case, theoretically ranges from 0 to 6, with 0 being a perfect score. An EMD of 0 would occur if the two distributions were identical, while 6 would occur if all respondents in one sample were located at one end of the scale and all respondents in the other sample were located at the other end of the scale. The EMD is calculated using the emdist package in R (Urbanek & Rubner, 2012).

Mass-Elite Congruence

I first measure overall mass-elite congruence, comparing the distributions of the entire samples. Figure 1 presents the distribution and mean (dashed line) of the citizen and representative panels on the policy issues. Representatives have stronger opinions than citizens, with higher shares on both ends of the scale. Offshore wind is an exception, with well-matched distributions, as well as onshore wind, where a larger share of citizens strongly agrees than representatives.

Representatives and citizens are strikingly congruent on the policy issues, with EMDs well below 1 (Table 3). The highest EMD, and thus least congruence, is on the meat and dairy issue (0.63 and 0.68). Offshore wind is the most congruent issue (0.04). The least congruent issues have more recently entered the public debate. The repeated policy issues show relative stability over time, with meat and dairy being the least congruent
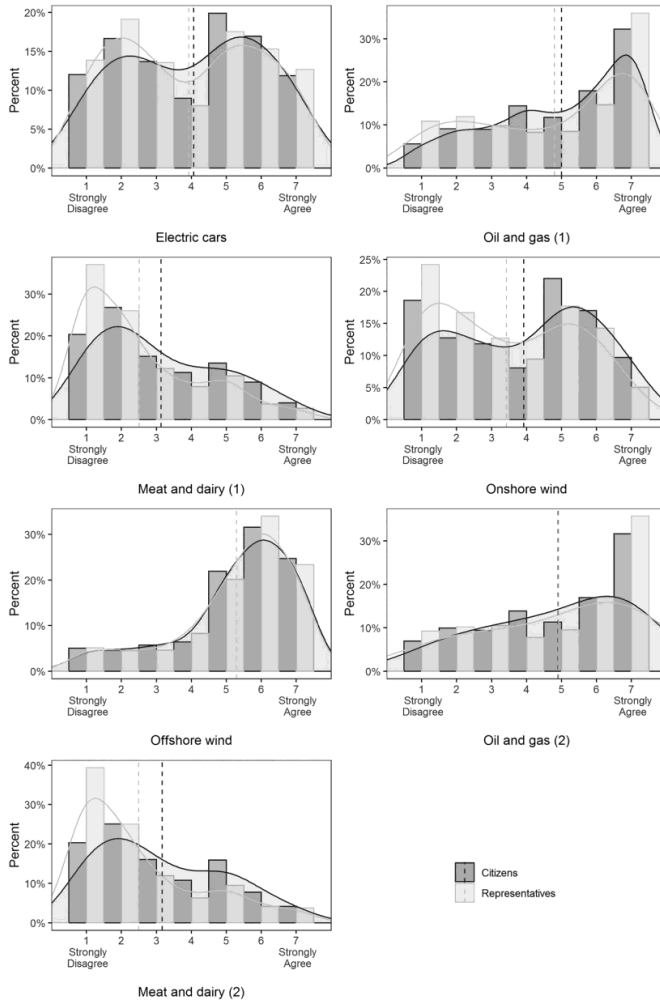
Figure 1. Overall distribution of policy issues.

issue and oil and gas in the middle. While representatives and citizens have become more aligned on the oil and gas issue over time, they have moved somewhat further away from each other on the meat and dairy issue.

Table 3. Overall congruence.

Electric cars	Oil and gas (1)	Meat and dairy (1)	Onshore wind	Offshore wind	Oil and gas (2)	Meat and dairy (2)
0.15	0.29	0.63	0.49	0.04	0.19	0.68

Note: Distance between citizens and representatives from 0 (perfect congruence) to 6 (incongruence).

Congruence in Sociodemographic Groups

Before analysing unequal representation on climate issues, and whether some groups are more congruent than others, I first need to establish that there actually are differences in the preferences of these groups. Inequality in congruence presupposes differences in groups' preferences. If some groups who have diverging opinions from other comparable groups also are descriptively underrepresented in legislatures, we can expect their policy preferences to be underrepresented as well. I, therefore, test the effects of gender, age, education, region, and income, on climate policy preferences.

Table 4 presents results from ordered logistic regressions.[4] They confirm the significant effects of gender, age, and education on most policy issues for both citizens and representatives. Women, young, and higher educated are more likely to support climate policies. However, women are less likely to support wind power. For citizens, this only applies to offshore wind, while the effect on onshore wind is not significant. Young has no significant effect on the oil and gas issues, nor offshore wind among citizens. The effect of higher education is not significant on either wind issue, nor the first meat and dairy issue in the citizen panel. Among representatives, young and women have significant effects on all issues except for the first meat and dairy. The effects of region and income vary.

Table 4. Ordered logistic regression analyses.

	Electric cars	Oil and gas (1)	Meat and dairy (1)	Onshore wind	Offshore wind	Oil and gas (2)	Meat and dairy (2)
Representatives							
Women	0.25***	0.42***	0.14	−0.30***	−0.38***	0.47***	0.34***
	(0.06)	(0.07)	(0.07)	(0.08)	(0.08)	(0.06)	(0.09)
Young	0.67***	0.34**	0.20	0.28**	0.59***	0.45***	0.65***
	(0.09)	(0.13)	(0.12)	(0.10)	(0.10)	(0.08)	(0.12)
Higher education	0.82***	0.50***	0.76***	0.37***	0.57***	0.56***	0.45***
	(0.06)	(0.08)	(0.08)	(0.09)	(0.09)	(0.07)	(0.10)
Centre	0.03	0.03	0.32***	0.43***	0.35***	0.11	0.25**
	(0.06)	(0.07)	(0.07)	(0.08)	(0.08)	(0.06)	(0.09)
Obs.	4053	2684	2688	1946	1939	3532	1593
Citizens							
Women	0.78***	0.42***	0.60**	0.05	−0.51***	0.44***	0.42*
	(0.16)	(0.06)	(0.20)	(0.13)	(0.14)	(0.09)	(0.18)
Young	1.00***	0.14	1.27***	0.58***	0.37	0.19	1.13***
	(0.21)	(0.08)	(0.28)	(0.14)	(0.20)	(0.11)	(0.24)
Higher education	0.54***	0.50***	0.34	0.21	0.22	0.63***	0.61***
	(0.14)	(0.05)	(0.18)	(0.11)	(0.13)	(0.09)	(0.14)
Centre	−0.05	0.02	0.29	0.71***	0.53***	0.03	0.22
	(0.15)	(0.06)	(0.20)	(0.13)	(0.13)	(0.09)	(0.17)
High income	0.30	−0.44***	−0.01	0.25	0.43*	−0.36**	0.10
	(0.18)	(0.07)	(0.16)	(0.19)	(0.17)	(0.11)	(0.16)
Obs.	1170	8445	1155	1381	1380	3710	1213

Note: Standard errors in parentheses. ***p-value < .001; **p-value < .01; *p-value < .05.

I now measure congruence between sociodemographic groups to analyse whether there is inequality, and some groups are better substantively represented than others. This is done first by dividing the representative *and* citizen panels into groups by gender, age, education, and region. The statistical distributions of preferences on the policy issues of the sub-groups in the two panels are then compared. This captures congruence between citizens and representatives who are descriptively similar.

Table 5 provides EMDs comparing the same sub-groups in both panels. Divided into sociodemographic groups, the highest EMD is found between young citizens and young representatives on meat and dairy production (1.02). The lowest EMD is between citizens and representatives in the middle age group on offshore wind (0.06). In general, women are less congruent than men, young less congruent than older age groups, and lower educated less congruent than higher educated. Those in the central region are less congruent than peripheral regions. The largest difference in congruence between two groups within the same sociodemographic variable is that of young versus old. EMDs in the repeated policy issues of oil and gas and meat and dairy show smaller differences in congruence between sub-groups within the same sociodemographic variable over time. When split into sociodemographic groups, representatives still have stronger opinions than citizens on the policy issues, with the distribution skewed more towards both ends of the scale in PER.[5]

Because the EMD itself does not offer any statistical significance, I use the data in Table 5 to run an OLS regression. This allows me to test whether the EMD varies significantly between sociodemographic sub-groups. The EMD is the dependent variable, ranging from 0.06 to 1.02. All 9 sociodemographic sub-groups (men, women, young, etc.) are independent variables. These are coded to dummies with each observation given the value 1 for the sub-group concerned, and the value 0 for all other sub-groups. For example, the upper left cell in Table 5 has an EMD of 0.14. In the regression, for this observation EMD = 0.14, men = 1, and all other sociodemographic dummies = 0. The number of observations is 63. None of the sociodemographic variables have significant effects on the EMD, though young has the largest coefficient (0.19). The effects of women and young are positive, indicating less congruence. On the contrary, the effects on men, older, and middle-aged are negative, increasing congruence. The regression table is included in the appendix (Table 20, model 1).

Table 5. Congruence in matched sociodemographic sub-groups.

	Electric cars	Oil and gas (1)	Meat and dairy (1)	Onshore wind	Offshore wind	Oil and gas (2)	Meat and dairy (2)
Men	0.14	0.26	0.35	0.38	0.11	0.12	0.64
Women	0.25	0.24	0.73	0.65	0.10	0.28	0.66
Young	0.18	0.44	1.02	0.77	0.17	0.34	0.87
Middle	0.14	0.26	0.48	0.44	0.06	0.16	0.64
Senior	0.20	0.27	0.25	0.24	0.17	0.18	0.67
Lower education	0.28	0.36	0.66	0.49	0.14	0.26	0.57
Higher education	0.13	0.28	0.56	0.51	0.10	0.14	0.78
Centre	0.16	0.31	0.48	0.57	0.08	0.20	0.66
Periphery	0.16	0.28	0.57	0.28	0.07	0.19	0.63

Note: Distance between citizens and representatives from 0 (congruence) to 6 (incongruence). Representatives and citizens are divided into groups by gender, age, education, and region and compared by matching sub-groups.

Following, I compare the statistical distributions of policy preferences in sociodemographic groups of citizens to the entire representative sample. Citizen's income is also included in this analysis. This examines whether some groups' policy preferences are better represented than others, and representatives are more congruent with certain groups.

Table 6 provides EMDs for sociodemographic groups of citizens compared to the entire representative panel. On most of the policy issues, representatives are more congruent with men than with women. Representatives are also more congruent with older citizens than with young, and the most congruent across all policy issues with the middle-aged. Representatives are more congruent with lower-educated citizens than higher-educated citizens. In other words, men are better represented than women, older people are better represented than younger people, and lower educated are better represented than higher educated. Representatives are more congruent with citizens in the peripheral regions than the central region on four of the seven issues. Representatives are more congruent with citizens with high income than with those with low income on the first three policy issues, but the opposite for the second half of the issues. However, the middle-income group is consistently the most congruent.

Interestingly, on the first oil and gas, as well as both meat and dairy issues, men citizens are better represented by all representatives (Table 6), than they are when only matching them with men representatives (Table 5). In other words, on these issues, men are better represented by men and women combined than by men alone. Women, on the other hand, are better represented by their own, than by all representatives.

The highest EMD, and least congruence, is for young citizens on meat and dairy production (1.36 and 1.40). In contrast, the lowest EMD, and most congruence, is for middle-income citizens on offshore wind (0.07). The largest difference between the two groups within the same sociodemographic variable is that of young versus middle-aged.[6]

Table 6. Congruence between citizens' sociodemographic sub-groups and all representatives.

	Electric cars	Oil and gas (1)	Meat and dairy (1)	Onshore wind	Offshore wind	Oil and gas (2)	Meat and dairy (2)
Men	0.31	0.23	0.30	0.48	0.16	0.36	0.50
Women	0.54	0.55	0.83	0.51	0.16	0.30	0.88
Young	0.65	0.42	1.36	0.96	0.11	0.21	1.40
Middle	0.08	0.26	0.40	0.37	0.09	0.20	0.50
Senior	0.29	0.34	0.50	0.44	0.14	0.23	0.71
Lower education	0.37	0.37	0.20	0.28	0.18	0.45	0.30
Higher education	0.37	0.42	0.76	0.63	0.11	0.23	0.91
Centre	0.14	0.32	0.69	0.87	0.13	0.18	0.82
Periphery	0.15	0.26	0.44	0.09	0.14	0.20	0.53
Low income	0.19	0.47	0.89	0.52	0.18	0.27	0.74
Middle income	0.17	0.32	0.48	0.43	0.07	0.15	0.64
High income	0.10	0.24	0.52	0.66	0.36	0.41	0.75

Note: Distance between citizens and representatives from 0 (congruence) to 6 (incongruence). Citizens are divided into groups by gender, age, education, region, and income and compared to all representatives.

To test whether the EMD varies significantly between sub-groups, I use the data in Table 6 to run an OLS regression ($N = 84$). This is done in the same manner as described above (for Table 5). The EMD is the dependent variable, and the 12 sociodemographic groups are independent variables. The only significant effect on EMD is that of the young (p-value < .01). This positive effect holds when excluding repeated policy issues. Elected representatives are significantly less congruent with young citizens, than with all other sociodemographic groups. The regression table is presented in the appendix (Table 20, model 2).

There are small differences between sub-groups over time on repeated policy issues. Women are better represented on the oil and gas issue the second time, and the difference in congruence between men and women is much smaller. This is likely due to the representativity of women being better in PER the second time this issue is included.[7] When women citizens are matched with women representatives only, women are actually slightly more congruent in the first oil and gas than the second, while men are better matched the second time. Thus, the reason for women being better represented by the entire PER in the second oil and gas is not due to a better match between their own, but the fact that there are more of their own. A similar pattern is also found for the young, even though they match each other better the second time. The representativity in PER of the young is better when oil and gas is included the second time, which can explain why there is virtually no age inequality in congruence on this issue.

Somewhat surprisingly, on the meat and dairy issue, most sub-groups are less congruent the second time the issue is included. However, young and women, who had the highest EMDs on the first meat and dairy issue, became more congruent in their respective groups on the second issue. Still, all citizen groups, except for low income, are less congruent with the representatives in the second meat and dairy issue. The difference between overall congruence in the two rounds is minimal, thus other groups seem to be representing them instead. The distance between the two panels increased from the first to the second item, though. Representatives moved towards stronger disagreement, and citizens towards more agreement.

Discussion and Conclusion

The results largely confirm that there is congruence on climate policies in Norway. However, I find inequality between sociodemographic groups, in line with previous studies on unequal issue congruence. Some groups are consistently better represented than others, on the policy issues. Dividing lines depend on the issue. Young and women are particularly substantively underrepresented on climate policy, as well as descriptively underrepresented. This is in contrast to the findings of Kissau et al. (2012) on the substantive representation of age groups, but in line with the exception of environmental policy that Dingler et al. (2018) find for substantive representation of gender. Women and young match their own groups less well compared to men and older. It might seem like women and young representatives either do not know their own group's preferences well enough, or they are more aligned with men and older representatives, who make up the majority of the legislative bodies.

Dingler et al. (2018) argue that 'the causal linkage between descriptive and substantive representation is not as proximal as previously thought, because male and female MPs

are equally willing and able to take up women's heterogeneous policy preferences' (p. 14). However, when I match male and female representatives, separately, with male and female citizens, there is a clear distinction and importance in terms of who represents. Women are best represented by women, and men are best represented by men. A similar pattern is found for age groups.[8]

We could expect the largest groups to be best represented, theoretically, in terms of majority views, and methodologically, with potential group size biases. For gender, the distribution of men and women are equal, both in the real world, and in the citizen panel. Men are, however, overrepresented in politics, which is reflected in the representative panel. For age, the middle group is the largest among citizens and representatives alike, and also the most congruent age group. More importantly, though, the young and old age groups are similar in size in the citizen panel, and thus comparable. The higher educated are overrepresented in both the citizen and representative panel. Despite this, the lower educated are somewhat better represented substantively. Group size alone does, therefore, not explain unequal issue congruence.

The underrepresented groups of women and young are also those who consistently hold higher levels of support for climate policies and call for climate action, especially the young. Therefore, better representation of women and young can be an important step towards climate action, at least for policy support. Due to Norway being a least likely case of inequality, we could expect to find inequality in issue congruence in other countries as well.

My findings add to previous studies linking issue congruence with inequality, demonstrating that some descriptively underrepresented groups are substantively underrepresented as well. However, Dingler et al. (2018) argue that for issue congruence, who votes is more important than who represents. Griffin and Newman (2005) found that voters are better represented than non-voters by elected officials in the US. This is an especially interesting perspective in relation to the underrepresentation of the young, who consistently have low turnout levels, compared to the rest of the public. The young might be suffering a double loss in the way to substantive representation – first from low turnout and second from descriptive underrepresentation. While the absence of young voters might decrease the chances of electing young representatives, the lack of representation might also directly contribute to political apathy and declining levels of participation of the young (Stockemer & Sundström, 2019). In relation to the young, climate is a particularly interesting policy domain, because consequences are unequally distributed across time and generations.

There are some limitations of this study. It is a single case study, which contains only five policy issues. This does, however, allow for a deep dive into unequal issue congruence on climate policies in Norway. The study also connects the fields of representation and issue congruence on the one hand, and climate policy on the other hand. For future research, the findings in this paper can be tested and robustness strengthened, by increasing the number of policy issues studied, within the field of climate and environment, as well as through cross-country analyses. Questions to be raised are if these patterns are found in other representative democracies, and whether preferences of the youth and women are even less represented in countries where these groups are more descriptively underrepresented.

Notes

1. The first recruitment of PER includes electric cars; oil and gas extraction (1); and meat and dairy production (1). The second recruitment includes onshore wind; offshore wind; oil and gas extraction (2); and meat and dairy production (2).
2. The scale originally ran from strongly agree (1) to strongly disagree (7), but was turned for more intuitive interpretations.
3. Included in the appendix are Tables 12–14 with different cut-off points of the sociodemographic variables, showing distributions and group sizes.
4. In the citizen sample, probability weights were applied, based on age, gender, geography, and education. When including party dummies in the regressions, the effects of sociodemographic variables generally still hold (see Table 9 in appendix).
5. See appendix for figures with distributions of policy issues in sociodemographic groups.
6. When subdividing the age groups to only include the youngest category (1990 or earlier), the EMDs are even higher, and differences between age groups larger. See Table 16 in the appendix.
7. See Table 11 in the appendix for distribution on sociodemographic variables by policy issue.
8. See Tables 21 and 22 in the appendix for EMDs of matched and unmatched gender and age groups.

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Appendix for Article 1

Appendix – Unequal representation

Table 8. Descriptive statistics of policy issues

REPRESENTATIVES

	N	Mean	St.Dev.	Min	Max	Fielded
Electric cars	4,230	3.93	2.02	1	7	March-April 2018
Oil and gas extraction (1)	2,745	4.79	2.20	1	7	Jan-Feb 2019
Meat and dairy production (1)	2,749	2.51	1.66	1	7	Jan-Feb 2019
Onshore wind	2,007	3.43	1.96	1	7	Feb-May 2020
Offshore wind	2,000	5.39	1.63	1	7	Feb-May 2020
Oil and gas extraction (2)	3,721	4.92	2.12	1	7	Feb-May 2020
Meat and dairy production (2)	1,716	2.49	1.73	1	7	Feb-May 2020

CITIZENS

	N	Mean	St.Dev.	Min	Max	Fielded
Electric cars	1,382	4.06	1.96	1	7	June 2018
Oil and gas extraction (1)	8,912	5.00	1.92	1	7	Jan-Feb 2019
Meat and dairy production (1)	1,370	3.14	1.78	1	7	May-June 2019
Onshore wind	1,722	3.92	2.02	1	7	November 2019
Offshore wind	1,722	5.29	1.66	1	7	November 2019
Oil and gas extraction (2)	7,526	4.90	1.99	1	7	Jan-Feb 2020
Meat and dairy production (2)	1,246	3.17	1.77	1	7	June 2020

Table 9. Ordered logistic regression analyses of policy issues

REPRESENTATIVES

	Electric cars	Oil and gas (1)	Meat and dairy (1)	Onshore wind	Offshore wind	Oil and gas (2)	Meat and dairy (2)
Women	.27***	.38***	.17*	-.40***	-.49***	.41***	.32**
	(.06)	(.08)	(.08)	(.09)	(.09)	(.07)	(.10)
Young	.75***	.30*	.32*	.40***	.61***	.13	.59***
	(.09)	(.14)	(.13)	(.10)	(.11)	(.09)	(.12)
Higher education	.55***	.36***	.54***	.31**	.42***	.38***	.20
	(.07)	(.08)	(.09)	(.09)	(.09)	(.07)	(.11)
Centre	-.01	.16*	.31***	.44***	.34***	.26***	.17
	(.06)	(.08)	(.08)	(.09)	(.09)	(.07)	(.10)
Progress Party	-1.91***	-2.54***	-1.10***	-1.53***	-1.82***	-3.09***	-1.95***
(FrP)	(.13)	(.17)	(.16)	(.19)	(.19)	(.16)	(.24)
Conservative Party	-.47***	-1.45***	-.18	41**	.02	-1.31	-.33*
(H)	(.08)	(.10)	(.10)	(.13)	(.13)	(.09)	(.14)
Christian Democrats	.19	.65***	-.34*	-.30	-.19	.30*	-.73*
(KrF)	(.12)	(.15)	(.14)	(.19)	(.19)	(.15)	(.21)
Green Party	3.55***	4.48***	2.59***	-.42*	.55*	4.67***	2.30***
(MDG)	(.25)	(.72)	(.23)	(.20)	(.22)	(.59)	(.26)
Red Party	1.03**	2.75***	.48	-2.45***	-.44	2.76***	.71**
(R)	(.31)	(.63)	(.23)	(.29)	(.27)	(.32)	(.27)
Centre Party	-.81***	.66***	-2.26***	-.73***	-.83***	.23**	-2.32***
(Sp)	(.09)	(.11)	(.14)	(.12)	(.12)	(.09)	(.16)
Socialist Left Party	1.72***	4.18***	.76***	-.78***	-.29	3.44***	.65**
(SV)	(.14)	(.46)	(.16)	(.17)	(.18)	(.28)	(.20)
Liberal Party	1.23***	2.09***	.81***	-.36	-.06	1.92***	.85**
(V)	(.13)	(.20)	(.16)	(.22)	(.23)	(.22)	(.27)
Obs.	3,834	2,538	2,542	1,845	1,838	3,340	1,502

Standard errors in parentheses. ***p-value<.001; **p-value<.01; *p-value<.05.

Labour Party (AP) is not included as a party dummy, but functions as baseline.

CITIZENS

	Electric cars	Oil and gas (1)	Meat and dairy (1)	Onshore wind	Offshore wind	Oil and gas (2)	Meat and dairy (2)
Women	.87***	.37***	.48**	-.01	-.64***	.42***	.30
	(.16)	(.07)	(.19)	(.14)	(.16)	(.10)	(.19)
Young	.49*	-.19*	.85**	.66***	.29	-.14	1.00***
	(.20)	(.09)	(.26)	(.15)	(.22)	(.12)	(.27)
Higher education	.28*	.22***	.21	.16	.16	.45***	.39*
	(.14)	(.06)	(.15)	(.12)	(.13)	(.09)	(.16)
Centre	-.02	-.06	.29	.81***	.47**	.06	.11
	(.15)	(.07)	(.17)	(.14)	(.14)	(.09)	(.18)
High income	.41*	-.27***	-.15	.18	.37*	-.35**	.13
	(.17)	(.08)	(.18)	(.19)	(.18)	(.10)	(.17)
Progress Party	-1.22***	-1.36***	-1.14**	-.51	-1.01**	-1.16***	-1.05**
(FrP)	(.27)	(.13)	(.39)	(.39)	(.39)	(.21)	(.38)
Conservative Party	-.11	-.59***	-.42	.30	-.01	-.85***	-.15
(H)	(.21)	(.09)	(.22)	(.22)	(.19)	(.12)	(.20)
Christian Democrats	.26	.20	-.39	.12	-.34	-.30	-.61*
(KrF)	(.26)	(.18)	(.35)	(.23)	(.29)	(.24)	(.30)
Green Party	1.61***	2.14***	2.77***	-.56	.26	1.99***	1.59**
(MDG)	(.39)	(.17)	(.44)	(.35)	(.31)	(.18)	(.50)
Red Party	1.95***	1.59***	1.04**	-.72**	-.50	1.33***	.78
(R)	(.50)	(.18)	(.34)	(.27)	(.36)	(.30)	(.45)
Centre Party	-.67**	.27*	-.96**	-.43	.05	.15	-.41
(Sp)	(.25)	(.12)	(.30)	(.23)	(.24)	(.14)	(.28)
Socialist Left Party	.71*	1.67***	.92**	.04	.02	1.59***	.59*
(SV)	(.29)	(.12)	(.28)	(.22)	(.25)	(.17)	(.25)
Liberal Party	.96**	.99***	.83*	-.18	.00	.18	.44
(V)	(.34)	(.20)	(.32)	(.34)	(.35)	(.40)	(.58)
Obs.	1,076	7,610	1,051	1,260	1,261	3,402	1,133

Standard errors in parentheses. ***p-value<.001; **p-value<.01; *p-value<.05.

Labour Party (AP) is not included as a party dummy, but functions as baseline.

Table 10. N and distribution of party affiliation by policy issue

REPRESENTATIVES

	Electric cars	Oil and gas (1)	Meat and dairy (1)	Onshore wind	Offshore wind	Oil and gas (2)	Meat and dairy (2)
AP	1,388	906	909	578	572	1,028	453
	34.75 %	34.95 %	35.02 %	30.42 %	30.22 %	29.24 %	28.00 %
FrP	289	172	173	127	127	233	107
	7.24 %	6.64 %	6.66 %	6.68 %	6.71 %	6.63 %	6.61 %
H	806	504	504	328	326	643	311
	20.18 %	19.44 %	19.41 %	17.26 %	17.22 %	18.29 %	19.22 %
KrF	283	194	192	99	100	192	92
	7.09 %	7.48 %	7.40 %	5.21 %	5.28 %	5.56 %	5.69 %
MDG	116	80	80	89	89	157	69
	2.90 %	3.09 %	3.08 %	4.68 %	4.70 %	4.47 %	4.26 %
R	41	25	25	52	52	103	51
	1.03 %	0.96 %	0.06 %	2.74 %	2.75 %	2.93 %	3.15 %
Sp	640	407	409	422	422	789	367
	16.02 %	15.70 %	15.76 %	22.21 %	22.29 %	22.44 %	22.68 %
SV	201	149	150	127	127	242	117
	5.03 %	5.75 %	5.78 %	6.68 %	6.71 %	6.88 %	7.23 %
V	230	155	154	78	78	129	51
	5.76 %	5.98 %	5.93 %	4.11 %	4.12 %	3.67 %	3.15 %

CITIZENS

	Electric cars	Oil and gas (1)	Meat and dairy (1)	Onshore wind	Offshore wind	Oil and gas (2)	Meat and dairy (2)
AP	211	2,168	282	331	331	1,489	214
	18.53 %	27.10 %	25.73 %	21.30 %	21.27 %	21.86 %	23.11 %
FrP	118	768	99	107	108	629	86
	10.36 %	9.60 %	9.03 %	6.89 %	6.94 %	9.23 %	9.29 %
H	353	1,946	276	322	322	1,412	193
	30.99 %	24.32 %	25.18 %	20.72 %	20.69 %	20.73 %	20.84 %
KrF	53	285	42	48	48	227	30
	4.65 %	3.56 %	3.83 %	3.09 %	3.08 %	3.33 %	3.24 %
MDG	41	423	62	124	126	584	79
	3.60 %	5.29 %	5.66 %	7.98 %	8.10 %	8.57 %	8.53 %
R	61	466	52	115	114	399	56
	5.36 %	5.83 %	4.74 %	7.40 %	7.33 %	5.86 %	6.05 %
Sp	125	884	130	303	304	1,125	148
	10.97 %	11.05 %	11.86 %	19.50 %	19.54 %	16.51 %	15.98 %
SV	118	746	110	150	150	714	99
	10.36 %	9.32 %	10.04 %	9.65 %	9.64 %	10.48 %	10.69 %
V	59	314	43	54	53	233	21
	5.18 %	3.92 %	3.92 %	3.47 %	3.41 %	3.42 %	2.27 %

Table 11. N and distribution of sociodemographic sub-groups by policy issue

REPRESENTATIVES

	Electric cars	Oil and gas (1)	Meat and dairy (1)	Onshore wind	Offshore wind	Oil and gas (2)	Meat and dairy (2)
Men	2,687	1,820	1,822	1,196	1,189	2,224	1,029
	63.52 %	66.30 %	66.28 %	59.59 %	59.45 %	59.77 %	59.97 %
Women	1,543	925	927	811	811	1,497	687
	36.48 %	33.70 %	33.72 %	40.41 %	40.55 %	40.23 %	40.03 %
Young generation	514	256	259	407	407	732	326
1980 or later	12.42 %	9.25 %	9.45 %	20.70 %	20.78 %	20.52	20.27 %
Middle generation	3,130	2,101	2,103	1,453	1,447	2,617	1,171
1950 – 1979	75.69 %	76.73 %	76.70 %	73.91 %	73.86 %	73.37 %	72.82 %
Senior generation	496	381	380	106	105	218	111
1949 or earlier	11.98 %	13.92 %	13.86 %	5.39 %	5.36 %	6.11 %	6.90 %
Lower education	1,252	812	813	646	642	1,161	518
	30.60 %	30.09 %	30.08 %	32.83 %	32.74 %	32.55 %	32.25 %
Higher education	2,839	1,887	1,890	1,322	1,319	2,406	1,088
	69.40 %	69.91 %	69.92 %	67,17 %	67.26 %	67.45 %	67.75 %
Centre	1,615	1,048	1,051	782	779	1,465	688
	38.31 %	38.29 %	38.34 %	39.04 %	39.03 %	39.41 %	40.09 %
Periphery	2,601	1,689	1,690	1,221	1,217	2,252	1,028
	61.69 %	61.71 %	61.66 %	60.96 %	60.97 %	60.59 %	59.91%

CITIZENS

	Electric cars	Oil and gas (1)	Meat and dairy (1)	Onshore wind	Offshore wind	Oil and gas (2)	Meat and dairy (2)
Men	610	4,469	602	852	853	1,827	631
	49.15 %	50.15 %	49.71 %	49.48 %	49.54 %	48.92 %	50.64 %
Women	631	4,443	609	870	869	1,908	615
	50.85 %	49.85 %	50.29 %	50.52 %	50.46 %	51.08 %	49.36 %
Young generation	200	1,822	194	315	315	1,502	221
1980 or later	16.12 %	20.44 %	16.02	18.29 %	18.29 %	19.96 %	17.74 %
Middle generation	776	5,346	762	1,048	1,052	4,693	797
1950 – 1979	62.53 %	59.99 %	62.92 %	60.86 %	61.09 %	61.64 %	63.96 %
Senior generation	265	1,744	255	359	355	1,385	228
1949 or earlier	21.35 %	19.57 %	21.06 %	20.85 %	20.62 %	18.40 %	18.30 %
Lower education	409	3,260	429	629	629	2,759	450
	34.23 %	37.90 %	36.57 %	38.28 %	38.28 %	37.56 %	36.98 %
Higher education	786	5,341	744	1,014	1,014	4,587	767
	65.77 %	62.10 %	63.43 %	61.72 %	61.72 %	62.44 %	63.02 %
Centre	635	4,579	624	893	895	3,910	659
	51.17 %	51.38 %	51.53 %	51.86 %	51.97 %	51.95 %	52.89 %
Periphery	606	4,333	587	829	827	3,616	587
	48.83 %	48.62 %	48.47 %	48.14 %	48.03 %	48.05 %	47.11 %
Low income	224	1,727	217	284	284	602	211
< 300 000	18.47 %	19.80 %	18.22 %	19.75 %	19.76 %	16.12 %	17.20 %
Middle income	782	5,394	753	892	892	2,380	768
300 001 – 700 000	64.47 %	61.83 %	63.22 %	62.03 %	62.07 %	63.72 %	62.59 %
High income	207	1,603	221	262	261	753	248
> 700 000	17.07 %	18.37 %	18.56 %	18.22 %	18.16 %	20.16 %	20.21 %

Table 12. N and distribution of different age subgroups by policy issue

REPRESENTATIVES

	Electric cars	Oil and gas (1)	Meat and dairy (2)	Onshore wind	Offshore wind	Oil and gas (2)	Meat and dairy (2)
Young	182	82	82	177	177	298	121
1990 or later	4.40 %	2.99 %	2.99 %	9 %	9.04 %	8.35 %	7.52 %
Middle	2,438	1,513	1,520	1,286	1,282	2,320	1,042
1960 – 1989	58.89 %	55.26 %	55.43 %	65.41 %	65.44 %	65.04 %	64.80 %
Old	1,520	1,143	1,140	503	500	949	445
1959 or earlier	36.71 %	41.75 %	41.58 %	25.58 %	25.52 %	26.60 %	27.67 %
Young gen	514	256	259	407	407	732	326
1980 or later	12.42 %	9.25 %	9.45 %	20.70 %	20.78 %	20.52	20.27 %
Middle gen	3,130	2,101	2,103	1,453	1,447	2,617	1,171
1950 – 1979	75.69 %	76.73 %	76.70 %	73.91 %	73.86 %	73.37 %	72.82 %
Senior gen	496	381	380	106	105	218	111
1949 or earlier	11.98 %	13.92 %	13.86 %	5.39 %	5.36 %	6.11 %	6.90 %
Age1	27	20	20	2	2	5	3
1939 or earlier	0.65 %	0.73 %	0.73 %	0.10 %	0.10 %	0.14 %	0.19 %
Age2	469	361	360	104	103	213	108
1940 – 1949	11.33 %	13.18 %	13.13 %	5.29 %	5.26 %	5.97 %	6.72 %
Age3	1,024	762	760	397	395	731	334
1950 – 1959	24.73 %	27.83 %	27.72 %	20.19 %	20.16 %	20.49 %	20.77 %
Age4	1,253	824	827	583	581	1,038	461
1960 – 1969	30.27 %	30.09 %	30.16 %	29.65 %	29.66 %	29.10 %	28.67 %
Age5	853	515	516	473	471	848	376
1970 – 1979	20.60 %	18.81 %	18.82 %	24.06	24.04 %	23.77 %	23.38 %
Age6	332	174	177	230	230	434	205
1980 – 1989	8.02 %	6.36 %	6.46 %	11.70 %	11.74 %	12.17 %	12.75 %
Age7	182	82	82	177	177	298	121
1990 or later	4.40 %	2.99 %	2.99 %	9.00 %	9.04 %	8.35 %	7.52 %

CITIZENS

	Electric cars	Oil and gas (1)	Meat and dairy (2)	Onshore wind	Offshore wind	Oil and gas (2)	Meat and dairy (2)
Young	79	910	162	132	132	666	91
1990 or later	6.37 %	7.81 %	4.10 %	7.67 %	7.67 %	8.85 %	7.30 %
Middle	564	5,778	2,070	807	810	3,678	622
1960 – 1989	45.45 %	49.60 %	52.37 %	46.86 %	47.04 %	48.87 %	49.92 %
Old	598	4,962	1,721	783	780	3,182	533
1959 or earlier	48.19 %	42.59 %	43.54 %	45.47 %	45.30 %	42.28 %	42.78 %
Young gen	200	1,822	194	315	315	1,502	221
1980 or later	16.12 %	20.44 %	16.02	18.29 %	18.29 %	19.96 %	17.74 %
Middle gen	776	5,346	762	1,048	1,052	4,693	797
1950 – 1979	62.53 %	59.99 %	62.92 %	60.86 %	61.09 %	61.64 %	63.96 %
Senior gen	265	1,744	255	359	355	1,385	228
1949 or earlier	21.35 %	19.57 %	21.06 %	20.85 %	20.62 %	18.40 %	18.30 %
Age1	31	249	24	51	51	204	33
1939 or earlier	2.50 %	2.79 %	1.98 %	2,96 %	2.96 %	2.71 %	2.65 %
Age2	234	1,495	231	308	304	1,181	195
1940 – 1949	18.86 %	16.78 %	19.08 %	17.89 %	17.65 %	15.69 %	15.65 %
Age3	333	2,075	326	424	425	1,797	305
1950 – 1959	26.83 %	23.28 %	26.92 %	24.62 %	24.68 %	23.88 %	24.48 %
Age4	260	1,864	274	364	367	1,634	290
1960 – 1969	20.95 %	20.92 %	22.63 %	21.14 %	21.31 %	21.71 %	23.27 %
Age5	183	1,407	162	260	260	1,208	202
1970 – 1979	14.75 %	15.79 %	13.38 %	15.10 %	15.10 %	16.05 %	16.21 %
Age6	121	994	114	183	183	836	130
1980 – 1989	9.75 %	11.15 %	9.41 %	10.63 %	10.63 %	11.11 %	10.43 %
Age7	79	828	80	132	132	666	91
1990 or later	6.37 %	9.29 %	6.61 %	7.67 %	7.67 %	8.85 %	7.30 %

Table 13. N and distribution of different region subgroups by policy issue

REPRESENTATIVES

	Electric cars	*Oil and gas (1)*	*Meat and dairy (1)*	*Onshore wind*	*Offshore wind*	*Oil and gas (2)*	*Meat and dairy (2)*
Centre/east	1,615	1,048	1,051	782	779	1,465	688
	38.31 %	38.29 %	38.34 %	39.04 %	39.03 %	39.41 %	40.09 %
Periphery	2,601	1,689	1,690	1,221	1,217	2,252	1,028
	61.69 %	61.71 %	61.66 %	60.96 %	60.97 %	60.59 %	59.91%
Centre	397	244	244	14	14	30	15
	9.42 %	8.91 %	8.90 %	0.70 %	0.70 %	0.81 %	0.87 %
Periphery	3,819	2,493	2,497	1,989	1,982	3,687	1,701
	90.56 %	91.09 %	91.10 %	99.30 %	99.30 %	99.19 %	99.13 %
Oslo	397	244	244	14	14	30	15
	9.42 %	8.91 %	8.90 %	0.70 %	0.70 %	0.81 %	0.87 %
East	1,218	804	807	768	765	1,435	673
	28.89 %	29.38 %	29.44 %	38.34 %	38.33 %	38.61 %	39.22 %
South	308	194	193	157	158	276	119
	7.31 %	7.09 %	7.04 %	7.84 %	7.92 %	7.43 %	6.93 %
West	1,267	836	837	579	577	1,086	507
	30.05 %	30.54 %	30.54 %	28.91 %	28.91 %	29.22 %	29.55 %
Mid	414	276	276	192	192	343	151
	9.82 %	10.08 %	10.07 %	9.59 %	9.62 %	9.23 %	8.80 %
North	612	383	384	293	290	547	251
	14.52 %	13.99 %	14.01 %	14.63 %	14.53 %	14.72 %	14.63 %

CITIZENS

	Electric cars	*Oil and gas (1)*	*Meat and dairy (1)*	*Onshore wind*	*Offshore wind*	*Oil and gas (2)*	*Meat and dairy (2)*
Centre/east	635	4,579	624	893	895	3,910	659
	51.17 %	51.38 %	51.53 %	51.86 %	51.97 %	51.95 %	52.89 %
Periphery	606	4,333	587	829	827	3,616	587
	48.83 %	48.62 %	48.47 %	48.14 %	48.03 %	48.05 %	47.11 %
Centre	361	2,547	344	475	475	1,176	198
	29.09 %	28.58 %	28.41 %	27.58 %	27.58 %	15.63 %	15.89 %
Periphery	880	6,365	867	1,247	1,247	6,350	1,048
	70.91 %	71.42 %	71.59 %	72.42 %	72.42 %	84.37 %	84.11 %
Oslo	361	2,547	344	475	475	1,176	198
	29.09 %	28.58 %	28.41 %	27.58 %	27.58 %	15.63 %	15.89 %
East	274	2,032	280	418	420	2,734	461
	22.08 %	22.80 %	23.12 %	24.27 %	24.39 %	36.33 %	37.00 %
South	71	466	46	112	112	388	53
	5.72 %	5.23 %	3.80 %	6.50 %	6.50 %	5.16 %	4.25 %
West	348	2,403	354	438	438	2,033	338
	28.04 %	26.96 %	29.23 %	25.44 %	25.44 %	27.01 %	27.13 %
Mid	97	771	101	138	137	616	102
	7.82 %	8.65 %	8.34 %	8.01 %	7.96 %	8.18 %	8.19 %
North	90	693	86	141	140	579	94
	7.25 %	7.78 %	7.10 %	8.19 %	8.13 %	7.69 %	7.54 %

Table 14. N and distribution of different income subgroups among citizens in NCP

	Electric cars	Oil and gas (1)	Meat and dairy (1)	Onshore wind	Offshore wind	Oil and gas (2)	Meat and dairy (2)
Low income	654	4,699	637	772	770	1,827	612
< 500 000	53.92 %	53.86 %	53.48 %	53.69 %	53.58 %	48.92 %	49.88 %
High income	559	4,025	554	666	667	1,908	615
> 500 000	46.08 %	46.14 %	46.52 %	46.31 %	46.42 %	51.08 %	50.12 %
Bottom	224	1,727	217	284	284	602	211
< 300 000	18.47 %	19.80 %	18.22 %	19.75 %	19.76 %	16.12 %	17.20 %
Middle	782	5,394	753	892	892	2,380	768
300 0001 – 700 000	64.47 %	61.83 %	63.22 %	62.03 %	62.07 %	63.72 %	62.59 %
Top	207	1,603	221	262	261	753	248
> 700 000	17.07 %	18.37 %	18.56 %	18.22 %	18.16 %	20.16 %	20.21 %
Income1	71	583	65	75	76	156	63
< 150 000	5.85 %	6.68 %	5.46 %	5.22 %	5.29 %	4.18 %	5.13 %
Income2	153	1,144	152	209	208	446	148
150 001- 300 000	12.61 %	13.11 %	12.76 %	14.53 %	14.47 %	11.94 %	12.06 %
Income3	195	1,373	193	239	238	578	196
300 001 – 400 00	16.08 %	15.74 %	16.20 %	16.62 %	16.56 %	15.48 %	15.97 %
Income4	235	1,599	227	249	248	647	205
400 001 – 500 000	19.37 %	18.33 %	19.06 %	17.32 %	17.26 %	17.32 %	16.71 %
Income5	218	1,460	193	226	228	670	223
500 001 – 600 000	17.97 %	16.74 %	16.20 %	15.72 %	15.87 %	17.94 %	18.17 %
Income6	134	962	140	178	178	485	144
600 001 – 700 000	11.05 %	11.03 %	11.75 %	12.38 %	12.39 %	12.99 %	11.74 %
Income7	145	1,108	149	174	173	502	161
700 001 – 1000 000	11.95 %	12.70 %	12.51 %	12.10 %	12.04 %	13.44 %	13.12 %
Income8	62	495	72	88	88	251	87
> 1 000 000	5.11 %	5.67 %	6.05 %	6.12 %	6.12 %	6.72 %	7.09 %

Table 15. Congruence in different age sub-groups

	Electric cars	Oil and gas (1)	Meat and dairy (1)	Onshore wind	Offshore wind	Oil and gas (2)	Meat and dairy (2)
Young	0.26	0.54	1.07	0.66	0.60	0.54	0.72
Middle	0.15	0.30	0.68	0.60	0.11	0.14	0.73
Old	0.14	0.25	0.33	0.30	0.11	0.22	0.64
Young gen	0.18	0.44	1.02	0.77	0.17	0.34	0.87
Middle gen	0.14	0.26	0.48	0.44	0.06	0.16	0.64
Senior gen	0.20	0.27	0.25	0.24	0.17	0.18	0.67
Age1	0.32	0.91	0.66	1.78	0.93	0.36	1.39
Age2	0.19	0.28	0.24	0.24	0.19	0.19	0.58
Age3	0.18	0.24	0.34	0.29	0.10	0.23	0.58
Age4	0.19	0.30	0.49	0.50	0.12	0.21	0.62
Age5	0.12	0.25	0.75	0.57	0.10	0.26	0.82
Age6	0.23	0.38	0.93	0.87	0.20	0.19	0.92
Age7	0.26	0.54	1.07	0.66	0.60	0.54	0.72

Table 16. Congruence between citizens' different age sub-groups and all representatives

	Electric cars	Oil and gas (1)	Meat and dairy (1)	Onshore wind	Offshore wind	Oil and gas (2)	Meat and dairy (2)
Young	1.16	0.47	1.68	1.25	0.15	0.25	1.76
Middle	0.15	0.27	0.62	0.49	0.11	0.19	0.65
Old	0.13	0.30	0.37	0.36	0.08	0.19	0.57
Young gen	0.65	0.42	1.36	0.96	0.11	0.21	1.40
Middle gen	0.08	0.26	0.40	0.37	0.09	0.20	0.50
Senior gen	0.29	0.34	0.50	0.44	0.14	0.23	0.71
Age1	0.65	0.34	0.79	0.95	0.35	0.24	1.19
Age2	0.29	0.34	0.48	0.35	0.10	0.22	0.63
Age3	0.06	0.28	0.28	0.30	0.09	0.16	0.47
Age4	0.11	0.28	0.37	0.33	0.15	0.23	0.34
Age5	0.29	0.25	0.72	0.55	0.12	0.20	0.79
Age6	0.32	0.38	1.13	0.75	0.13	0.21	1.15
Age7	1.16	0.47	1.68	1.25	0.15	0.25	1.76

Table 17. Congruence in different region sub-groups

	Electric cars	Oil and gas (1)	Meat and dairy (1)	Onshore wind	Offshore wind	Oil and gas (2)	Meat and dairy (2)
Centre/east	0.16	0.31	0.48	0.57	0.08	0.20	0.66
Periphery	0.16	0.28	0.57	0.28	0.07	0.19	0.63
Centre	0.26	0.32	0.29	0.44	0.43	0.55	0.42
Periphery	0.12	0.28	0.49	0.29	0.08	0.21	0.58
Oslo	0.26	0.32	0.29	0.44	0.43	0.55	0.42
East	0.17	0.31	0.32	0.38	0.15	0.29	0.48
South	0.17	0.29	0.34	0.10	0.18	0.18	0.38
West	0.11	0.26	0.52	0.37	0.07	0.22	0.56
Mid	0.19	0.30	1.02	0.53	0.23	0.15	1.26
North	0.32	0.61	0.40	0.21	0.12	0.42	0.40

Table 18. Congruence between citizens' different region sub-groups and all representatives

	Electric cars	Oil and gas (1)	Meat and dairy (1)	Onshore wind	Offshore wind	Oil and gas (2)	Meat and dairy (2)
Centre/east	0.14	0.32	0.69	0.87	0.13	0.18	0.82
Periphery	0.15	0.26	0.44	0.09	0.14	0.20	0.53
Centre	0.39	0.36	0.91	1.05	0.19	0.30	1.31
Periphery	0.10	0.28	0.43	0.28	0.08	0.22	0.57
Oslo	0.39	0.36	0.91	1.05	0.19	0.30	1.31
East	0.21	0.32	0.41	0.66	0.06	0.24	0.62
South	0.23	0.31	0.57	0.22	0.16	0.26	0.43
West	0.17	0.25	0.44	0.05	0.11	0.26	0.53
Mid	0.15	0.41	0.67	0.49	0.12	0.21	0.97
North	0.11	0.68	0.17	0.42	0.43	0.52	0.19

Table 19. Congruence between citizens' different income sub-groups and all representatives

	Electric cars	*Oil and gas (1)*	*Meat and dairy (1)*	*Onshore wind*	*Offshore wind*	*Oil and gas (2)*	*Meat and dairy (2)*
Low income	0.16	0.40	0.60	0.36	0.14	0.23	0.64
High income	0.15	0.20	0.51	0.63	0.17	0.12	0.72
Bottom	0.19	0.47	0.89	0.52	0.18	0.28	0.74
Middle	0.17	0.32	0.48	0.43	0.07	0.15	0.64
Top	0.10	0.24	0.52	0.66	0.36	0.41	0.75
Income1	0.80	0.63	1.65	0.95	0.21	0.56	1.65
Income2	0.24	0.41	0.56	0.37	0.16	0.30	0.39
Income3	0.13	0.35	0.53	0.22	0.19	0.21	0.64
Income4	0.23	0.36	0.40	0.32	0.15	0.21	0.56
Income5	0.12	0.33	0.41	0.69	0.09	0.17	0.81
Income6	0.33	0.22	0.63	0.53	0.09	0.05	0.54
Income7	0.27	0.19	0.37	0.53	0.24	0.16	0.80
Income8	0.28	0.56	0.82	0.90	0.60	0.70	0.70

Table 20: OLS regression analyses of EMD values

	Model 1	Model 2
Men	-.07	.01
	(.13)	(.14)
Women	.06	.22
	(.13)	(.14)
Young	.19	.41**
	(.13)	(.14)
Middle	-.04	-.05
	(.13)	(.14)
Senior	-.07	.06
	(.13)	(.14)
Lower education	.04	-.02
	(.13)	(.14)
Higher education	.01	.17
	(.13)	(.14)
Centre	(omitted)	.13
		(.14)
Periphery	-.04	-.06
	(.13)	(.14)
Low income		.14
		(.14)
Middle income		(omitted)
High income		.11
		(.14)
Obs.	63	84

Standard errors in parentheses. ***p-value<.001; **p-value<.01; *p-value<.05. Model 1: Representatives' subgroups x citizens' subgroups, Model 2: All representatives x citizens' subgroups.

Table 21: EMD for matched and unmatched gender groups

			REPRESENTATIVES	
			Men	Women
CITIZENS	Men	*Electric cars*	0.14	0.60
		Oil and gas (1)	0.26	0.55
		Meat and dairy (1)	0.35	0.20
		Onshore wind	0.38	0.63
		Offshore wind	0.11	0.27
		Oil and gas (2)	0.12	0.76
		Meat and dairy (2)	0.64	0.29
	Women	*Electric cars*	0.71	0.25
		Oil and gas (1)	0.76	0.24
		Meat and dairy (1)	0.88	0.73
		Onshore wind	0.41	0.65
		Offshore wind	0.23	0.10
		Oil and gas (2)	0.57	0.28
		Meat and dairy (2)	1.03	0.66

Table 22: EMD for matched and unmatched age groups

			REPRESENTATIVES		
			Young	Middle	Senior
CITIZENS	Young	Electric cars	0.18	0.73	0.80
		Oil and gas (1)	0.44	0.45	0.32
		Meat and dairy (1)	1.02	1.45	1.12
		Onshore wind	0.77	1.03	0.69
		Offshore wind	0.17	0.19	0.24
		Oil and gas (2)	0.34	0.28	0.34
		Meat and dairy (2)	0.87	1.56	1.40
	Middle	Electric cars	0.62	0.14	0.21
		Oil and gas (1)	0.45	0.26	0.19
		Meat and dairy (1)	0.32	0.48	0.15
		Onshore wind	0.18	0.44	0.20
		Offshore wind	0.34	0.06	0.26
		Oil and gas (2)	0.28	0.16	0.49
		Meat and dairy (2)	0.28	0.64	0.49
	Senior	Electric cars	0.75	0.28	0.20
		Oil and gas (1)	0.50	0.36	0.27
		Meat and dairy (1)	0.47	0.58	0.25
		Onshore wind	0.25	0.51	0.24
		Offshore wind	0.19	0.20	0.17
		Oil and gas (2)	0.43	0.19	0.18
		Meat and dairy (2)	0.42	0.85	0.67

Figure 2. Electric cars by gender
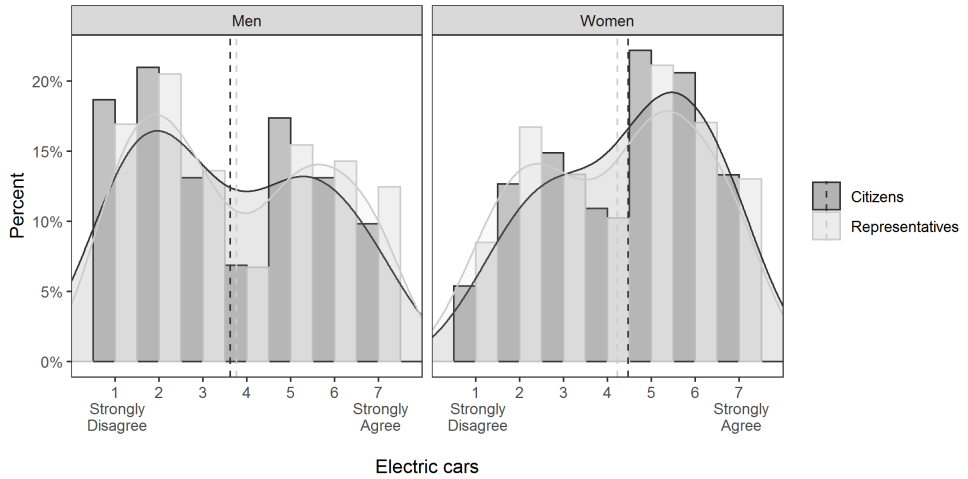
Figure 3. Electric cars by age
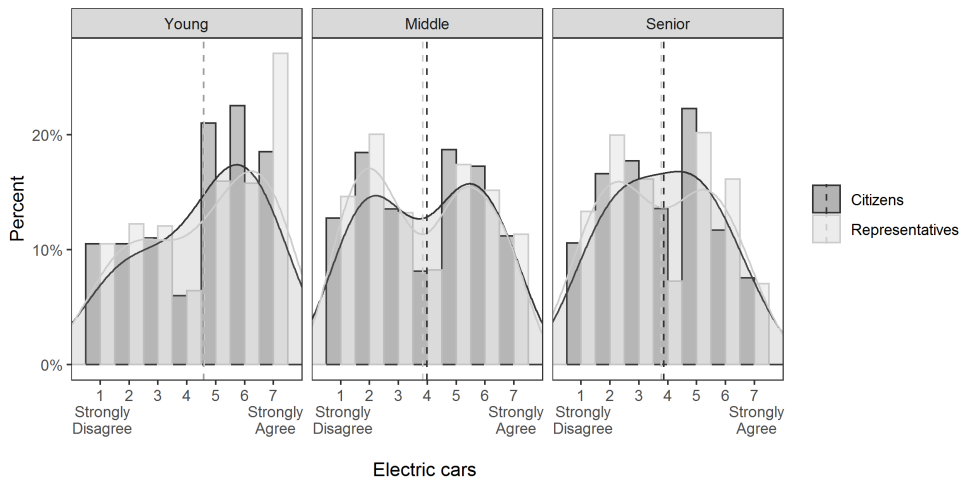
Figure 4. Electric cars by education
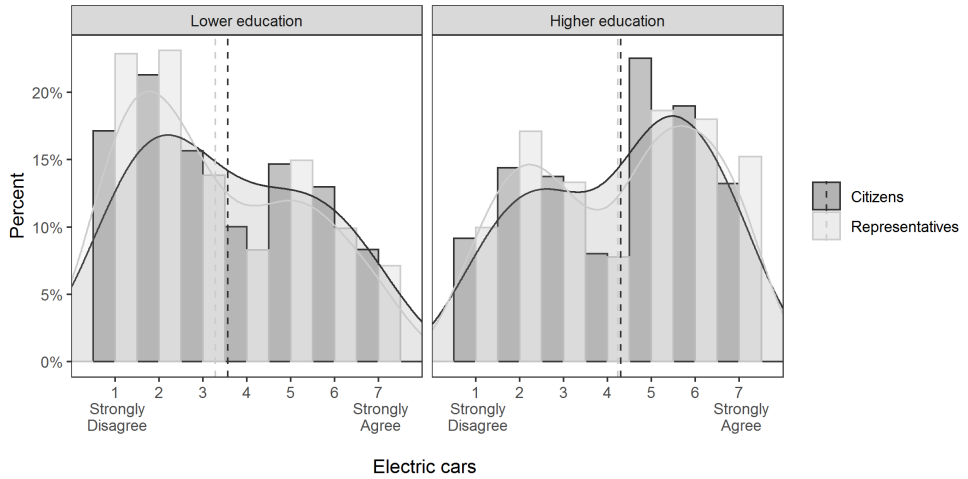


Figure 5. Electric cars by region
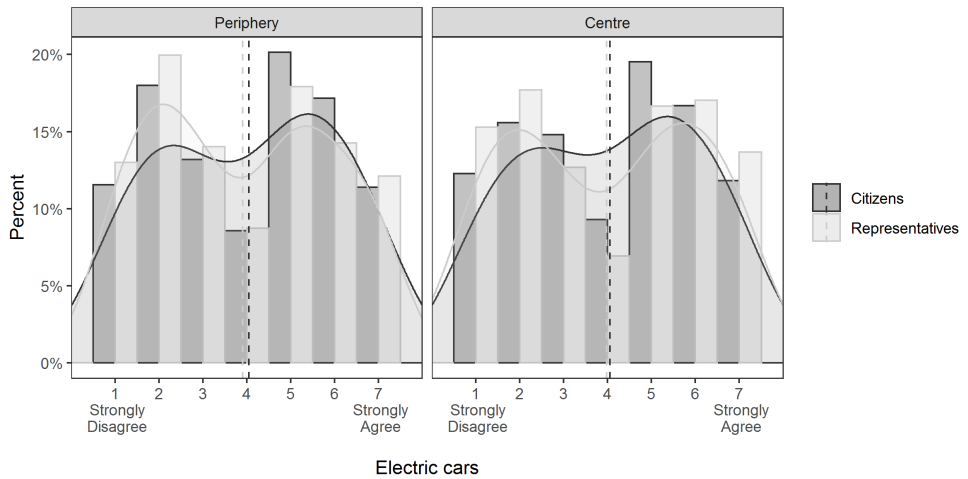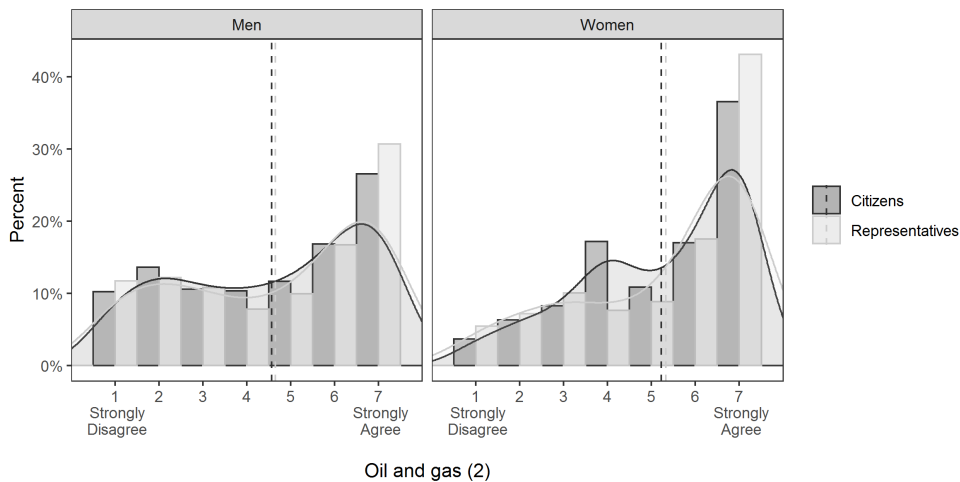
Figure 6. Oil and gas (1) by gender
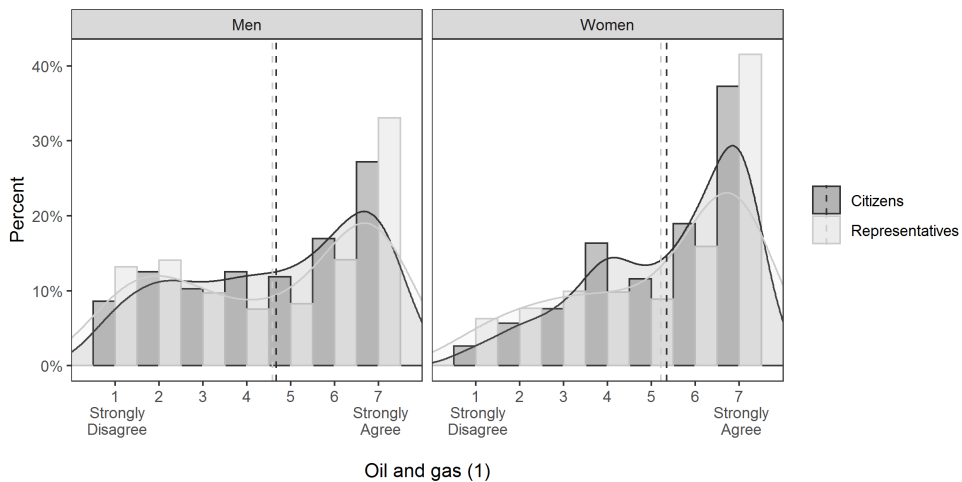
# Figure 7. Oil and gas (1) by age
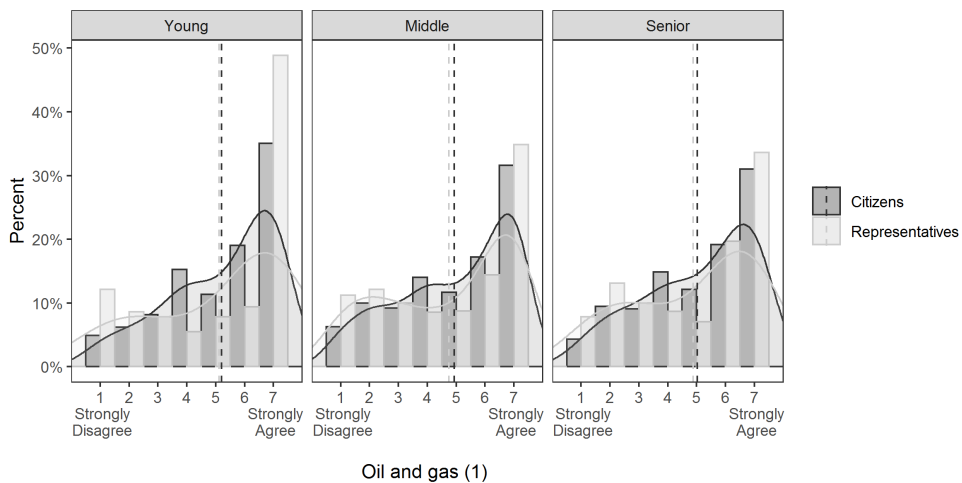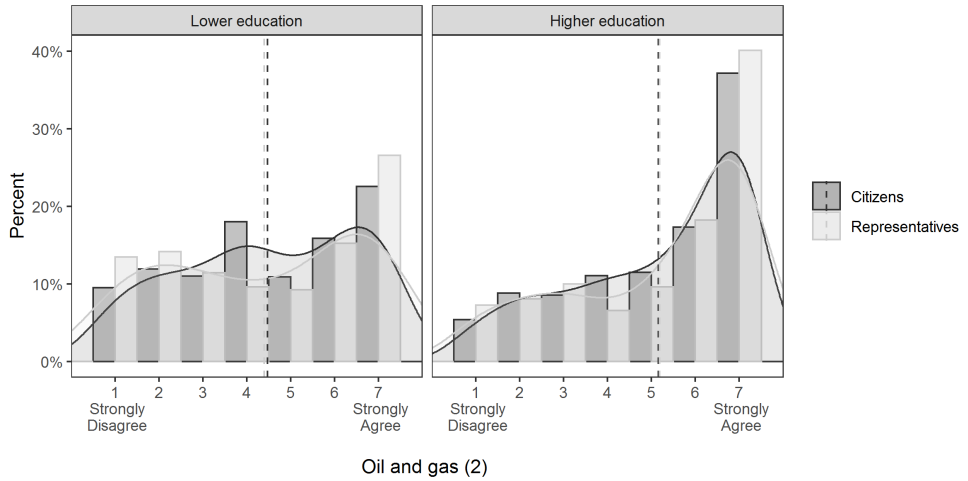
Figure 8. Oil and gas (1) by education
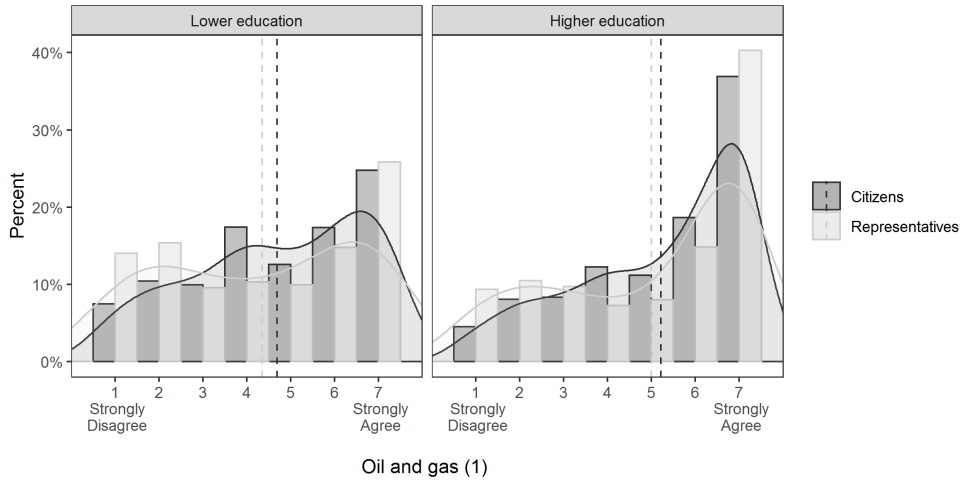

Figure 9. Oil and gas (1) by region
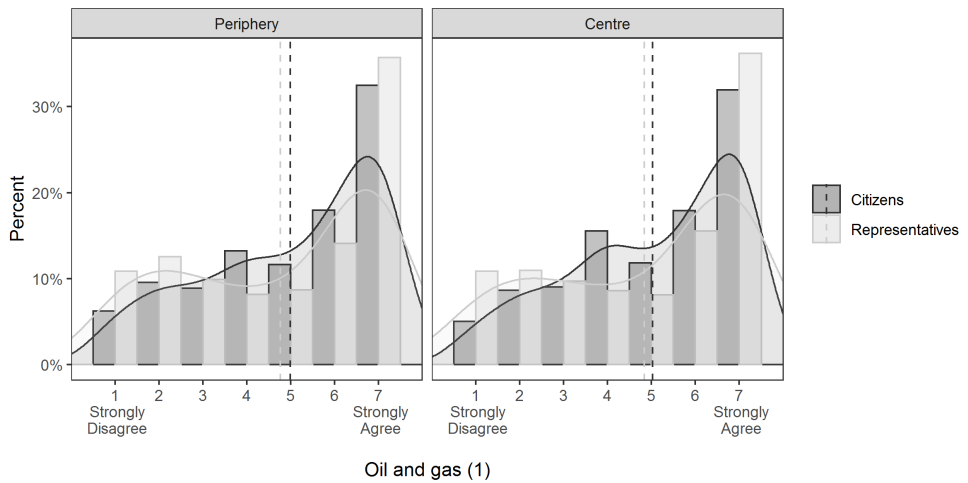
Figure 10. Meat and dairy (1) by gender
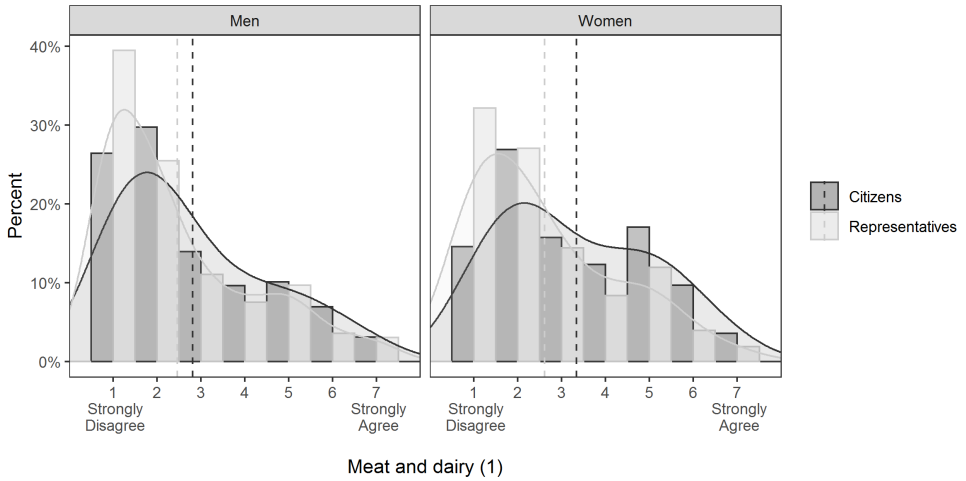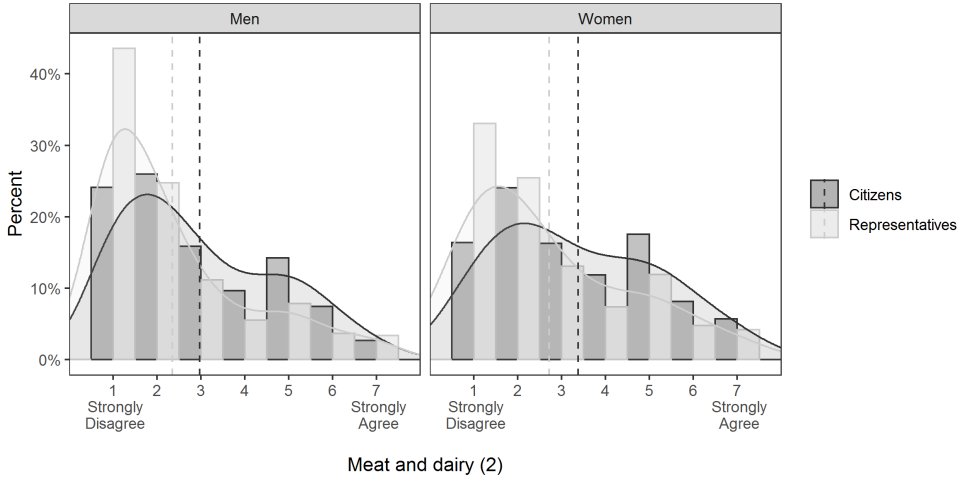

Figure 11. Meat and dairy (1) by age
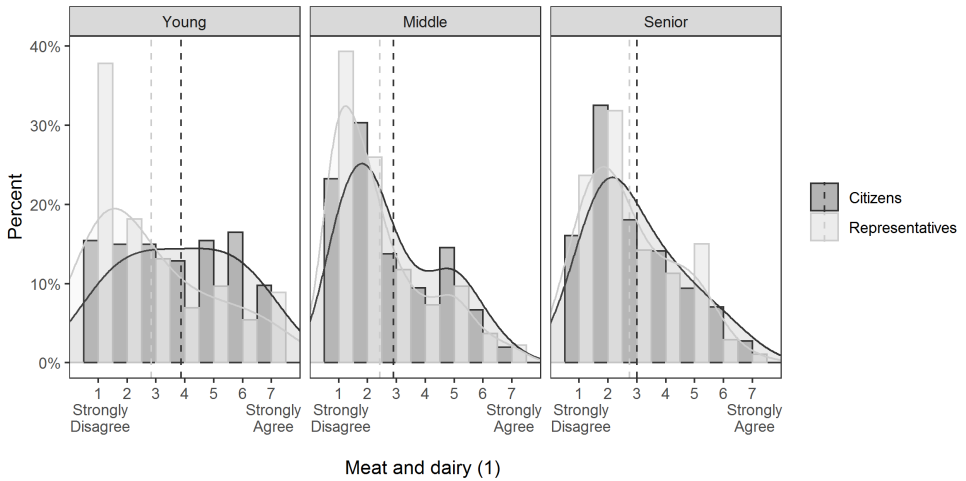
Figure 12. Meat and dairy (1) by education
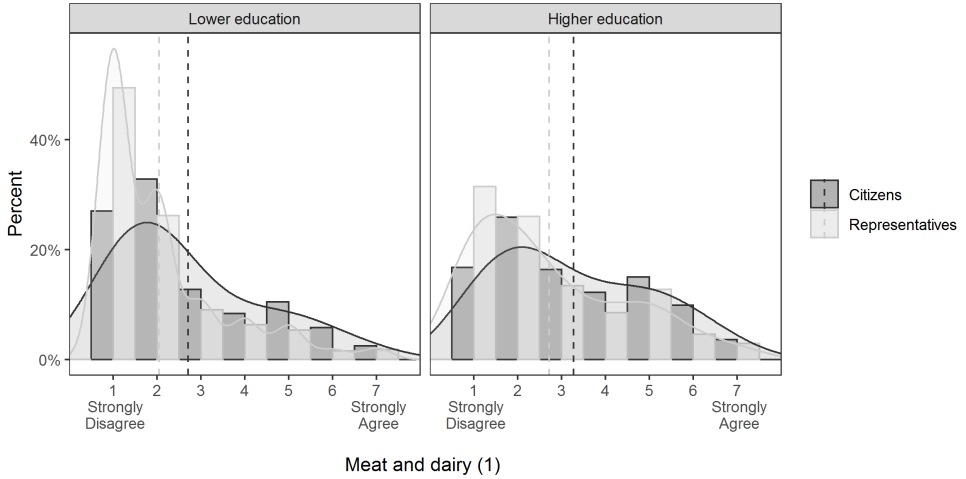
Figure 13. Meat and dairy (1) by region
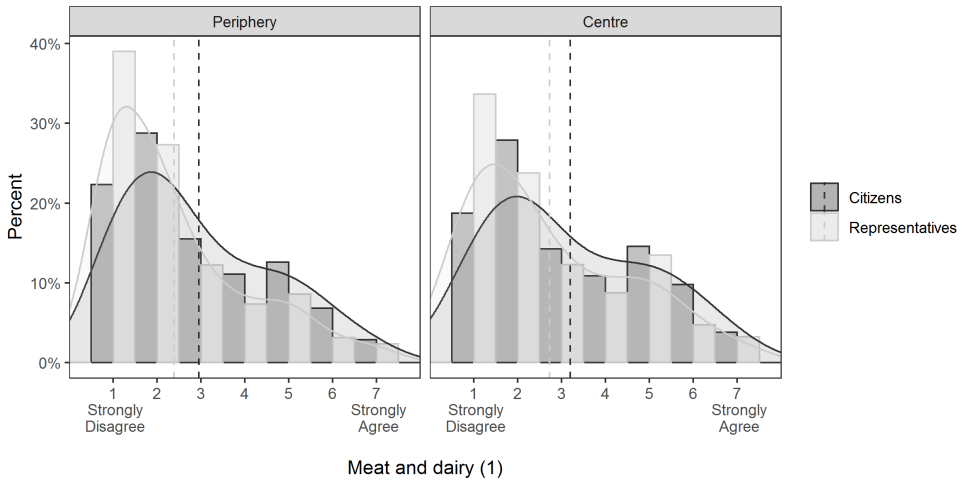
Figure 14. Onshore wind by gender
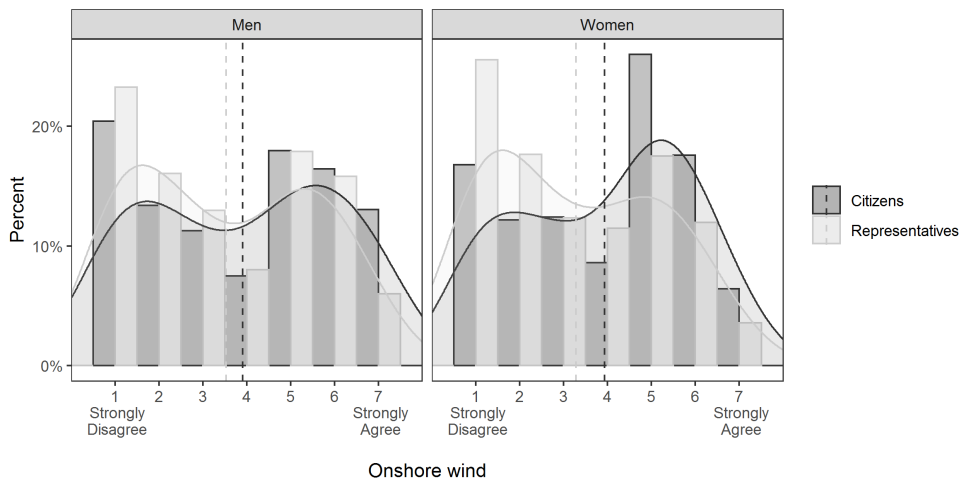
Figure 15. Onshore wind by age
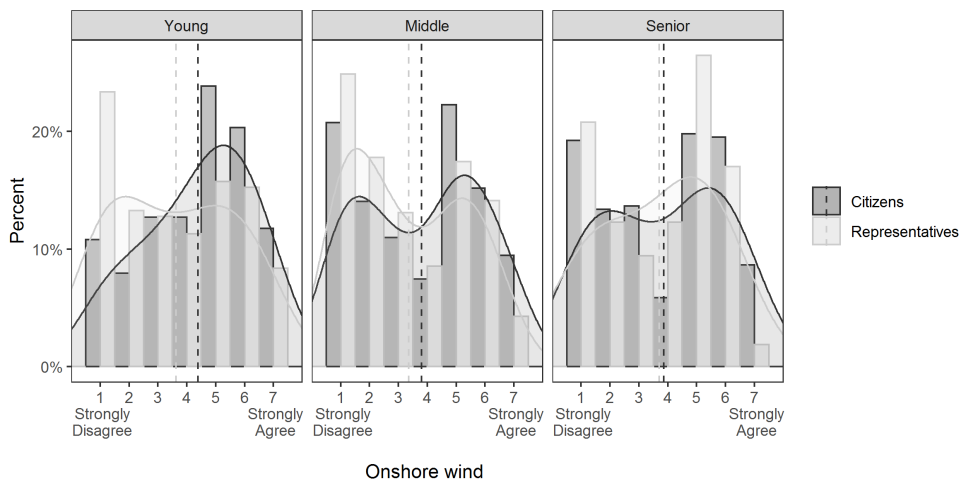
Figure 16. Onshore wind by education
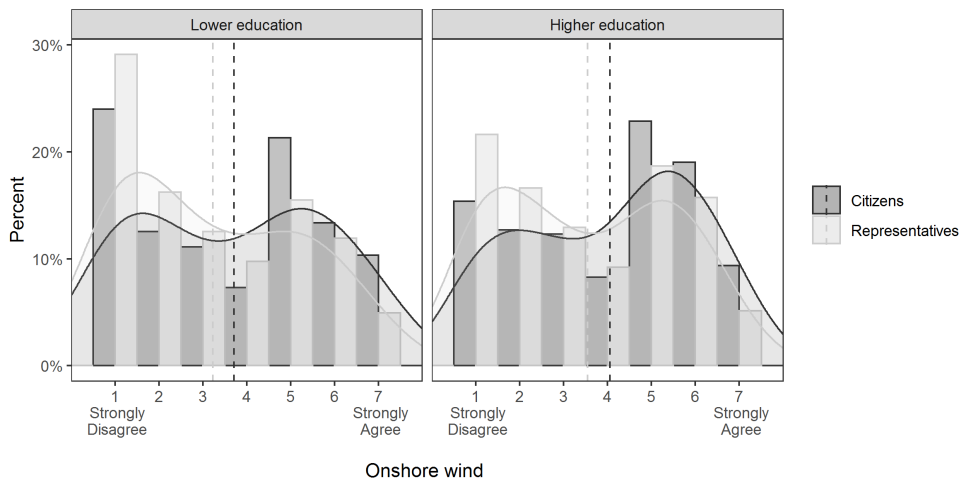
Figure 17. Onshore wind by region
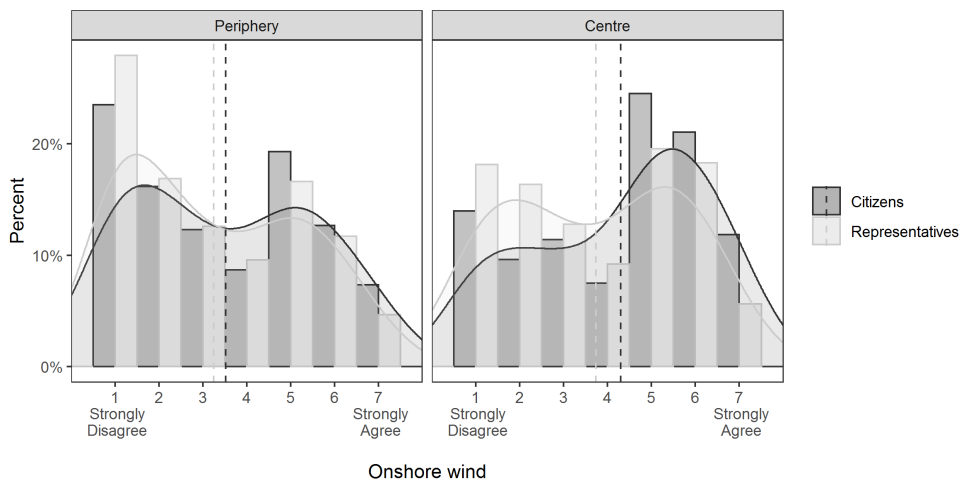
Figure 18. Offshore wind by gender
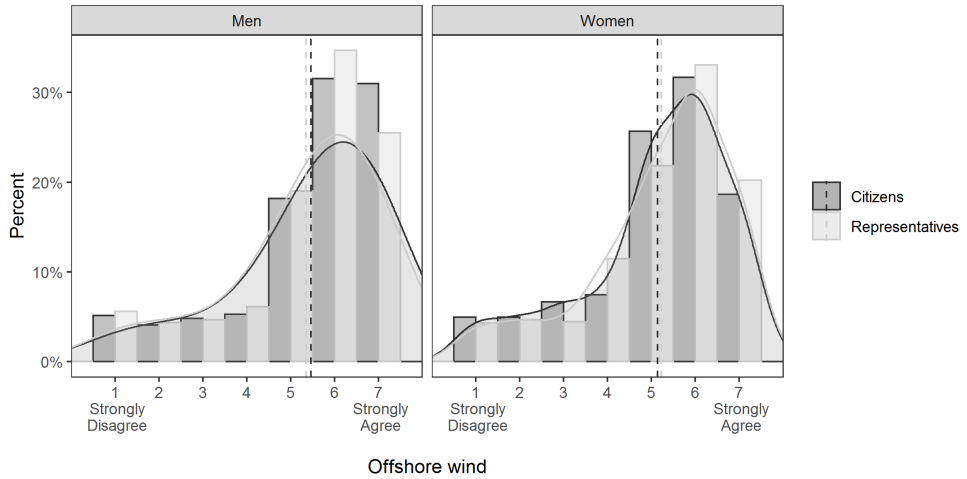
Figure 19. Offshore wind by age
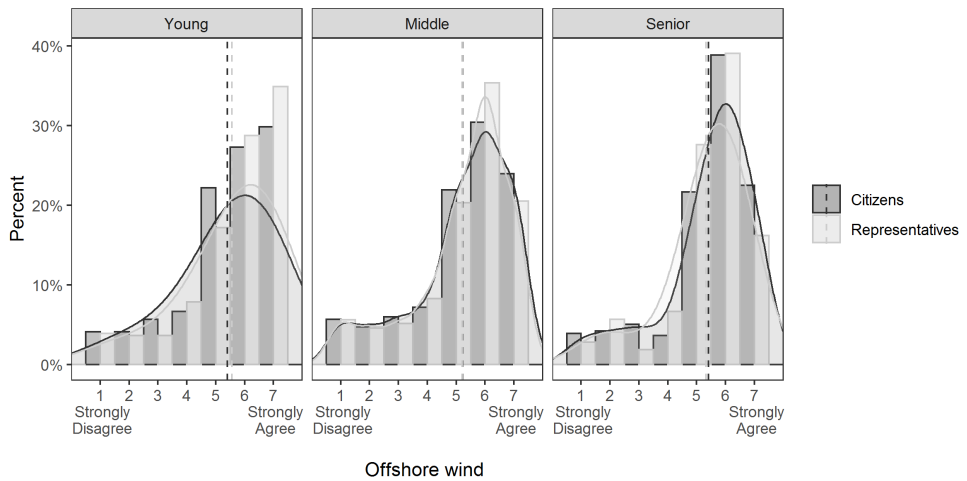
Figure 20. Offshore wind by education
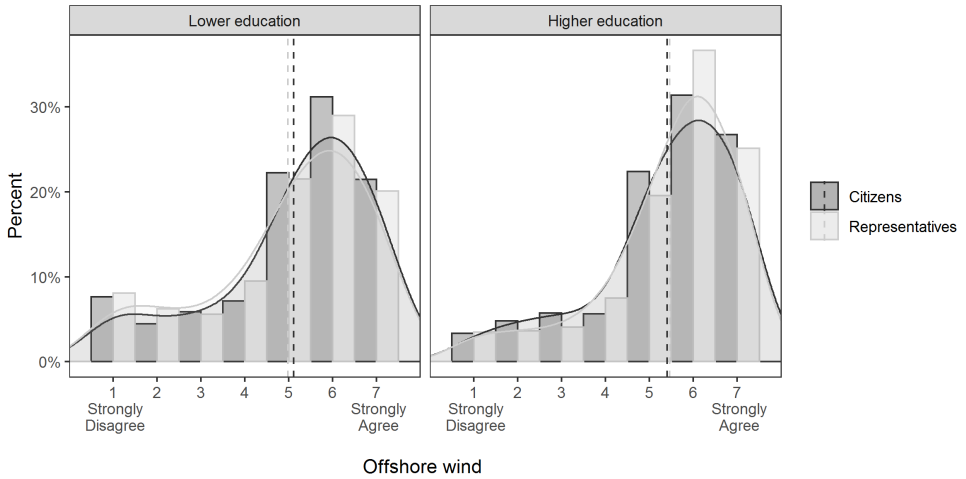
Figure 21. Offshore wind by region
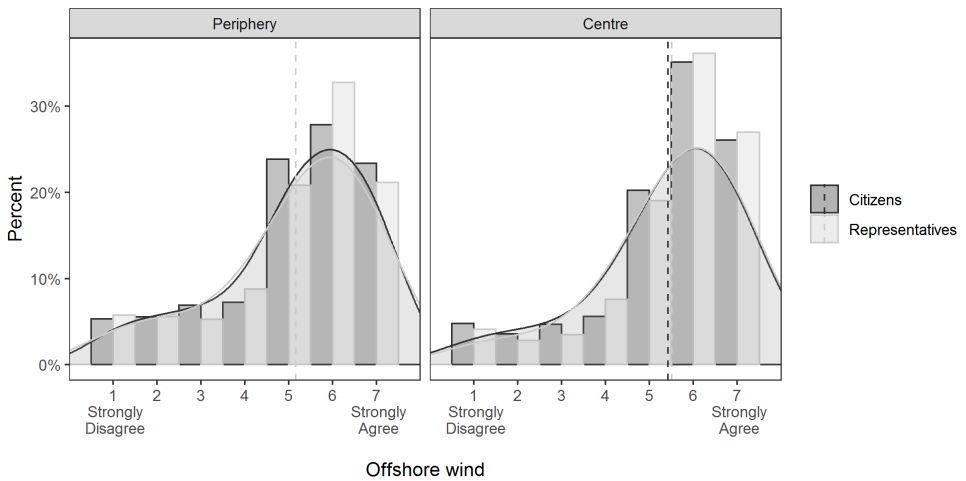
Figure 22. Oil and gas (2) by gender

Figure 23. Oil and gas (2) by age
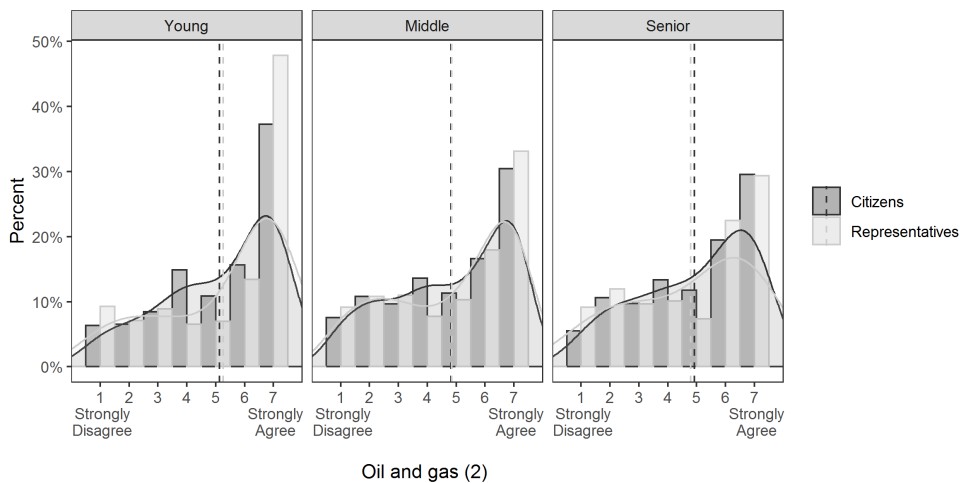
Figure 24. Oil and gas (2) by education

Figure 25. Oil and gas (2) by region
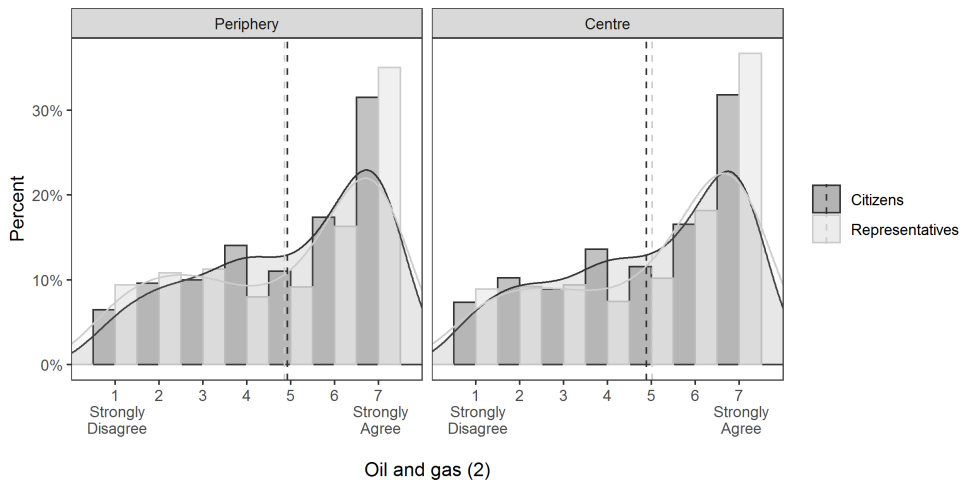
Figure 26. Meat and dairy (2) by gender

Figure 27. Meat and dairy (2) by age
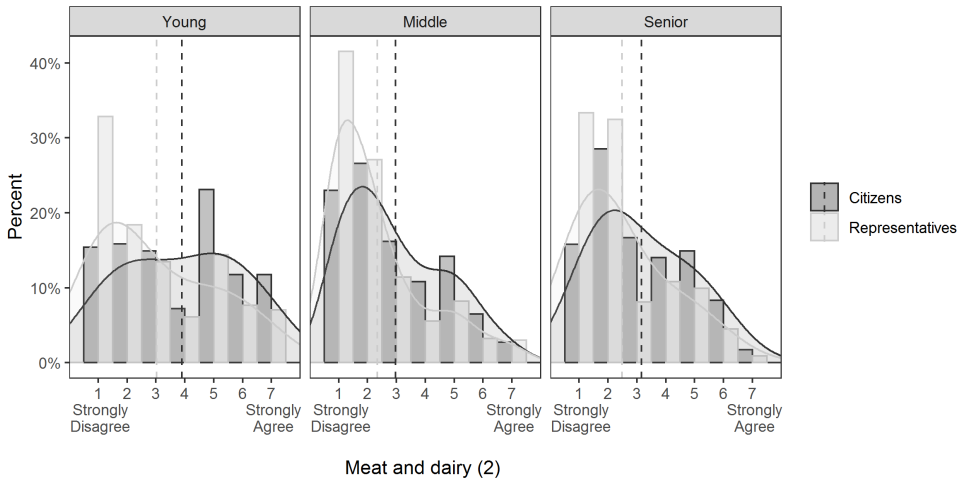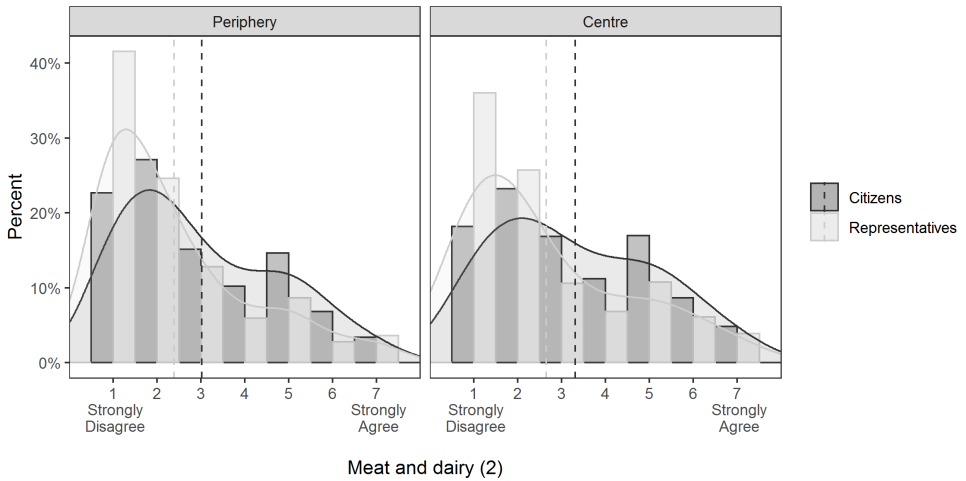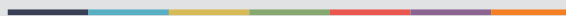
Figure 28. Meat and dairy (2) by education
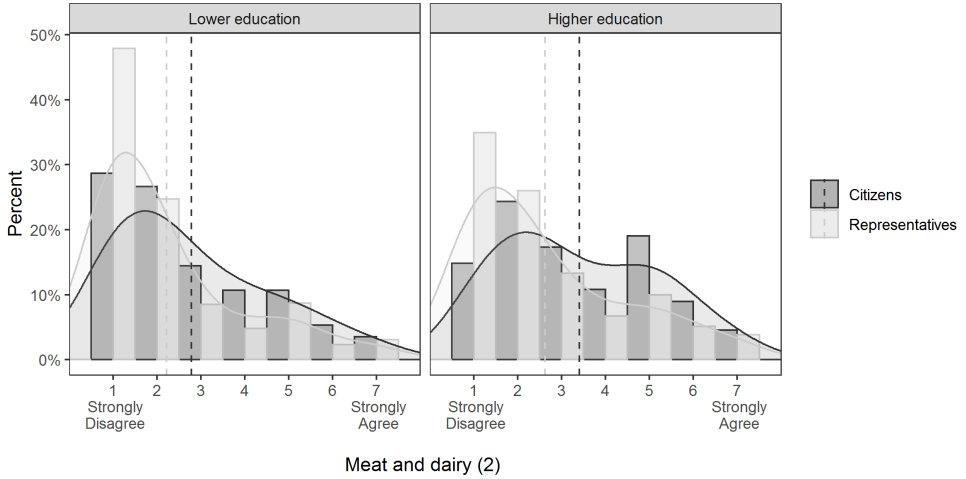
Figure 29. Meat and dairy (2) by region

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