Connecting descriptive and substantive representation: An analysis of differential responsiveness in the environmental policy field across 21 European democracies

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Abstract

This thesis considers environmental policy representation in a comparative study of 21 European countries to find what explains that hardly any of them have enacted policies commensurate with the public consensus on the need to mitigate climate change. Based on an original dataset of public opinion on ten potential environmental policy changes between 2008 and 2020, the main results are that amidst general policy responsiveness, both genders and age groups are equally well represented whereas high-educated citizens experience a slight representational bias. This demonstrates that climate policy adoption is not hampered by the underrepresentation of pro-environmental interests. The analyses in the second part reject descriptive representation as a plausible explanation for unequal policy responsiveness. Doing so, this thesis emphasizes the importance of going beyond numbers to explore mechanisms that facilitate the representation of climate preferences held by diverse groups in society.

Keywords: Policy responsiveness, substantive representation, descriptive representation, climate policy, public opinion

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1. Introduction

In an effort to cope with the threatening rates of environmental degradation, far-reaching climate change mitigation policies are fundamental (Konisky et al., 2016, p. 538).[1] Within the 'green policy' realm, scholars have highlighted the relevance of public support for transmitting the issue of climate change into governmental action (Rothermich et al., 2021, p. 1). Especially in the context of Western liberal democracies, prior work has shown that citizen's pro-environmental beliefs are among the determining factors when it comes to the introduction of ambitious climate policies (Huber et al., 2020a, p. 649; Anderson et al., 2017, p. 1). Following Wlezien (1995) who suggested that the general public's preferences can be understood as a 'thermostat' guiding political action (p. 982), scholars consider the lack of social acceptance to account for countries' underreaction in terms of climate policy (Peters et al., 2017, p. 621). However, as studies reflect calls for wide-ranging action and report growing levels of environmental concern among individuals, current research faces an empirical dilemma.

Despite the assumption of governments' responsiveness to societal preferences (Anderson et al., 2017, p. 2), European governments fall short in producing policy responses commensurate with public opinion in favor of environmental policies. Eurobarometer survey data reported that over 70 percent of the respondents is convinced that their national government is not doing enough against climate change (European Commission, 2020). Another indicator of inadequate performance is the increase in civil society groups acting through courts to demand greater government action. In 2012, the Urgenda Foundation sued the Dutch government for failing to implement effective climate policies (Minnesma, 2020, p. 141). Following the judgment in 2015, the government adopted legislation to phase out all coal power plants by 2030 and passed the Climate Act, which lays down a 95 percent emissions reduction target by 2050 – one of the most ambitious worldwide. Thereby, the Urgenda case

[1] Throughout this thesis, terms like climate change and environmental issues are used interchangeably.

has set an important precedent for people in other countries to raise similar legal arguments regarding the obligation of states to prevent climate change by means of calling for new laws, policies or halts to existing rules (Minnesma, 2020, p. 149).[2] Overall, the introduction of policy seems to progress at a slower pace than citizens believe is necessary (Bernauer, 2013, p. 423).

A recent study by Dingler et al. (2019) provides potentially fertile ground for addressing why policies aimed to mitigate climate change have turned out to be less far-reaching than preferred by citizens. Their results indicate that parliaments in Europe better reflect men's demands for limited climate protection than women's general preference for stronger environmental regulation (p. 315). These findings imply that the level of climate policies is negatively impacted by the underrepresentation of women in political office and therefore advance the 'politics of presence' argument that the number of female politicians (descriptive representation) contributes to strengthening the position of women's interests (substantive representation) (Phillips, 1995, p. 66). The suggestive relationship between descriptive and substantive representation in the climate policy field, however, represents an anomaly when compared to other policy domains for which Dingler et al. (2019) identify no causal linkages.[3]

Considering the mixed evidence, the still open question about the relationship between the two facets of representation on environmental issues deserves detailed investigation. The starting point of the present study is the hypothesis that disregarding women's positions on environmental issues causes a negative impact on the shaping of ambitious climate policy measures. The implicit assumption behind this claim is that men and women have different political preferences. Besides women, previous research has demonstrated that young adults and high-educated people are associated with positive support for environmental policies (McCright, 2010; Shwom et al., 2015). While age and education are at least as likely to

[2] France, Belgium and Switzerland are among the other countries where people have brought legal charges against the government for the lack of ambitiousness and concrete action.
[3] Although Dingler et al. (2019) recognize that the findings suggest dynamics specific to the climate policy field, further examination lies outside the scope of their study.

contribute to political divisions, these two characteristics have received little attention in existing studies that cover the linkages between substantive and descriptive representation. By including multiple demographic features, this thesis moves beyond the narrow focus on gender.

To provide an answer to the question whether development of climate change mitigation policy is constrained by the lack of descriptive representation of societal groups that hold pro-environmental beliefs, I split the research in two. First, I study whether the aforementioned social groups are underrepresented in terms of climate policy output. Second, I test whether descriptive representation can account for potential inequalities.

Providing clarity about the dynamics of democratic representation in the climate policy field is a social imperative in at least two respects. Reluctance of governments to adopt ambitious measures to reduce climate change increases vulnerability to environmental risks. Aside from implications for climate politics, understanding biases in representation in more general terms speaks to the ongoing debate about the quality of democratic performance. Among others, Louwerse and Andeweg (2020) emphasize that the failing capacity to respond to the preferences expressed by subsets of citizens indicates a violation of the egalitarian foundation of democracy (p. 285). Consequently, the disruption of the equal integration of citizens' preferences should raise normative concerns on the functioning of democracy in light of major societal challenges – such as climate change (Gilens, 2012, p. 5; Morlino, 2020, p. 56).

2. Theoretical background

By detailing the relationship between the represented and the representative, the classic work of Hanna Pitkin (1967) provided the groundwork for much of the research concerning the quality of democratic representation. Within her classification of forms of representation, Pitkin highlights substantive representation of which she thinks as 'acting in the interests of the represented, in a manner responsive to them' (p. 209). Because this conceptualization is

commonly understood as the extent to which representatives implement policies in response to citizens' demands (Celis & Mazur, 2012, p. 512), Pitkin's work served as a direct motivation to introduce the analysis of policy output into the study of representation. Building on this notion, additional research started from the premise that democratic representation fails without a firm linkage between public opinion and policy adoption (see for example Hakhverdian, 2010; Gilens, 2012). Therefore, policy responsiveness can be conceived as a standard for judging democratic quality in terms of substantive representation (Celis, 2012, p. 524).

Along with the increased attention for responsiveness, a related school of thought emerged in the literature around the concept of congruence. While the alternative measures of substantive representation capture different strategies for testing the ties between citizens and representatives (Lax & Philips, 2012, p. 148), the distinction has frequently led to conceptual and methodological confusion (Russo, 2020, p. 315). In essence, policy congruence is concerned with the extent of policy differences between citizens and representatives at a given point in time (Arnold & Franklin, 2012, p. 1218). Policy responsiveness, by contrast, suggests a more dynamic process of political actors responding to voters' policy preferences by changing policies in the desired direction (Louwerse & Andeweg, 2020, pp. 276-277).

Even though responsiveness has received much scholarly attention on the conceptual level, a relatively small number of empirical studies addressed the quality of substantive representation as such. The lack of adequate individual-level data necessary to assess the preferred policies is one of the main reasons why the approach of responsiveness has been met with skepticism. Even if data is obtained for citizens' policy beliefs, the operation to equate preferences with actual policy output is hampered due to the differences between the broader vision of public opinion and the practical complexity of policy outcomes (Russo, 2020, p. 317). A further nuance to the empirical approach is that responsiveness implies a causal element.

Consequently, political scientists face the challenge of substantiating whether public opinion affects policy change or that a third factor influences both (Beyer & Hänni, 2018, p. 18).

Despite its limitations, addressing the opinion-policy nexus in terms of responsiveness has substantial advantages. First, it is argued that the measure is 'the ultimate metric of representation' (Caughey & Warshaw, 2018, p. 250) because policies affect the lives of citizens in a myriad of ways (Hacker & Pierson, 2014, p. 643). Second, while ample evidence suggests that people understand ideological scales in systematically different ways (Schakel & Van der Pas, 2019, p. 8), studies continue to rely on ideological self-identification on such scales (see for example Giger et al., 2012). By moving beyond the use of left-right scales, responsiveness offers fertile ground for overcoming the problem of ambiguous results (Gilens, 2012, p. 47).

Finally, scholars of the two concepts address different types of research questions. Studies on congruence generally place strong emphasis is on the concept as a measure of citizens' satisfaction with democracy and on the mediating effects of political parties (Mayne & Hakhverdian, 2017). Within the strand of research that is concerned with responsiveness, a majority studies differences between societal groups or the causals effects of public preferences on policy output (Homola, 2017). Applied to my research question, adopting the mechanism of responsiveness to link public opinion to policy outcomes seems to be the best fit. [4]

Unequal policy responsiveness

While responsiveness implies a substantial degree of equality in policy outcomes, this ideal is perhaps impossible to fully achieve (Gilens, 2012, p. 70). Scholars have engaged with this question of political inequality to assess whether policymakers favor the preferences of some societal groups over those of others. For instance, many studies have identified differential policy responsiveness across economic strata of the population (see for example Branham et

[4] Because substantive representation is measured as policy responsiveness, I use these terms as synonyms.

al., 2017; Caughey & Warshaw, 2018; Schakel, 2019). Schakel and Van der Pas (2020) provide one of the recent examples in the tradition of unequal presentation wherein the size of the gap between voters' preferences and policy output depends on citizens' educational attainment.

As Giger et al. (2012) put it, unequal responsiveness only becomes consequential if there is variation in political preferences across groups (p. 48). In the absence of differing policy preferences, unequal responsiveness loses its significance due to having no effect on actual policy output (Soroka & Wlezien, 2008, p. 325). In light of this, it is important to understand the diversity in policy preferences that aggregate to mass opinion. As mentioned at the outset of this thesis, it is well-established that the demographic characteristics of gender, age and education are strong predictors of levels of support for action against climate change (Rhodes et al., 2017, pp. 58-59). More specifically, survey evidence widely confirms that respondents who hold strong pro-environmental beliefs, are likely to be women, in the group aged 15-24 and to have completed full-time education over the age of 20 (European Commission, 2019, pp. 19-40). The following paragraph discusses these varying preferences in further detail.

Even though a rich body of literature focuses on the substantive representation of women (see for example Krook & O'Brien, 2015; Wängnerud, 2009), few studies have actually devoted attention to gender inequality in terms of policy responsiveness (Ferland, 2019, p. 2). In spite of that, scholars who control for the demographic characteristic of gender have identified that women are more likely to report high levels of support for policies designed to combat climate change as compared to their male counterparts (McCright, 2010, p. 83; Kvaløy et al., 2012, p. 18). Combining these insights with empirical evidence that women represent a marginalized group across national parliaments (Inter-Parliamentary Union, 2021), I derive the expectation that policy output is less responsive to female preferences regarding environmental issues.

H_1: Climate policy is more responsive to the preferences of men than to the preferences of women.

Similar to women and their male counterparts, studies have identified that young adults are more likely to favor taking action to fight climate change than older age cohorts (McCright et al., 2016, p. 350). Such a generational gap is supported by data from the Gallup Polls showing that people below 35 are most engaged with the environment (Reinhart, 2018). In explaining the age cleavage, Rohtermich et al. (2021) refer to the fact that younger individuals have to deal longer with the negative effects of climate change (p. 3). Yet, a discrepancy is brought to light as in 2018 over half of the world's voters were reported to be under the age of 40, compared to merely 15 per cent of national legislators (McClean, 2021, p. 1). Because underrepresentation in political institutions and restrictions on voting age create an environment in which younger people have little say (Bhatti et al., 2012, p. 592), I expect a responsiveness gap once more.

H_2: Climate policy is more responsive to the preferences of older citizens than to the preferences of younger citizens

Aside from gender and age, education too lies at the root of cleavages in attitudes towards the environment. According to Huber et al. (2020b), the issue of climate change is characterized by its elite-driven and technical nature as it relies heavily on scientific reports and policy responses negotiated in international fora (p. 376). Against this background, it is argued that education provides individuals with the cognitive resources that facilitate a better understanding of the scientific basis of environmental issues (Kvaløy et al., 2012, p. 12). Another suggestive piece of evidence for the importance of education as a source of political divides in terms of climate policy preferences is that by the 2010s the highest-educated voters had become more likely than the rest of the electorate to support green parties (De la Sota et al., 2021, p. 21). A

related observation is that education is closely linked to the emergence of the cultural dimension of political competition that, among others, captures environmental issues (Kriesi et al., 2006, p. 922). Together, these arguments are confirmed by studies reporting that a higher level of education increases support for ambitious climate measures (McCright et al., 2016, p. 350).

While it is not a new insight that the high-educated dominate politics, it carries implications for the predicted level of responsiveness. Prior research on cultural issues has underlined that their disproportionate presence partly explains why highly educated citizens experience a bigger chance of seeing their interests reflected in policy outcomes than low-educated citizens (Schakel & Van der Pas, 2020, p. 14). Even though this has not yet been researched for the climate policy field, these considerations underlie the expectation that climate policy is influenced in favor of the high-educated. It is worth emphasizing that the rationale behind education differs from hypotheses 1 and 2 in the sense that policy output is anticipated to disadvantage women and young people because they are descriptively underrepresented.

H3: Climate policy is more responsive to the preferences of high-educated citizens than to the preferences of low-educated citizens.

Descriptive representation

In line with Pitkin's (1967) discussion of the possibility that inequalities in political representation extend to the area of substantive representation (pp. 112-143), substantive and descriptive variant of representation are expected to be closely linked. Descriptive representation refers to a representative who 'stands for' the represented simply by having similar demographic characteristics such as class, gender or ethnicity (Pitkin, 1967, p. 60). Underpinning the relationship is the assumption that individuals' shared identity with representatives increases the chances of seeing their interests translated into policy (Golder & Ferland, 2018, pp. 232-233). In this view, descriptive representation can be construed as a way

of making substantive representation more effective (Castiglione, 2012, p. 521). Conversely, these insights provide good reasons to believe that the numerical underrepresentation of subgroups in the population skews climate change mitigation policies in their disadvantage.

Ideally then, descriptive representation implies that the legislature mirrors the electorate that it represents. The question whether or not a mismatch in descriptive representation may be harmful for substantive outcomes has been taken up in particular by feminist research (Celis, 2012, p. 524; Mansbridge, 1999, p. 629). Efforts thus far to prove that weak numerical strength in parliaments has undesirable consequences for the degree to which women's preferences regarding feminist issues are promoted have been fruitful (Ferland, 2019, p. 7; Wängnerud, 2009, p. 65). For example, studies have found that the share of women in parliament especially carries weight with respect to the adoption of policies regarding family leave, childcare, and equal pay (Kittilson, 2008, p. 21). On the other hand, research has shown that the balance of men and women in politically representative roles does not make a difference vis-à-vis mainstream issues (McEvoy, 2016, p. 755). As this has not yet been proven in the climate policy context, greater political presence may incline policy outcomes to women's preferences.[5]

H4: The larger the share of women elected to parliament, the stronger the policy responsiveness to female preferences concerning environmental issues.

While well-developed literature exists on how gender influences policy outcomes, past studies seem to have neglected the implications of politicians' age for representation.[6] Yet, two recent exceptions studying the role of a politician's age in determining their policy choices cast doubt on whether younger citizens can get sufficient attention to issues important to them whilst

[5] Because the evidence base of this study is far from exhaustive in space and time, it is not possible in the current analysis to reliably establish causality. Hence, I am cautious with stating the association in explicitly causal terms.
[6] The lack of work may stem from the fact that age is viewed as a distinct type of social identity – unlike gender, age is universal – and that age discrimination is not associated with high levels of animosity (Mansbridge, 1999).

lacking descriptive representation. While Curry and Haydon (2018) show that older members of Congress support more bills important to seniors (p. 567), Alesina et al. (2019) find that younger politicians in Italy differ from older ones in the sense that they tend to adopt more long-term policies due to having longer horizons (pp. 689-690). Both studies suggest that policies adopted by older politicians may be detrimental to issues that disproportionately affect younger generations – such as the urgent need for climate action (Sundström & Stockemer, 2021, p. 195). Following the line of inquiry that descriptive representation of young people influences the degree to which action is taken on behalf of them, I expect that substantive representation of their climate interests is enhanced when their peers hold political office.

> H5: The larger the share of young people elected to parliament, the stronger the policy responsiveness to youth's preferences concerning environmental issues.

The question remains whether the same logic that underlies descriptive representation based on gender and age can be generalized to the shared characteristic of education. Bovens and Wille (2017) point out that about 90% of all members of Dutch parliament belong to the group with the highest level of educational attainment – and similar patterns are visible across other countries (p. 111). Even though this skewed representation is often justified by arguments based on meritocratic principles, political domination by citizens with the highest formal educational qualifications does not leave the political realm unaffected. Hakhverdian (2015) advances this claim by demonstrating that the small presence in parliaments is likely to cause lower educated citizens to be substantively underrepresented (p. 244; see also Schakel & Van der Pas, 2020, p. 4). These observations lead to the expectation that the climate interests of high-educated citizens are best represented by politicians with whom they share an educational background.

H6: The larger the share of high-educated people elected to parliament, the stronger the policy responsiveness to the preferences of the highly educated concerning environmental issues.

3. Data and methods

In the remainder of this thesis, I follow a two-staged strategy to test the six theoretical informed expectations. While the methods of analysis used in both stages are detailed in the subsequent sections, it is worth mentioning here that I integrate components of the methods used by Schakel (2019) and Dingler et al. (2019) into a single research design. Before turning to the analytical framework, however, I consider a few methodological issues related to the selection of cases.

Differences between societal groups within and across states have led earlier studies to take the form of single-country cases (see for example Schakel, 2019; Elsässer et al., 2017). However, I believe that a cross-national large-N analysis serves as a valuable complement to the research field as the comparative aspect offers greater generalization potential regarding the country level variables that are likely to contribute to differential responsiveness.[7] In an effort to provide appropriate testing grounds for such large-scale comparison, I choose countries based on democratic status and data availability. The justification for focusing on democratic regimes is supported by Dahl's recognition (1989) that the absence of systematic bias in policy representation is one of the foundations of democracy (p. 95). Pitkin (1967) further emphasizes that intrinsically democratic institutional settings, like fair and open elections, enhance substantive representation of diverse groups in the population (pp. 230-235).[8] Aside from democratic structures, my case selection is predetermined by data availability. Given the sparse publication and diffusion of relevant data over various sources, I have compiled relatively

[7] After all, Beyer and Hänni (2018) indicate that the literature on policy responsiveness and electoral system-related concepts is still in its infancy (p. 36; see Hobolt and Klemmensen (2008) for an exception).
[8] While such structures may exist in non-democracies, they usually do not function as representative institutions.

complete data for a sample of countries using cross-national surveys conducted within Europe (see Appendix A for survey sources).[9]

First stage: unequal policy responsiveness

In the first step of the empirical analysis, I deal with two questions: do the policy preferences of citizens vary according to demographic characteristics? And do governments respond differently to societal groups, resulting in unequal policy responsiveness? The first question is answered using simple mean comparisons. To clarify the latter, I adopt the methodological framework used by Schakel (2019) in his study of unequal representation of income groups.

In doing so, I replicate his quantitative assessment of responsiveness by directly linking the adoption of national policies to individual policy preferences, wherein the independent variables are the levels of support among each group for potential policy changes. To measure support, I rely on pre-existing public opinion surveys that ask respondents about their preferences regarding climate policies. Both the European Social Survey Round 8 and a series of Special Eurobarometers contain sections on climate change from which survey-questions could be obtained (Table A2 displays a list of questions).[10] Considering that the nature of this thesis is merely to provide a clear distinction between policy preferences, it is irrelevant what the gradations of such preferences are but rather whether respondents are in favor of or against the introduction of environmental policies. Hence, I follow the example of Schakel (2019) to dichotomize answer options and disregard the share of respondents who have no explicit opinion or none at all. The independent variables are then calculated as the percentage of female

[9] The 21 countries are Austria, Belgium, Switzerland, Czechia, Germany, Estonia, Spain, Finland, France, UK, Ireland, Hungary, Italy, Iceland, the Netherlands, Norway, Poland, Portugal, Sweden, Slovenia and Lithuania.

[10] I bear in mind that questions should be specific enough so that citizens' inputs can be convincingly matched with policy changes and to reliably code whether policies were adopted or not. Neither could I use questions asking about policies that not one country adopted, because the lack of dynamics makes these questions unfit for analyzing responsiveness (e.g. the ESS-question about banning the sale of least energy efficient household appliances).

respondents in favor of policy change among all women who expressed their opinion on the issue. In addition to gender, the same approach is utilized for age groups and education.[11]

For the dependent variables, I look at whether or not a specific policy is adopted. In line with Schakel (2019), I consider a 4-year period after the survey was conducted (p. 8). To give an indication, the fieldwork for the European Social Survey was targeted all along 2016. In order to decrease the possibility of reverse causation, I examine the period ranging from 2017 to 2020 for determining whether the measure was adopted – if this is not the case, it is deemed a lack of policy change. Taken together, the quantitative studies' timespan covers the period ranging from 2008 to 2020. Countries that have a policy that matches one of the survey-questions receive a 1, whereas all others are assigned 0. For data regarding the domestic implementation of environmental policies, I rely on the Climate Change Laws of the World Database (version 2021). This choice is primarily motivated by the fact that it is the most comprehensive database of its kind. Furthermore, it allows for additional selection criteria of relevant policy instruments and sectors, which enables specific and systematic evaluation of policies.[12]

In order to assess whose preferences are best met with the adoption of policies, I bring survey data on public opinion and information from the CCLW database together in one original dataset. This combination allows to perform separate logistic regression analyses through which the relationship between groups' climate preferences and policy implementation is predicted. Compared to measuring responsiveness gaps in terms of absolute differences, this statistical technique has the advantage of facilitating a better assessment of the strength of political influence of preferences over climate policy output.

[11] Because the ESS (2017) contains internationally standardized variables of the level of education (ISCED) while Eurobarometer surveys look at the age at which respondents finished full-time education, I harmonize measurement methods of educational attainment by comparing the lowest and highest quartiles.
[12] A limitation is that the database does not distinguish between the quality of measures, even if some policies are more stringent or successful than others.

Second stage: descriptive representation

In the second step, I apply linear regression analyses to test whether descriptive representation accounts for variations in the size of responsiveness gaps.[13] To construct the dependent variables expressed as gaps in substantive representation, I use data about respondents' opinions on policies as obtained in the previous stage. For adopted policies, I subtract the percentage of male support from the percentage of women in favor of a measure. In a slightly different way, I subtract men's opposition from the percentage of women against the policy change for policies not adopted. The representation gap then equals zero if responsiveness to women is the same as for their male counterparts, negative values indicate a gap in which the preferences of women are less accurately reflected in policy output and positive values point to overrepresentation. To give an illustration, 88.6% female and 71.6% male respondents from Finland supported the introduction of subsidies on renewable energy. The Finnish implementation of a related policy thus results in a gap of 17% favoring women. Ireland, however, does not adopt a such a measure. As it received opposition from 20.5% of women and 25.2% of men, Irish policy is 4.7% more responsive to male preferences. A similar procedure is employed to calculate responsiveness gaps for age groups and educational levels on each of the policy items.

The independent variable of descriptive representation is operationalized as the average share of seats that is taken by officeholders who belong to one of the societal groups under examination in this study.[14] For gender, I use the proportion of women in the lower house – in case of bicameralism – as gathered in the Inter-Parliamentary Union Database (IPU Parline). The same database covers age distributions among representatives. By drawing on prior work that identifies a cleavage in support for climate action between millennials and older age cohorts

[13] See for a similar approach Dingler et al. (2019), who also attempt to shed light on descriptive representation as an explanation for unequal policy representation.

[14] For each of the variables included in the linear regression analysis applies that I combined all available data between 2008 and 2020 and added the calculated average during this time period to the dataset; Other studies have understood descriptive representation in terms of committee memberships (see for example Mügge et al., 2019) but demographical information about members of climate committees was insufficient.

(Tyson et al., 2021), I determine 40 as an appropriate cut-off point. As the distinction between younger and older generations is marked by this cut-off point, I treat the share of representatives aged 40 or below as a proxy for descriptive representation based on age.[15] Information concerning politicians' educational attainment is collected through the European Elites Survey from which I retrieve the percentage of 'Political elite' that scores 'University completed' or higher (Best et al., 2012, pp. 253-54).[16] Since no evidence is suggestive of substantial changes in the political presence of the highly educated, I regard the results of the survey, which was conducted between 2007-2009, as illustrative for the timespan of this thesis.

Despite difficulties in reliably drawing causal inferences by means of using survey data, it is possible to exclude a number of confounding variables by controlling for potential rival causes. Of all possible factors, scholars often focus on proportional electoral systems in which citizens' preferences are more closely reflected due to a higher dispersion of parties and thereby stimulate better descriptive representation (Golder & Ferland, 2018, pp. 235-236; Bernauer et al., 2015, p. 92). Finnegan (2019) adds that proportional systems are better able to address long-term policy challenges compared to majoritarian systems (pp. 34-35). Combining these insights, proportionality could be a driver of both better descriptive representation and climate policy adoption.[17] Accordingly, I control for the proportionality of the electoral system by using mean district magnitudes as collected in the Quality of Government dataset (Teorell et al., 2021)

As an additional control variable at the country level, I include a dummy for Central and Eastern European (CEE) countries for two reasons. First, several studies have documented low political salience of climate change in former communist countries (McCright et al., 2016, p. 344). Considering that political mobilization is less likely to occur on issues of low salience,

[15] An additional analysis of descriptive representation for 30 as age cut-off can be found in Appendix C.
[16] Data is supplemented with studies for the Netherlands (Bovens & Wille, 2013), Finland (OSF, 2019) and Sweden (Erikson & Josefsson, 2019). Adequate information is lacking for Switzerland, Ireland, Norway and Slovenia.
[17] Opposite findings by Soroka and Wlezien (2012) that governmental action in proportional systems is less responsive to public opinion stress the importance of taking into account the electoral context.

representation may thus be detrimental to pro-climate interests. Second, due to the sustained conservative culture as is manifest in the disproportionate political presence of older men (Gwiazda, 2019, p. 179), policy output can be expected to be biased towards their preferences.

Because political parties play a crucial role in the composition of parliament and the expression of citizens' interests, I control for green party ideology. Besides embracing policy agendas that include strong support for environmental regulation, green parties are associated with the political left that tends to present itself as advocating underrepresented groups such as women (Golder & Ferland, 2018, p. 232). Green parties may not only put climate issues high on the political agenda but may as well be conducive to better descriptive representation. Following Van Haute's (2016) recommendation to identify green parties based on their affiliation to a transnational federation (p. 18), I calculate the seat share of members of the European Green Party with data from the Parliaments and Governments database (ParlGov). Table 1 presents the descriptive statistics for all dependent, independent and control variables.

Table 1. Descriptive statistics

Variable	*N*	Min.	Max.	Mean	Sd.
Responsiveness gap gender	185	-9.5	17	.15	3.91
Responsiveness gap age	185	-17.20	11.7	-.95	5.55
Responsiveness gap education	185	-27.10	28.3	-2.05	10.09
Proportion of female parliamentarians	185	11	45	31.73	8.35
Proportion of parliamentarians aged 40 or below	185	14	42.7	24.33	6.99
Proportion of high-educated parliamentarians	161	46.9	98.8	83.53	11.91
Proportionality of electoral system	185	1	150	15.71	32.74
CEE-country dummy	185	0	1	.32	.48
Green party strength	185	0	15.6	3.25	3.77

4. Results

Unequal policy responsiveness

As outlined in the theoretical section, sociodemographic characteristics can only bring about unequal responsiveness if they correlate with political preferences. In support of this condition,

I anticipated that the social markers of gender, age and education stratify public opinion on climate issues. The *t*-test statistics in Table 2, however, reveal that the mean value for women's support towards climate policies is 63.48 per cent, and almost the same (63.21) is found in the case of men's support levels. Notwithstanding that the overall differences are small, it is important to underline that policy preferences between the two genders vary across countries (see Appendix B) and issues. Turning to individual policy items, preferences regarding subsidies on renewable energies display gaps that reach conventional levels of statistical significance. For example, in Finland, women's preferences regarding subsidies are 17 per cent higher than for men, which is the largest gender gap in policy preferences in my sample.

Table 2. Paired t-tests for mean differences in support for potential policy changes

Policy item	*N*	Women (mean)	Men (mean)	Difference	*p*-value
All	185	63.48	63.21	0.27	.374
Fossil fuel taxation	21	34.63	34.05	0.58	.494
RES subsidies	21	83.13	80.48	2.64	.032
Alternative fuels	18	72.89	75.03	-2.14	.122
RES targets	18	90.48	88.76	1.72	.023
Energy efficiency	18	92.02	90.82	1.19	.052
Corporate/industrial action	18	75.64	75.54	1.10	.053
Energy-based taxation	17	69.36	70.38	-1.02	.197
RES targets	18	19.01	20.74	-1.73	.017
GHG emissions	18	19.64	20.07	-0.43	.508
Corporate/industrial action	18	77.07	76.84	0.23	.818

The mean comparisons in Table 3 show that there are clear differences between younger and older respondents in my data ($t(184) = 3.26$, $p < 0.001$). For example, young persons in Spain and the United Kingdom exhibit over 17 per cent higher support for the use of alternative fuels instead of fossil fuels. Additionally, a large preference gap (14 per cent) is observed in Belgium with regard to the desirability of increased taxation on polluting energy sources. Still, it cannot be overlooked that age groups take similar positions on other issues. Concerning energy efficiency, the amount of action taken by corporations and targets aimed at limiting greenhouse gas emissions, the preferences of younger and older age cohorts are nearly identical.

Table 3. Paired t-tests for mean differences in support for potential policy changes

Policy item	*N*	Under 40 (mean)	Above 40 (mean)	Difference	*p*-value
All	185	65.34	61.97	3.36	.000
Fossil fuel taxation	21	38.03	32.41	5.62	.000
RES subsidies	21	82.17	79.18	2.99	.006
Alternative fuels	18	78.87	71.04	7.82	.000
RES targets	18	91.03	88.99	2.03	.048
Energy efficiency	18	91.87	91.27	0.63	.268
Corporate/industrial action	18	75.96	74.87	0.82	.148
Energy-based taxation	17	72.98	67.86	5.12	.000
RES targets	18	22.52	18.48	4.05	.001
GHG emissions	18	21.12	19.17	1.95	.055
Corporate/industrial action	18	78.48	76.14	2.33	.025

Table 4 denotes particularly broad preference gaps between the lowest and highest education quartiles ($t(184) = 7.55$, $p < 0.001$). With an average preference gap of only 3.87 per cent, subsidies for the use of renewable energy sources are clearly more popular among the low-educated as compared to increased taxation of fossil fuels – the latter measure provoking the greatest opposition as expressed in the gap of 16.39 percentage points. Focusing on the issue-level thus exposes variations in support that give the impression that social position plays a role in determining to what extent low-educated citizens will accept different policy instruments.

Table 4. Paired t-tests for mean differences in support for potential policy changes

Policy item	*N*	Low (mean)	High (mean)	Difference	*p*-value
All	185	60.11	67.65	7.55	.000
Fossil fuel taxation	21	30.18	46.57	16.39	.000
RES subsidies	21	80.56	84.43	3.87	.015
Alternative fuels	18	68.52	77.43	8.91	.001
RES targets	18	85.46	90.79	5.34	.000
Energy efficiency	18	88.35	92.26	3.91	.000
Corporate/industrial action	18	73.96	79.36	5.40	.001
Energy-based taxation	17	68.39	74.49	6.11	.000
RES targets	18	15.91	24.47	8.56	.000
GHG emissions	18	17.35	23.28	5.93	.000
Corporate/industrial action	18	71.51	81.78	10.27	.000

Whereas gender differences in support for climate policies are relatively small, simple *t*-test statistics indicate that the young and highly educated respondents in my sample exhibit significantly higher levels of support – thereby creating the possibility to identify unequal

responsiveness. Table 5 presents the results of separate logit models where potential policy changes constitute the dependent variables and the independent variables are preferences broken down by gender, age and education. For women, a 1% increase in support multiplies the odds of a climate measure being enacted by 1.015. The effect of men's preferences is only slightly stronger (OR = 1.016, $p = 0.016$). Models 3 and 4 further suggest that policies are more reflective of the wishes of young people, albeit marginally. Finally, a clearer difference stands out with regard to the influence of educational levels. When the low-educated exhibit 1% higher support, the odds of policy change increase by 1.015 while the odds for high-educated support multiply by 1.019. In general, however, the indices report policy responsiveness to all groups.

Table 5. Separate logistic regression models of gender, age and education

	Gender		Age		Education	
	Model 1 (F)	Model 2 (M)	Model 3 (<40)	Model 4 (>40)	Model 5 (L)	Model 6 (H)
Odds ratio	1.015*	1.016*	1.017**	1.016*	1.015*	1.019**
	(0.006)	(0.006)	(.007)	(.006)	(0.006)	(.007)
Constant	0.184***	.185***	.159***	.186***	0.199***	.132***
	(0.451)	(0.458)	(0.483)	(0.445)	(0.430)	(.525)
Nagelkerke R^2	.049	.046	.055	.049	.046	.063
N	185	185	185	185	185	185

Note: odds ratios with 95% confidence intervals in parentheses. ***p < 0.001, **p < 0.01, *p < 0.05

Taking a more close-up look, Figure 1 depicts the relationship between different levels of support among low- and high-educated respondents and policy being passed. The black dots indicate adopted policies, whereas the transparent dots point to those not implemented. The upper-right division illustrates that when a measure is encouraged by a majority of both educational groups, the potential policy change tends to be implemented. A similar relationship between opposition and no policy change is evidenced in the lower-left area of the figure. Together, both quadrants show that the preferences of educational groups are highly correlated ($r = 0.96$). The black dots in the upper-left quadrant however indicate that when most high-educated respondents support the introduction of a policy while a majority of low-educated is opposed to it, policy change is biased to the preferences of the well-educated. This stronger

responsiveness to the higher demand for increasing taxes on fossil fuels is visible in the Netherlands, Finland, Iceland, Norway and Switzerland.[18] Given that the dataset contains no policies opposed by high-educated and supported by low-educated respondents, climate attitudes seem to divide less clearly along demographic lines. This, perhaps, reflects that unlike economic or social problems, environmental issues preoccupy societal groups in a similar way.

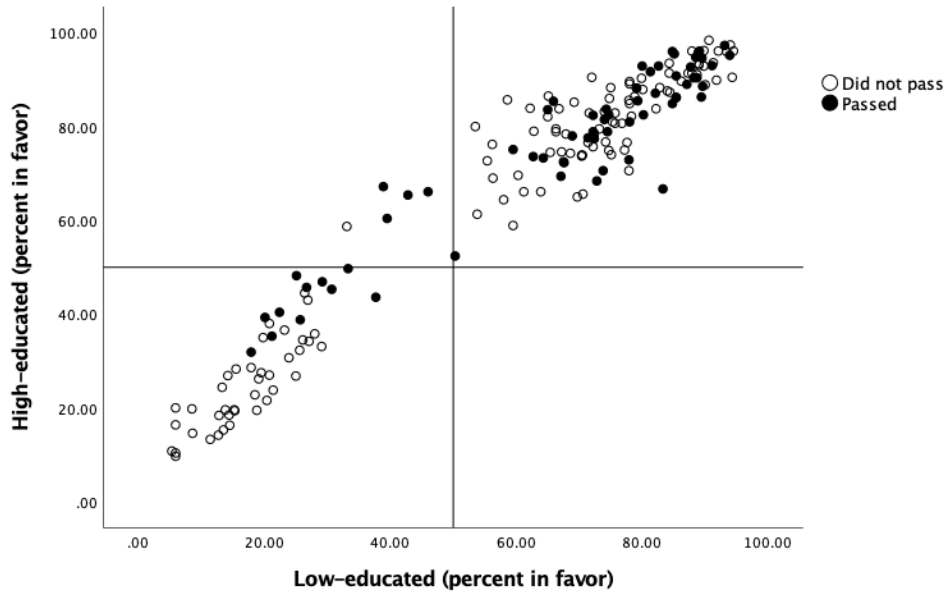

Figure 1. Low and high-educated preferences

In order to avoid that the absence of clear preference differences leads to an overestimation of equal responsiveness, the logistic regressions in Table 6 incorporate the cases for which the demands of men and women differ by more than 5%. Contrary to Table 5, the indices suggest stronger responsiveness to women (OR = 1.015, $p = 0.424$) compared to men (OR = 1.007, $p = 0.711$), but inferences should be made with caution since both estimates are insignificant.

[18] For reasons of brevity, the associations for gender and age with policy adoption are presented in Appendix B.

Against hypotheses 1 and 2, the overall picture shows a relatively equal influence of gender and age groups on policy adoption. At the same time, the conclusion that the preferences of the high-educated are a stronger predictor of policy implementation lends support to hypothesis 3.

Table 6. Logistic regression model of gender when preferences diverge

	Gender	
	Model 7 (Female)	Model 8 (Male)
Odds ratio	1.015	1.007
	(0.019)	(0.019)
Constant	.162	.283
	(1.373)	(1.345)
Nagelkerke R^2	.030	.006
N	32	32

Note: odds ratios with 95% confidence intervals in parentheses. ***p < 0.001, **p < 0.01, *p < 0.05

Descriptive representation

Whereas the previous analyses have evidenced some differential responsiveness, I now turn to test whether the size of responsiveness gaps is mediated by descriptive representation.

Table 7. Linear regression model of gender gaps in terms of policy responsiveness

	Model 9	Model 10	Model 11
(Constant)	-.548	.898	.903
	(1.058)	(1.258)	(1.290)
% women in parliament	.022	-.009	-.009
	(.037)	(.043)	(.040)
Proportionality		-.009**	-.009**
		(.002)	(.003)
Central and Eastern European country		-.979	-.996
		(.522)	(.574)
Green party strength			-.006
			(.084)
R^2	.002	.014	.014
Adj. R^2	-.003	-.002	-.008
N	185	185	185

Note: OLS regression coefficients with standard errors clustered at the country level in parentheses, ***p < 0.001, **p < 0.01, *p < 0.05

Table 7 displays the results of OLS regressions in which the dependent variable is the gender difference in responsiveness and the independent variable is the proportion of women elected

in parliament. Given that that preferences of men and women differ marginally (Table 2), it is not too surprising that the coefficients for female descriptive representation are close to zero and statistically insignificant. Of the additional variables listed in models 10 and 11, the proportionality of electoral systems has a small but significant influence on responsiveness. In other words, countries with more proportional representation do not increase responsiveness in favor of women. All in all, the model provides ground to reject that a higher number of female legislators would enhance the representation of women's climate policy preferences.

Looking at Table 8, none of the factors that I expected to account for variation in responsiveness has a statistically significant impact. This implies the rejections of hypothesis 5 which states the size of responsiveness gaps can be explained by descriptive representation of the young. Models 13 and 14 are suggestive of CEE-countries being less responsive to the climate preferences of young people, but the coefficients fall short of statistical significance.

Table 8. Linear regression model of age gaps in terms of policy responsiveness

	Model 12	Model 13	Model 14
(Constant)	.004	1.147	1.400
	(2.075)	(2.036)	(2.390)
% under 40 in parliament	-.039	-.062	-.064
	(.073)	(.070)	(.074)
Proportionality		-.008	-.007
		(.005)	(.007)
Central and Eastern European country		-1.412	-.1597
		(1.286)	(1.360)
Green party strength			-.047
			(.178)
R^2	.002	.016	.017
Adj. R^2	-.003	.000	.-.005
N	185	185	185

Note: OLS regression coefficients with standard errors clustered at the country level in parentheses,
***p < 0.001, **p < 0.01, *p < 0.05

As formulated in hypothesis 6, I further expected that representatives with a high educational background would enhance responsiveness toward the climate policy preferences of better educated citizens. The opposite is demonstrated by my data: the coefficient for descriptive

representation in model 15 shows that one percentage point more high-educated representatives in parliament leads to a predicted -.144 decrease in responsiveness against the preferences held by the high-educated. Nonetheless, it should be noted that the domination of high-educated politicians across all countries in my sample problematizes the process of making inferences about descriptive representation as an explanation for variations in responsiveness. Finally, models 16 and 17 indicate that proportional democracies not necessarily fare better when it comes to responsiveness to high-educated and their ambitious demand for climate policies.

Table 9. Linear regression model of educational gaps in terms of policy responsiveness

	Model 15	Model 16	Model 17
(Constant)	9.728*	3.048*	8.008
	(3.439)	(5.479)	(3.910)
% high-educated in parliament	-.144**	-.105*	-.109*
	(.041)	(.039)	(.045)
Proportionality		-.028**	-.027**
		(.006)	(.009)
Central and Eastern European country		-2.114	-2.173
		(1.174)	(1.219)
Green party strength			-.025
			(.246)
R^2	.033	.047	.047
Adj. R^2	.027	.029	.023
N	161	161	161

Note: OLS regression coefficients with standard errors clustered at the country level in parentheses,
***p < 0.001, **p < 0.01, *p < 0.05

5. Conclusion and discussion

This thesis set out to explore whether policy underrepresentation of the preferences of women, younger and high-educated people, obstructs the introduction of far-reaching climate measures. In the first stage I identified that inequalities exist in the substantive representation of interests concerning environmental issues. In line with my initial expectations, bivariate models demonstrated that the effect of preferences on policy adoption increases as people are higher educated. With regard to age, unexpectedly, it turned out that young and older age cohorts are quite evenly represented. Because the interests of men and women are barely indistinguishable,

no relevant deductions can be made on unequal representation based on gender. Together, these findings show that the lack of ambitious climate policy is not driven by the undermining of pro-environmental beliefs. The results presented in the second stage of the quantitative research further indicate that the explanation of descriptive representation made little difference in predicting variance in the responsiveness of governmental climate action.

Within the framework of a new policy area, this study seeks to contribute to the understanding if and how unequal policy representation comes into place. Similar measures of responsiveness have been limited to the study of economic and social policy, while it has not been applied to climate issues – that are highly characteristic of current political and societal debates. So, this research provides a first step towards exploring the causal mechanisms behind inequality within the climate policy context. The results further add new fuel to the classic debate of descriptive and substantive representation in the sense that it indicates the limited relevance of numerical presence in enhancing the representation of environmental interests.

I acknowledge this study has some drawbacks related to the data used and the complexity of the climate policy domain. With regard to survey answers, a limitation is the complicated interpretation of high levels of public support for climate change initiatives. Measuring environmental support is difficult because an explanation of climate policies' costs and benefits can be lengthy and therefore hard to present on surveys. While both the ESS (2017) and Eurobarometer (2011) address tax increases, the surveys fail to explicitly mention the effective costs for respondents that follow from raised government spending (see questions 1 and 7 in Appendix A). Due to understating the price of such policies, answers possibly become biased. Another caution follows from the empirical shortcoming that involves the possibility of reverse causation. Despite accounting for the temporal difference between survey fieldwork and policy adoption, policies could have been initiated before it became visible in implementation.

These limitations aside, this study indicates there are alternative mechanisms at play that determine climate policy output. Echoing the observations of Schakel (2019), one possible starting point for future research in explaining other factors is the possibility of extra-parliamentary avenues being used to exert political influence. Vesa et al. (2020) suggest that lobbying activities of actors that prioritize economic competitiveness over climate action constitute a plausible reason for why environmental policy is not at the desired level (p. 2). Especially in European countries with lively corporatist traditions, pro-economy interest groups can rely on their close connections to public authorities in order to influence policy making. In contrast to economic interests, environmental advocates spare no efforts to prevent a further disconnect between what is needed to avoid climate change and what has been done. Even though it is difficult to quantify effects of interest groups on climate policy, future studies could pay more attention to strategies utilized by relevant actors outside the legislative arena.

Moreover, the results presented here carry implications for the implementation of climate policy and maintaining the overall public support and trust in the procedures of representative democracy. Since inequalities in the level of support had no negative consequences for climate action, the good news is that policy implementation is not undermined by differential responsiveness. Yet, the finding that policy is stronger pulled toward the wishes of the high-educated is more sobering. Along with the complex features associated with climate policies (Huber et al., 2020b, p. 373), it is argued that currently observed populist hostility to the climate agenda is reinforced by the perception of the policy field as being dominated by a high-educated elite (Lockwood, 2018, p. 713).[19] Ironically, in light of the evidence that all groups favor environmental policies, the idea that the need for climate action is claimed by the high-educated is more a construct of populist discourse than a reflection of actual engagement with the issue.

Huber et al. (2020b) corroborate the view that although – both in theory and in practice –

[19] Although I do not claim here that low educational levels inevitably lead to hostility, some studies have shown correlations between climate skepticism and low education (McCright *et al*., 2016).

climate policy turns out to be responsive to all public interests, this is not perceived as such by the general population. This is precisely why responsiveness is of importance in debates about populism as Huber et al. (2020b) find that individuals who regard political elites as responsive to their preferences are more likely to support and pay for climate policies, indicating that less technical and top-down communication increases acceptance for mitigation measures (pp. 382-383). So, the relevant lesson that can be found is that representatives must seek ways, other than descriptive representation, to involve underrepresented groups in the making of climate policy goals – or governments risk producing outcomes with detrimental effects for future implementation. In light of these considerations, it seems likely that efforts at strengthening climate policy should go hand in hand with efforts to preserve equality in policy responsiveness.

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Appendix A: Survey sources

Table A1. Data sources for the survey questions

Survey	Year of publication	*N*
Special Eurobarometer 300	2008	4
Special Eurobarometer 372	2011	1
Special Eurobarometer 409	2014	2
Special Eurobarometer 416	2014	1
European Social Survey Round 8	2017	2

Table A2. Survey questions on policy preferences

1. To what extent are you in favor or against increasing taxes on fossil fuels, such as oil, gas and coal?
2. To what extent are you in favor or against using public money to subsidize renewable energy such as wind and solar power?[20]
3. Do you agree that alternative fuels, such as biofuels, should be used to reduce greenhouse gas emissions?
4. How important do you think it is that your government sets targets to increase the amount of renewable energy used, such as wind or solar power, by 2030?
5. How important do you think it is that your government provides support for improving energy efficiency (for example, by encouraging people to insulate their home or purchase low energy light bulbs) by 2030?
6. In your opinion are corporations and industry currently not doing enough to fight climate change?
7. To what extent do you agree that taxation should be based more on the way we use energy.
8. Do you believe the target of a 20% share of renewable energy is too modest?
9. Do you believe the target of a 30% reduction in GHG emissions is too modest?
10. In your opinion are corporations and industry currently not doing enough to fight climate change?

[20] For this question, I only consider respondents that make a clear choice for environmentally friendly subsidies. Therefore, I disregard those who agree to (more) electricity production from coal. In this way, I hope to distinguish support for environmentally harmful subsidies to fossil fuels from support for clean energy subsidies.

Appendix B: Policy preferences

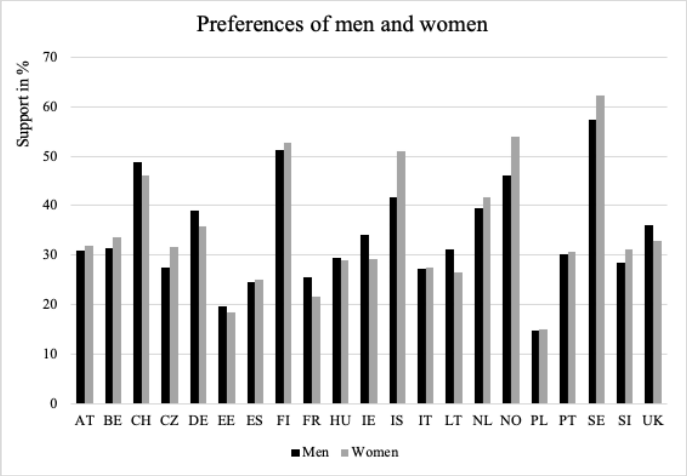

Figure B1. Preferences of men and women

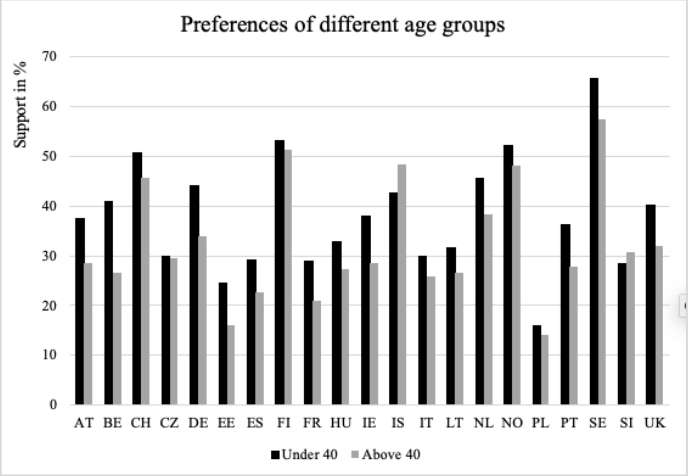

Figure B2. Preferences of different age groups with 40 as age cut-off

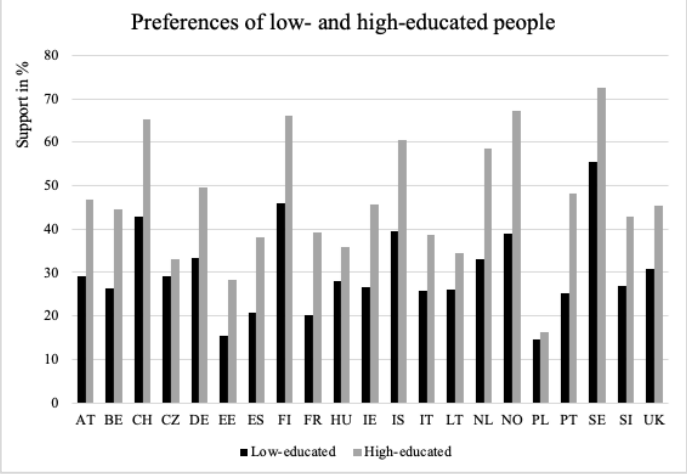

Figure B3. Preferences of low- and high-educated people

Figure B1 and B2 respectively indicate a responsiveness bias towards women's wishes for taxation in Norway and Iceland and to younger people in Norway and Switzerland.

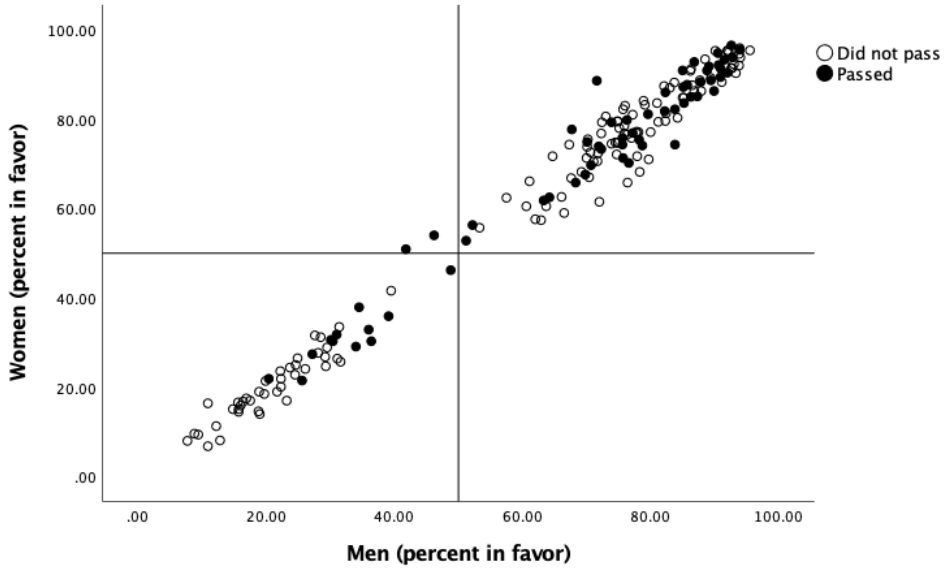

Figure B4. Scatterplot of male and female preferences

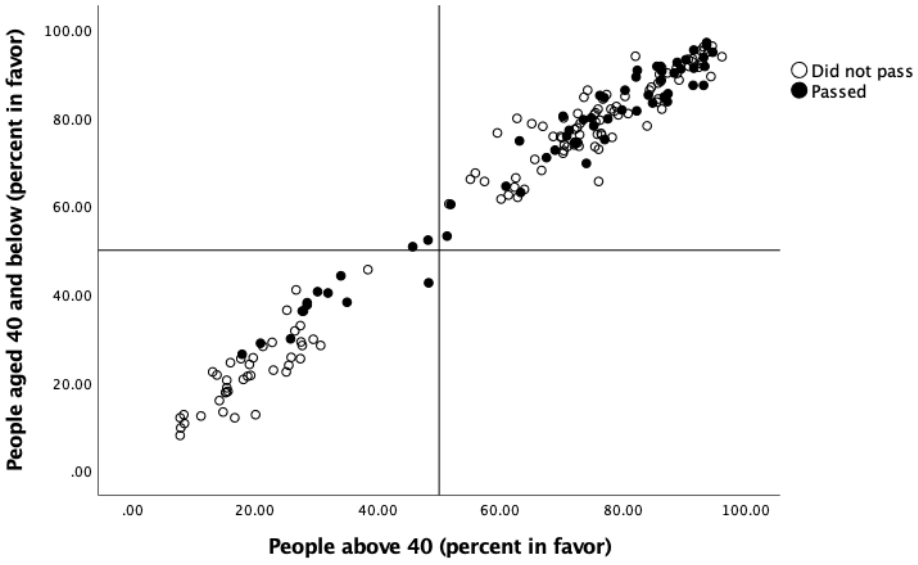

Figure B5. Scatterplot of young and old preferences

Appendix C: Linear regression

As shown in Table C1, the proportion of politicians aged 30 or below across European parliaments is even smaller than the share of representatives below 40. Nonetheless, the preferences display less significant gaps as compared to the mean comparisons with 40 as age cut-off. Finally, Table C3 indicates that higher descriptive representation inclines climate policy to the preferences of the young, albeit not in a statistically significant manner.

Table C1. Descriptive statistics

Variable	*N*	Min.	Max.	Mean	Sd.
Proportion of parliamentarians aged 30 or below	185	.42	11.84	3.74	2.23

Table C2. Paired t-tests for mean differences in support for potential policy changes

Policy item	*N*	Under 30 (mean)	Above 30 (mean)	Difference	*p*-value
All	185	56.90	55.53	3.36	.000
Fossil fuel taxation	21	36.95	32.50	5.62	.001
RES subsidies	21	53.15	56.65	-3.50	.002
Alternative fuels	18	33.66	28.33	5.33	.000
RES targets	18	91.07	89.20	1.87	.092
Energy efficiency	18	91.47	91.22	0.63	.654
Corporate/industrial action	18	74.81	75.18	-.37	.743
Energy-based taxation	17	72.84	68.71	4.13	.005
RES targets	18	22.79	20.69	2.11	.023
GHG emissions	18	19.14	20.05	-.91	.220
Corporate/industrial action	18	74.66	73.62	1.04	.336

Table C3. Linear regression model of age gaps in policy responsiveness

	Model C1	Model C2	Model C3
(Constant)	-1.029	-1.033	-.304
	(1.040)	(1.323)	(1.629)
% under 30 in parliament	.163	.167	.136
	(.183)	(.187)	(.197)
Proportionality		.006	.008
		(.008)	(.008)
Central and Eastern European country		-.301	-.845
		(1.075)	(1.230)
Green party strength			-.144
			(.179)
R^2	.005	.007	.015
Adj. R^2	-.001	-.009	-.007
N	185	185	185

Note: OLS regression coefficients with standard errors clustered at the country level in parentheses,
***p < 0.001, **p < 0.01, *p < 0.05