

What Can We Learn from the Welfare State?

An Empirical Investigation on Climate Policy

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Abstract: Since the United Nations Convention of Climate Change (UNFCCC) was established in Rio de Janeiro in 1992 we observe an increasing political awareness and institutionalization of environmental issues concerning the mitigation of climate change on the national as well as the international level. Drawing on the vast literature of welfare state research this paper corresponds to the question why welfare states have been pioneers in developing policies for mitigation of climate change referring to country specific pathways of institutional developments in two different ways.

First, welfare state research is used as a pool of analogical theoretical explanations of national climate change institutions and strategies. I transfer the Korpi argument of left parties and social movements as a source of extending welfare state programs to the strength of Green parties and environmental movements as a source of climate policies and combine it with Lijparts dimension of consensus democracy.

Secondly, welfare states themselves are shown to be resources of individual attitudes towards climate change. I focus on differences within countries, relating them to structural changes caused by welfare redistribution and postmaterialistic values. This approach gives a more detailed insight in country specific institutional strategies of climate change mitigation and their individual support. The analysis is based on Eurobarometer data which is combined with institutional indicators on the macrolevel using a multilevel modelling approach.

1 Introduction

Climate change (CC) has evolved as a new topic of high political relevance with increasing attention by the media and public opinion within the last five years. With the establishment of the Kyoto-Protocol climate relevant topics have also played an increasing role in national political decision-making and shaped individual attitudes and interests. However, climate policy has received not the same level of political attention in all European countries and we can see notable differences in the implementation of emission reduction strategies. Since political decisions with reference to CC involve strong economic interests and moral values, differences in interest group constellations, values and individual attitudes might explain the variation of climate policy across European nation states.

However, sociological theoretical work and empirical studies with a focus on climate policy in a comparative perspective are rare. One central factor for explaining country differences in climate policy and performance that has been put forward by the researcher group of Gough et al. (2008) is the differences of national welfare state arrangements. They interpret CC as a new social risk that needs to be addressed by welfare policy. Supporting this theoretical argument, empirical studies have shown for instance that social democratic welfare states have stronger climate and environmental policies than liberal welfare states (Recchia 2002). However, the theoretical mechanisms for the relationship between a strong welfare state and a high level of climate policy are not sufficiently specified. The aim of this study is to explain this relationship using two theoretical mechanisms: First, I follow the power resource approach of Korpi (1989) and Esping-Andersen (1990) and conceptualize policies as a result of political power relations and political interest group representation. Left parties can serve as a power resource for both an extended welfare state and climate policy. Second, I assume that the welfare state itself creates new interest groups supporting strong climate policies, in particular the new middle class. The impact these groups have on national climate policies, however, depends on the political power resources of climate relevant parties, strong environmental movements and the openness of the institutional political system. These hypotheses are tested using multivariate statistical analysis of individual-level and country-level data.

In the next section, I present the theoretical approaches used for explaining cross-country variation in climate policies. Section 3 discusses research on attitudes towards climate policies as an indicator for the public legitimacy of these policies. Section 4 discusses the existing empirical studies on cross-national variation in climate policies. The selected data and methods are presented in section 5. Results of the multivariate analyses are described in section 6. Section 7 summarizes and discusses the results.

2 Theoretical approaches

Policy refers to the substantive dimension of political action. The formulation of policies can be done by a variety of actors. I use it in a rather narrow sense referring only to public state actions by actors like national governments and public institutions. *Climate policy* refers then to a policy which content are the regulations towards CC implemented merely by public actors (Schmidt 1995). Based on existing empirical studies, I expect substantial variation both in the degree and the form of climate policies between the European member states (Borek and Bohon 2008; Fisher and Freudenburg 2004; Raustiala and David 1998; Vasi 2007). Despite the increasing importance of international agreements on CC, nation states still remain the major actors since they are responsible for the implementation of international agreed standards (e.g. by the Kyoto-Protocol) in national climate policies (Braun and Santarius 2007; Conca 2005; David, Raustiala, and Skolnikoff 1998). As a result, national policies for reducing CC rely heavily on existing institutional and socio-structural patterns of the country (Eckersley 2006; Jahn 1998).

Accordingly, climate policy can be understood as the implementation of a general interest. In order to be implemented it requires representation through political parties and social movements. The power resource approach is based on the assumption that parties are the central power resource in order to implement interest-related policies. This argument has been based on historical analyses of the emergence of divergent welfare states by Korpi (1980) and Esping-Andersen (1990). Power resource theory postulates that political issues are mainly influenced by the economic and political distribution of power between different societal groups with opposing interests. Welfare policy is therefore a result of political power struggles between the social cleavage of labor and capital depending on their divergent possibilities to mobilize resources (Esping-Andersen 1990; Korpi 1989; Korpi and Palme 2003; Rokkan 1970). Political representation as the central power resource is a necessary condition to implement institutional agreements. Left parties in particular represent the interests of labor. Hence, strong left parties represent an opportunity structure which allows strong redistributive welfare policies.

Welfare state redistribution also creates new social interest groups proclaiming environmental and climate policies especially from the new middle class and people with high postmaterialistic values (Neumayer 2003). The impact of these interest groups on political decision-making depends on their political representation by left or green parties. The more established parties include CC in their political agenda the bigger is the power resource of climate relevant interest groups.

One explanation of the expected positive relationship between welfare state and climate policy might be based on the strength of left parties. If strong left parties are the source of a high level of climate policies, the relationship between welfare and climate policy is spurious because left parties increase both welfare state generosity and effort in climate policies. Left parties are argued to support climate mitigating policies because new social movements and environmental movements are rooted within the left political wing and traditionally receive support from left parties (Jahn 1998; Klitschelt 1993; Markham 2008; McCormick 1998; Neumayer 2003). Left parties also prefer institutional solution on social problems and therefore we can expect that left-wing governments implement climate-relevant ministries and acts earlier than governments consisting of other party constellations (Evans 1999; Jahn 1998; 2004; Neumayer 2003).

The second explanatory mechanism I propose assumes a causal effect of the welfare state mediated by the development of an ecological interest representation. Following this line of argument, the emergence of environmental movement and green parties can be understood as a result of welfare state redistribution. Environmental movements aim to influence the political decision-making process through coalitions with political parties. In countries in which green parties exist they usually built coalitions with this party. Green parties have the advantage of a strong environmental focus but often lack political power. Therefore, environmental movements also seek relations with left parties which often have more political power but a lower interest in environmental issues particularly when traditional working-class related interests are also at stakes (Kriesi, Koopmans, Duyvendak, and Giugni 1992).

Power resource approaches are useful because they draw our attention to the importance of actors and their relative power in the political process but it is also important to note that these actors are embedded in typical institutional structures that enable and restrict distinct political action (Immergut 1994; Peters 1999). The political system for instance influences

the number of parties and therefore the relative significance of small and big parties. In the United Kingdom, for instance, the green party fails to enter parliament and cabinet because of majority electoral system. Another relevant aspect of the political system is the openness towards social movements. Multi-level governance and corporatistic structures e.g. allow a consensus-oriented informational policy and include public and non-governmental actors in political decision making processes (Crepaz 1995; Lundqvist 2001; Scruggs 2001; Scruggs 1999; Wälti 2004). Environmental movements, therefore, are capable in balancing the strong influence of economic interest on political decision making processes towards CC in consensus-oriented democracies (Eckersley 2006; Goldstone 2003; Kitschelt 1986; Kriesi, Koopmans, Duyvendak, and Giugni 1992; Kriesi 1991; Raustiala and David 1998; Tarrow 1983; Tarrow 1989; Tarrow 1991).

In order to account for the relevance of the political institutional structure, I include Lijpharts (2008) classification of political systems on a dimension ranging from majority to consensus-oriented democracies as a moderating factor of climate policy. *Majority-based democracies* are characterized by central political structures with one-party- dominance executive and by interest group pluralism. *Consensus-oriented democracies* rely on a multi-party-system, bi-cameralism, federalism, and interest group corporatism. Both systems have a different impact on policy outputs. Majority-oriented democracies allow fast decision-making processes and show a strong orientation towards the median-voter. Due to a higher number of veto-players in the consensus-oriented system, political decision-making is more time-consuming but therefore also include minor group interests. Because CC is rarely a topic concerning the median-voter, I expect stronger climate policies in consensus-oriented democracies than in majority-oriented democracies.

3 Attitudes towards climate change and new interests on the individual level

Policies are rarely made in absence of electoral support because policy-makers have an electoral incentive to follow public opinion in their decision-making. Hence, public opinion and lobbyists remain powerful instruments of political influence. This illustrates the relevance of individual attitudes for climate policies (Burstein 1998; Marquart-Pyatt 2007; Tanguay, Lanoie, and Moreau 2004). Attitudes towards CC can be seen as a special case of environmental consciousness. As a formed public opinion they are hypothesized to influence climate policies (Brody, Zahran, Vedlitz, and Grover 2008; Franzen and Meyer 2004; Heath and Gifford 2006; O'Connor, Bord, and Fisher 1999; O'Connor, Bord, Yarnal, and Wiefek 2002; Preisendörfer 1999). Individual attitudes are formed based on individual self-interests and values.

Since the welfare state has a major influence on a person's class position and economic living situation, I suggest an influence of the welfare state on climate policies through the development of new interest groups and value orientations supporting climate policies. One of the new interest groups created through the welfare state is the *new middle class* that is defined as “*a group with two characteristic political concerns: the control of the symbolic environment and the relationship between ideal and the real*” (Kirkpatrick 1998: 213). Kirkpatrick (1998; 1979) identifies a group with mainly liberal value orientations of highly educated people with high income and socio-economic status that are employed in positions mainly requiring verbal and communicative skills (Bell 1979; Brint 1984; Bruce-Briggs 1979; Cotgrove 1982; Eckersley 1989; Kirkpatrick 1998; Kriesi 1989; Ladd 1979; Mertig and Dunlap 2001; Phelan and Phelan 1991; Wynne 1998). This group holds an interest in climate policies because policies towards climate mitigation are created in a way that these groups benefit from them. The new middle class holds enough financial resources to participate e.g. in the national solar energy programme that creates further economic benefits (Bell 1979; Burstein 2003; Burstein and Linton 2002; Edlund 2000; Kriesi, Koopmans, Dyvendak, and Giugni 1995; Ladd 1979; Wynne 1998).

CC policies cannot only create short-term benefits but are particularly relevant if people hold a long-term perspective. Hence, CC can be understood as a new social risk (Gough et al. 2008). Like pension systems ensure benefits in the old age, climate policy ensures for bene-

fits of their own descendents. Under such a subjective perspective engagement for the environments seems subjectiv rational. However, this interpretation requires individual skills to plan for the far future and the faith in having a positive influence on the future situation by your own behavior. Many studies show that mainly people with high internal believes in self-control and highly educated people, one of the characteristics of the new middle class, show these skills (Gecas 1989; Mirowsky and Ross 2007). Thus, in a long-term perspective there is something to gain through climate policies for the new middle class. The new middle class has not only benefits from climate policies, it is also, as Eckersley (1989) argues, a group which “can afford” positive attitudes towards CC because they stay outside the productive sector and do not depend on policies towards CC.

Ingleharts (1981; 1977) thesis that societies with increasing wealth also change from individual materialistic to postmaterialistic values. Since the welfare state plays a major role in ensuring objective and subjective social security, it serves as a important factor of the emergence of postmaterialistic value orientations (Inglehart 1981; 1977). Inglehart (Abramson and Inglehart 1995; 1995) defines “materialistic“ as a state of striving for the daily survival, that means of materialistic scarcity and less security. Postmaterialists, however, strive to higher life quality and self-fulfillment. The emergence of Western European welfare states serves the process of value change through two mechanisms. On the one hand, welfare redistribution produces subjective individual security by generous unemployment, illness and pension systems (Abramson and Inglehart 1995; Inglehart 2008). On the other hand, income redistribution also creates a new middle class that has an actual lower risk of being unemployed (Inglehart 2008). Postmaterialistic values therefore should have a positive impact on the individual attitudes towards CC (Abramson and Inglehart 1995; Inglehart 1995).

4 Literature Review

These theoretical approaches have been already empirically tested by different studies. Different authors evaluate the influence of left parties on welfare state generosity and come the conclusion of decreasing welfare benefits and less class voting behavior due to structural changes (Pierson 1996). Others, however, can show that welfare state services are cut significant less in countries with strong left parties (Korpi 2003; Korpi and Palme 2003). Evans (1999) also states that the voting behavior did not change significant during the last 10 years.

Lijpharts concept of majority and consensus-oriented democracies was applied to many subjects including environmental movements and CC. Lijphart (1999) finds a positive effect of bivariate regression analysis between indicators of consensus-oriented democracies with arrangements of the welfare state following Esping-Andersen (1990) and the national social expenditure. He also identified consensus-oriented democracies to perform better on Palmers (1997) index for environmental performance and energy efficiency. Scruggs (1999) found a positive but not statistically significant effect of consensus-oriented democracies on environmental performance. A more detailed result is presented by Poloni-Staudinger (2008). While he can not show differences between political systems on the dimension of environmental taxation and nuclear energy production, consensus-oriented political systems perform better on mundane environmentalism; majority-oriented political systems do better on conservation.

Ingleharts hypothesis of a positive effect of postmaterialistic values on environmental consciousness has been tested in a large number of studies using national wealth of a country as indirect measure of postmaterialism. The results remain inconclusive with some studies confirming the relationship (Franzen 2003; Franzen and Meyer 2004; 1995; Kimmelmeier, Krol, and Kim 2002; Khanna 2002; Kidd and Lee 1997), others reporting no significant correlation (Brechin 1999; Brechin and Kempton 1994; Dunlap and York 2008; Dunlap and Mertig 1997; Gelissen 2007; Sandvik 2008). It is in particular the high values of environmental consciousness in less developed countries which result in a contradiction of Ingleharts assumption, that postmaterialistic values only appear in countries of economic security and lead to environmental behavior (Duroy 2008; Gelissen 2007; O'Connor, Bord, Yarnal, and Wiefek 2002).

5 Data and Methods

On the national level, I collected country-specific data for all EU-27 memberstates (1990-2008 if possible) following a most-similar design with common precondition like demographic development, institutional and economic settings, but with distinct differences in welfare state institutions.

- *Climate policy*: The International Energy Agency (IEA) provides a database for all national programmes to CC, energy efficiency and renewables. I counted the amount of certain types of programmes for each country and calculated two dimensions via factor analysis: direct and indirect climate policies.¹ Both dimensions are included in the analysis separately.
- *Welfare state*: On the national level, I use the level of social expenditures as a percentage of GDP (Eurostat, 2008).
- *Polical indicators*: Political macro indicators are derived from the Comparative Political Data Set (CPDS) III. Averages of the annual numbers (1990-2006) of cabinet and parliament strength of left parties, the proportion of parliamentary seats for social democrats as well as the elective proportion of the greens were calculated for each country. The effective number of parties in parliament, the legislative-executive relationship (dominant vs. balanced), the elective system (majority vs. proportional) and the executive form (one-party vs. multi-party coalition cabinet) serve to build an additive index of Lijpharts (1984; 1999) dimension of “executive disproportionality“. The strength of environmental movements was operationalized using aggregated information on membership based on the World Value Survey of 1999 (Dalton 2005).
- *Control Variables*: On the national level, I use the GDP in purchasing power parities (US dollar based) as a control for the economic development, as well as an indicator for the average change of economic energy intensity 1990-2008 from Eurostat.

¹The first dimension can be interpreted as direct public influences on national economy which includes programmes like benefits and subsidies, political processes, regulations and emission permits. The second dimension measures whether one country uses financial instruments, public investments, research and development and voluntary agreements that give incentives without having a direct impact on economy. (status: 20.03.2009).

On the individual level, I use recent survey data from the Eurobarometer 2008.

- *Attitudes towards CC*: For the following analysis I use three dependent variables for individual attitudes towards CC: (1) a general evaluation of global warming as a serious problem on 10-point scale (“climate“), (2) a decision for or against environmental protection versus economic growth on a 4-point scale (“pro environment“), (3) the voluntarily paid additional costs for environmentally friendly energy production in % of the current energy costs (“energy costs“).
- *Socio-economic variables*: The new middle class is operationalized by education (in age at highest education status, recoded as categorical variable with education groups “medium” and “higher education” with the reference category “lower education”), employment (white-blue-collar, self-employed, not-employed: students, unemployed, housework, pensioner) and the personal assumption of the future economic and job situation of the household.
- *Postmaterialistic values*: An additive index was calculated for the respondents answer on things that make their life more satisfied (materialistic -4 bis 4 post-materialistic).²
- *Control*: All individual analysis is controlled for age and gender to avoid aging and distributive effects of these variables. Other variables to control for are the personal knowledge about CC and general political values on a left-right scale.

Regression analysis: On the macro level ordinary least square (OLS) macro regressions were calculated with countries as cases to test the theoretical assumptions. For the individual level both individual as well as macro variables were included in a multi-level regression analysis. A multi-level regression analysis allows an estimation of the dependency between the individual cases within a country by calculating residuals for both individual as well as country variance (Hox 2002). This approach seems best for the given research question because it implies a content specific interest to explain country differences.

² Money, work, order and health was interpreted as materialistic values whereas love, friendship, peace, justice and freedom belongs to post-materialistic values. Tradition, pleasure, faith, education, nation and solidarity are neutral ones.

The estimated linear random-intercept model is calculated based on the following formula:

$$y_{ij} = \beta_1 + \beta_2 x_{2ij} + \dots + \beta_p X_{pij} + \zeta_j + \varepsilon_{ij} \quad (1.1)$$

where the dependent variable y_{ij} stands for the average response to the item of climate attitudes for respondent i in the country j and x_{2ij} to x_{pij} for the explained covariates. With the error-terms the model distinguishes between the individual specific error-term ε_{ij} and the country specific error-term ζ_j (Rabe-Hesketh and Skrondal 2005).

6 Results

Welfare and climate policy: The starting point of this work is the postulated positive relationship between the welfare state and climate policy.

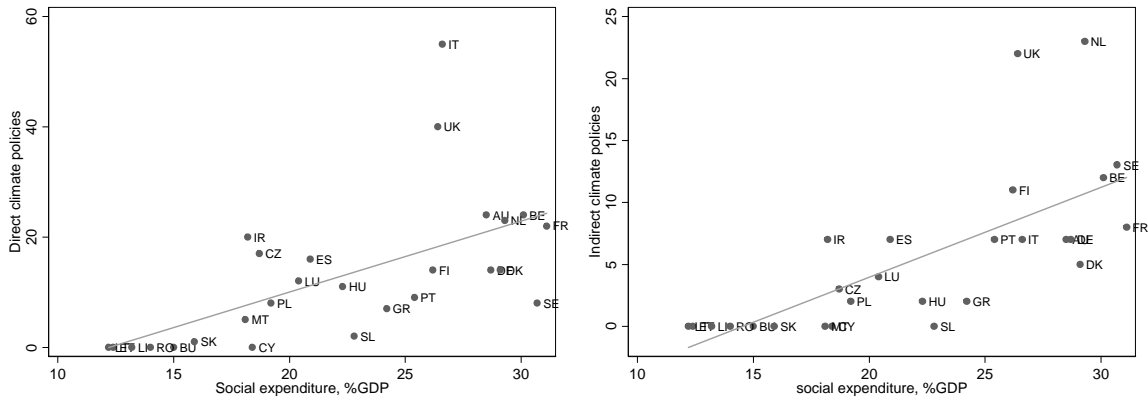


Figure 1: Bivariate relationship between social expenditure (%GDP) and climate policy

Table 1: OLS-coefficients of social expenditure (%GDP) on climate policies

	Climate policies	
	direct	indirect
Social expenditure (% GDP)	1.01* (0.50)	0.76*** (0.22)
Constant	-7.86 (12.89)	-11.59* (5.66)
<i>N</i>	27	27
<i>Adj. R</i> ²	0.33	0.45

Notes: Standard Errors in paranthesis, significance: * $p < .10$, ** $p < .05$, *** $p < .01$., controlled for energy intensity of economy

Source: UN-DATA, Eurostat, IEA, Germanwatch, own calculations

Figure 1 shows the positive relation between direct and indirect climate policies with national social expenditure. OLS-regression analysis of social expenditure on national climate policies confirm the results of a positive relationship between both indicators shown in figure 1 (table 1). Every additional percentage point of social expenditure of national GDP increases the number of direct climate policies significant by one additional policy ($p < 0.10$). Indirect policies are increase by 0.76 policies on average ($p < 0.01$). The explanation of variance for both climate indicators is 33% ($R^2 = 0.33$) for direct and 45% ($R^2 = 0.45$) for indirect climate policies.

Left party strength: In a second step, I analyzed whether the political strength of left parties influences climate policies. The expected positive effect however is only significant for indi-

rect climate policies (table 2). Each additional standard deviation of the left party's proportion in cabinet and parliament increases indirect climate policies on average by 0.28 ($p < 0.05$). No effect shows the proportion of Social Democrats in national parliaments.

Table 2: OLS-coefficients of left party strength on climate policy

	direct climate policies			indirect climate policies		
	(1)	(2)	(3)	(1)	(2)	(3)
Left proportion in cabinet	0.05 (0.13)			0.28* (0.06)		
Left proportion in parliament		0.03 (3.68)			0.28* (1.59)	
Social Democratic proportion in parliament			-0.12 (0.17)			0.13 (0.08)
Constant	(4.59)	(4.59)	(4.68)	(1.99)	(1.98)	(2.15)
<i>N</i>	27	27	27	27	27	27
<i>adj. R</i> ²	0.23	0.23	0.24	0.43	0.43	0.32

Notes: standard errors in paranthesis, significance: * $p < .10$, ** $p < .05$, *** $p < .01$, OLS-coefficients standardized, controlled for Eastern European countries

Source: IEA, Comparative Political Dataset III, own calculations

Greens and environmental movements: The postulated positive effect of environmental movements and the Greens on climate policies is presented in table 3. It shows a significant and positive effect of the elective proportion of the Greens that fails the significance criteria when we control for Eastern European countries ($p < 0.05$ for Model (2) und (5)). Although we find no effect of environmental movement strength on direct climate policies, the degree of indirect climate policies increases by 0.32 ($p < 0.05$) with each percentage of the population that is a member of an environmental movement. Environmental movements explain 45% of the total variance of indirect climate policies.

Table 3: OLS-coefficients for the electoral proportions of the Greens and the strength of environmental movements on climate policies

	direct climate policies			indirect climate policies		
	(1)	(2)	(3)	(4)	(5)	(6)
Electoral proportion of the Greens	1.24 (0.78)	0.23 (0.81)		0.86** (0.36)	0.38 (0.36)	
Strength of environmental movements			0.03 (0.29)			0.32** (0.12)
Eastern European Countries		-13.43** (5.24)	-12.87** (6.15)		-6.46** (2.37)	-5.93** (2.46)
Constant	9.95*** (3.04)	17.25* (3.96)	15.52* (8.55)	3.52** (1.39)	7.03*** (3.42)	6.20* (3.42)
<i>N</i>	27	27	27	27	27	27
<i>Adj. R</i> ²	0.09	0.23	0.194	0.19	0.33	0.453

Notes: standard errors in paranthesis, significance: * $p < .10$, ** $p < .05$, *** $p < .01$, controlled for GDP

Source: IEA, Comparative Political Dataset III, VWS 1999, own calculations

Interactions: Of major interest are the interactions between political parties, environmental movements and the political institutional system. Figure 2 shows the results of the interaction between environmental movements and the social democrats' share in parliament. A positive main effect for Social Democrats ($p < 0.10$) and for the strength of environmental movements ($p < 0.05$) can be shown only for indirect climate policies.

The interaction between both factors, however, shows a significant negative effect ($F(21) = 3.99$, $p < 0.05$). Climate policies are less developed in countries with both strong social democrats and strong environmental movements. This result contradicts the theoretical assumption of a successful partnership between both political actors. However, the results lead to the conclusion, that social democrats loose their interest and dependency on environmental movements with increasing political strength.

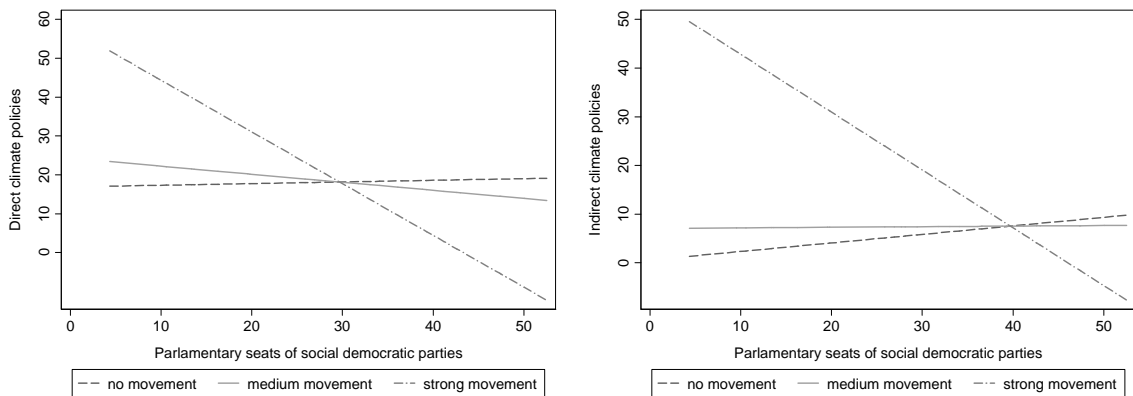


Figure 2: Estimations of the interaction between environmental movement’s strength and the Social Democrats’ proportion in parliament on direct und indirect climate policies

In contrast to social democrats green parties have a primary focus on environmental issues and therefore should be supported most by the environmental movement. This relationship can be shown only for indirect climate policies (Figure 3). In countries with stong environmental movements the influence of the Greens on indirect climate policies increases significantly ($F(22) = 3.99, p < 0.05$), even though the main effect for both factors disappears.

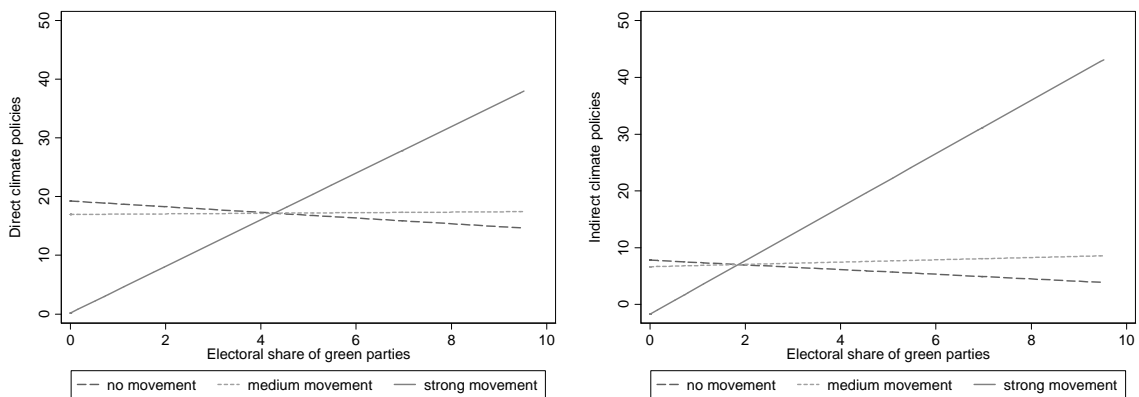


Figure 3: Estimations of the interaction between the Greens elective proportion and the environmental movement’s strength on climate policies

Figure 4 shows the interaction between consensus-/majority-oriented political systems and the political strength of social democratic parties. Consensus-oriented democracies ($p < 0.01$) and social democratic parties’ proportion in parliament ($p < 0.01$) show a significant main affect on direct climate policies. The interaction of both factors is significantly nega-

tive for direct climate policies ($F(22) = 5.63, p < 0.01$), which is in contrast to the expectations of a positive interaction effect.

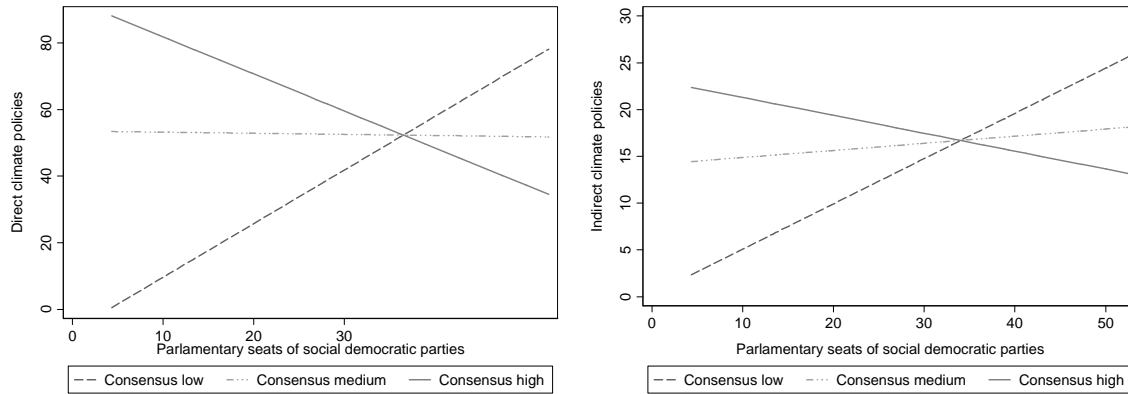


Figure 4: Estimations of the interaction between Social Democrats proportion in parliament and consensus-oriented democracies on climate policies

The influence of social democratic parties on direct climate policies decreases with increasing proportions in parliament and if the political system is more consensus-oriented than majoritarian. That result also can be shown for indirect climate policies ($F(23) = 2.55, p < 0.10$), even though it fails the significance criteria when controlling for Eastern European countries ($F(22) = 1.62, p = 0.22$). We can assume that the amount of political actors in opposition to Social Democrats increase with more consensus-oriented political systems which address climate policies.

The results also show no evidence for the interaction between green party strength and consensus oriented democracies on direct climate policies (Figure 5). Indirect climate policies, however, are significant negative influenced in consensus-oriented political systems and the increasing electoral proportion of the Greens. This effect changes to the opposite by a significant positive interaction of both factors ($F(21) = 1.78, p < 0.20$). Countries with majority-oriented political systems and low levels of electoral support for the Greens on the one hand, and consensus-oriented political systems and strong Greens on the other hand show the highest amount of indirect climate policies..

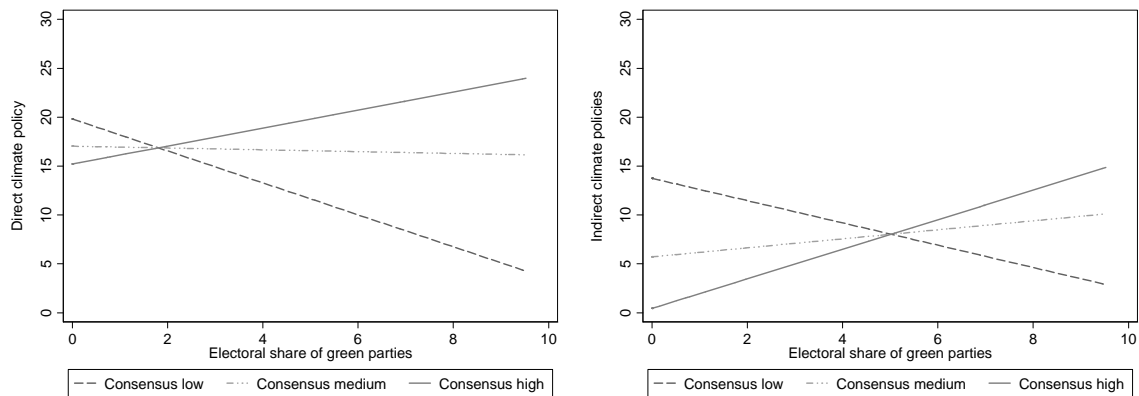


Figure 5: Estimations of the interaction between the electoral proportion of the Greens and consensus-oriented democracies on climate policies

Individual effects: For the analysis of individual attitudes towards CC I employed multi-level regression analysis using data from the Eurobarometer 2008. Overall, I calculated eight hierarchical multilevel regression models for each of the dependent variables. The individual attitudes towards CC have been z-transformed so that the results can be directly compared. Table 3 presents the random-intercept models including all individual variables for all three items measuring attitudes towards CC.

One characteristic of the new middle class is higher education. Thus it was expected persons with a higher level of education attribute a higher relevance to CC and support related policies stronger than persons with a lower level of education. Table 3 shows that individuals with a medium or a high level of education perceive CC as a more serious problem and support environmental policy stronger than persons with a low level of education, holding all other variables constant. A medium or high level of education also increases the willingness to pay more for green energy compared to a low level of education, holding all other variables constant. The effect of a higher level education is strongest for the willingness to pay more for energy costs, and lowest for the evaluation of CC as a serious problem. The small difference for the assessment of CC is due to the fact that there is a relatively uniform agreement that CC constitutes a relevant problem. However, groups differ in their perception of suitable reactions to the problem. The higher willingness to pay more for “green” energy production of the higher educated might also reflect their higher income levels (proxy meas-

ure: financial situation might not cover these differences) which in fact enable these groups to pay more for their energy.

The employment status (self-employed, white collar, dependents, reference: blue collars) serves as a second indicator for the new middle class which is primarily white collar or self-employed. Table 3 shows that the self-employed see CC significantly as a less serious problem than blue collars ($p < 0.01$), holding all other variables constant. These groups do not differ in their support of pro-environmental compared to economic policy but self-employed respondents are willing to pay 0.10 standard deviations more on energy costs for the mitigation of CC than blue collars ($p < 0.01$), holding all other variables constant. In line with the theoretical expectations, white collars show more positive attitudes towards environmental policies ($p < 0.01$) and are more willing to pay more for “green” energy costs ($p < 0.10$) than blue collars, holding all other variables constant. Like for the level of education the biggest difference can be found for the individual attitudes towards the willingness to pay more on energy costs.

Some of the found patterns can be explained by the dependency from economic growth. Blue collars are more strongly affected by CC and climate policies and therefore show a higher level of concern with CC. The dependency on economic growth also explains differences between white collars and self-employed on “pro environment“. White collars working in the public sector are much less dependent on economic cycles and benefit more from political acts towards environmental protection than self-employed or blue collars.

Following Ingleharts (1990; 2003; 2008) idea that people only think about the environment if their own economic security is secured, the employment group of dependents from welfare state (pensioners, unemployed, housewives, students) should show negative effects. The results in table 3 show an ambiguous result. Dependents assess CC by 0.06 standard deviations less serious than blue collars ($p < 0.05$) but they are more willing to pay 0.05 standard deviations more on energy costs than respondents of the reference group ($p < 0.10$), holding all other variables constant. One can argue that this group is very heterogeneous and does not necessarily represent only poor respondents (e.g. housewives, pensioners).

In order to directly investigate the effect of monetary resources on attitudes towards CC, a subjective assessment one’s personal financial situation was included. As expected we see a significant positive effect of a better financial situation for all dependent variables ($p < 0.10$

for “climate“ and “pro environment“, $p < 0.01$ for “Energy costs“). Respondents who estimate their situation one point better see CC 0.01 standard deviations more serious, agree to environmental programmes before economic growth by 0.01 standard deviations. They would spend 0.06 standard deviations of their recent energy costs for environmentally friendly energy production, holding all other variables constant.

Table 3: Micro-models

	Climate		Pro-environment		Energy costs	
Medium Education 20-25 years of age	0.02 (0.02)		0.08*** (0.02)		0.10*** (0.02)	
High Education 26+ years of age	0.05* (0.03)		0.15*** (0.03)		0.22*** (0.03)	
Self-employed (Reference: Blue Collar)	-0.07*** (0.03)		-0.02 (0.03)		0.10*** (0.03)	
White collar (Reference: Blue Collar)	-0.00 (0.02)		0.03* (0.02)		0.10*** (0.02)	
Dependents (Reference: Blue Collar)	-0.06** (0.03)		-0.04 (0.03)		0.05* (0.03)	
Financial situation	0.01* (0.01)		0.01* (0.01)		0.06*** (0.01)	
Postmaterialism	0.04*** (0.01)		0.06*** (0.01)		0.04*** (0.01)	
Constant	0.05 (0.05)	-0.41*** (0.07)	-0.01 (0.04)	-0.45*** (0.05)	-0.01 (0.04)	-0.32*** (0.05)
Country variance	0.074 (0.021)	0.089 (0.025)	0.035 (0.010)	0.022 (0.007)	0.031 (0.009)	0.019 (0.006)
Individual variance	0.929 (0.010)	0.904 (0.010)	0.960 (0.011)	0.936 (0.010)	0.964 (0.011)	0.919 (0.010)
<i>N</i>	16587	16587	16587	16587	16587	16587
Log-Likelihood	-22978	-22753	-23237	-23022	-23272	-22874

Notes: Standard errors in paranthesis, significance: * $p < .10$, ** $p < .05$, *** $p < .01$, controlled for gender, age, knowledge about CC, general political orientation (left-right)

Source: Eurobarometer 2008

Postmaterialism also shows a significant positive effect on all dependent variables ($p < 0.01$). The individual attitudes toward climate change as a serious problem increase by 0.04 standard deviation, the agreement on environmental policies before economic growth by 0.06 standard deviations and the willingness to pay more for “green” energy production by 0.04 standard deviations for each additional value on the scale of post-materialism.

Macro indicators: Since the main aim of this article was to explore country differences, I tried to explain variation across countries in the average attitudes towards climate change as is shown in table 4. It was expected that the strength of environmental movements have a positive influence on the climate change attitudes. The results are inconclusive since environmental movements show a negative effect of 0.01 standard deviations for “climate” ($p < 0.10$), no significant effect for “pro environment” and a significant positive one for “energy costs” ($p < 0.10$) of 0.01 standard deviations for each additional percentage point of environmental memberships. The positive results of “energy costs” support the assumption, that environmental organizations successfully raise the individual awareness and behavior towards CC.

Table 4 shows no significant effect for the percentage of social expenditure on attitudes towards CC, however, a positive interaction of social expenditure on and the subjective financial situation ($p < 0.05$ for “climate“, $p < 0.01$ for “pro environment“). Respondents with a better evaluation of their future financial situation in countries of generous welfare policy also see CC as a more serious problem and agree more to environmental policy before economic wealth than respondents in countries with less support by the welfare state. There is no significant effect for “energy costs”.

While the individual-level characteristics show in general the hypothesized effects, the impact of the macro-level indicators remain inconclusive.

Table 4: Macro-Results: Social expenditure and Environmental Movement

	Climate			Pro-environment			Energy costs		
Env. Movement	-0.01 [*] (0.01)			0.00 (0.00)			0.01 [*] (0.00)		
Social Expenditure	-0.01 (0.01)	-0.01 (0.01)		0.00 (0.01)	0.00 (0.01)		-0.00 (0.01)	-0.00 (0.01)	
Interaction: Social Exp. X fin. Sit.			0.00 ^{**} (0.00)			0.00 ^{***} (0.00)			-0.00 (0.00)
Constant	-0.19 (0.13)	0.01 (0.21)	0.02 (0.21)	-0.47 ^{***} (0.09)	-0.50 ^{***} (0.12)	-0.48 ^{***} (0.12)	-0.30 ^{***} (0.08)	-0.29 ^{**} (0.12)	-0.29 ^{**} (0.12)
Country variance	0.069 (0.019)	0.074 (0.021)	0.074 (0.021)	0.022 (0.007)	0.022 (0.007)	0.022 (0.006)	0.016 (0.005)	0.019 (0.006)	0.019 (0.006)
Individual-variance	0.904 (0.010)	0.904 (0.010)	0.904 (0.010)	0.936 (0.010)	0.936 (0.010)	0.935 (0.010)	0.919 (0.010)	0.919 (0.010)	0.919 (0.010)
<i>N</i>	16587	16587	16587	16587	16587	16587	16587	16587	16587
Log-Likelihood	-22750	-22751	-22748	-23022	-23022	-23017	-22872	-22874	-22873

Notes: Standard errors in paranthesis, significance: * $p < .10$, ** $p < .05$, *** $p < .01$., controlled for gender, age, knowledge about CC, general political orientation (left-right)

Source: Eurobaromter 2008, WVS 1999, Eurostat

7 Discussion

This paper investigated the relationship between the welfare state and CC referring to direct and indirect climate policy and individual attitudes towards global warming. In a first step the relationship between social expenditure and climate policies was shown. In a second step, this paper tried to explain this relationship based on theoretical assumptions of political representation of interests towards CC by left and green parties in interaction with a strong environmental movement and consensus-oriented political attributes of the institutional system.

On the individual level the new middle class and post-materialism explain attitudes towards CC. I tested the theoretical assumptions with international macro data on the EU-level and individual survey data of the Eurobarometer on the individual level in a country comparison. The results show a positive effect of national social expenditure on climate policies as well as support the assumption of a positive relationship between left and green parties and environmental movements towards climate policies, even though not for both direct and indirect climate policies. The interaction between environmental movement, green party strength and consensus-oriented democracies is also positive, but the data show an opposite influence of the interaction with social democratic parties' voter share in parliament. Therefore, the interplay between the political institutional system, political parties and the environmental movement's strength seems more complex and is difficult to model it in a quantitative matter. Unfortunately, the number of cases of 27 countries and the problem of multi-collinearity does not allow controlling for every influencing factor within one model. Therefore, further theoretical and empirical analysis using data over time is needed to investigate these complex relationships in more detail. On the individual level, I find most of the expected effects. However, it remains still unclear whether the welfare state is a cause of the individual conditions that leads individual attributes of positive attitudes towards the mitigation of CC as was assumed in this paper. Looking at the macro influences of environmental movements on the individual attitudes towards CC we find a significant effect but only for two of three indicators.

This paper provided a first attempt to specify theoretically and measure empirically the relationship between the welfare state and climate policy as it has been postulated by Gough et

al. (2008). The relationships, however, are more complex and the results are not robust for both dimensions of climate policies.

For future analyses, different measures of both concepts should be explored. National social expenditure, for instance is a comprehensive indicator of the generosity of the welfare state but does not sufficiently capture the qualitative differences between institutional welfare arrangements between countries (Esping-Andersen 1990; 1998; 2002). With reference to climate policy, the selected measures of direct and indirect climate policies give less information about the degree of emission-reducing strategies of the climate programmes, but more information about differences in kind of national strategies towards climate mitigation. Moreover, for investigating the proposed effects the suitability of a cross-sectional design is rather limited. Further research should therefore employ a longitudinal approach and investigate the diverging pathways of national development towards national climate strategies. However, these requirements reflect a challenge for the data sources which are currently available.

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