



COLOGNE GRADUATE SCHOOL  
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## The Capacities to Fight Climate Change?

An Empirical Investigation on the Influence of Economic, Institutional, Structural and Cultural Capacities on National Climate Policy Efforts and Strategies

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Recently, the Third IPCC Assessment Report claimed that the national effort of one country to address climate change depends on its economic, institutional, structural and cultural capacities. The European Union, in contrast, considers only economic wealth of a Member State as a criterion for the planned EU Effort Sharing Decision within the EU Climate and Energy Package. In order to assess recent climate policy instruments of EU Member States it is crucial to take a variety of national capacities into account. This article raises the question of how economic, institutional, structural and cultural capacities influence the effort and the character of national climate policy instruments. National programs and policy processes of climate change from 1990 to 2008 are mapped for all EU Member States. On the one hand, the allocation and political representation of general interests among business associations or the environmental movement by political parties is seen as a major explanatory factor for differences among the countries' effort in climate policy legislation. Constitutional factors like the number of veto players mediate parties' influence on the national effort of climate mitigation. A cluster analysis, on the other hand, reveals similarities within and differences between national climate policy strategies of certain country clusters. Differences in the character of national climate policy strategies are explained by structural economic changes (privatization) and institutional affinities (styles of regulation). Relying on combined data from the Comparative Manifesto Project, the Comparative Political Dataset and climate policy data from the International Energy Agency, both issues are examined using pooled time-series cross-sectional analysis for EU-25 countries in 1990-2008.

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## Introduction

The growing awareness of climate change as a major political and social challenge has led to international efforts for its mitigation such as the adoption of the United Nations Framework Convention on Climate Change in 1992 and the Kyoto Protocol in 1997. The success of these international agreements, however, depends on the development and implementation of concrete policies in individual countries. This ongoing process is rather advanced within the European region. Partly, this is due to the implementation of the EU Emission Trading Scheme (ETS), a climate policy which is regulated at the European level. Yet, sectors which are not specified by the ETS such as transport, housing, and promotion of renewable energy usage will be crucial for the achievement of the agreed reduction of greenhouse gas (GHG) within the EU Climate and Energy package starting 2012. Since these sections are regulated within the EU Effort Sharing Decision which specifies only national targets (No. 406/2009/EC) and not detailed prescriptions for policy instruments, we observe substantial variation in the regulatory efforts and strategies among Member States. The purpose of this paper is to explain the variation in national efforts and character of climate policy strategies.

Among convergence theory which assumes a diffusion process of general policies across EU Member States (Albrecht and Arts 2005; Holzinger, Knill, and Sommerer 2010), I argue that varying capacities in implementing climate policies are one major source for national differences in GHG reduction efforts and strategies (Burch and Robinson 2007; Winkler, Baumert, Blanchard, Burch, and Robinson 2007). Capacity theory understands national capacities for policy change to be based on domestic political institutions as well as structural and cultural properties. This approach is partly realized by the EU ESD where EU Member States follow binding reduction targets according to their economic capacities. However, this paper follows an interpretation of national capacities going beyond economic strength (e.g. as GDP per capita) but including institutional, structural and organizational factors resulting from historical developments within individual countries (Burch and Robinson 2007). Institutional resources are, for example, power resources derived from political parties which represent general interests in climate policies and mitigation support. It is also the character of the political system within the country, namely the number of access points which positively or negatively influences the articulation of special interests for environmental issues and, in consequence, the political willingness for certain policy instruments of GHG mitigation (Winkler et al. 2007). Concerning socio-technological resources, it is not only the technical advancement and educational capacity within the state which contributes to the implementation of climate policies and GHG emission reduction, but also country-specific

styles of regulation and varieties in business-labor relations, the production regime, the welfare state or the general level of privatization. Apart from national motivation induced by top-down governance of EU regulations in the domestic business sector and independent from national emission levels or economic factors, these institutional and organizational resources are supposed to strongly influence national regulations on climate change (Haddad 2005; Winkler et al. 2007).

Following this argument, more general, but theoretically elaborated approaches to analyze the development of domestic mitigation policies for climate change (CC) are applied (Esping-Andersen 1998b; Gough, Meadowcroft, Dryzek, Gerhards, Lengfeld, Markandya, and Ortiz 2008; Knill, Debus, and Heichel 2009; Poloni-Staudinger 2008; Vogel 2003). Furthermore, European Member States differ not only in their political agreement towards GHG reduction and number of national regulations as it is institutionalized in the EU ESD, but also in their variety of instruments ranging from ecological standards of production or incentive-based instruments to voluntary agreements and education (Fiddaman 2007; Stephenson and Boston 2010; Strachan, Foxon, and Fujino 2008). Therefore, qualitative differences in national strategies of GHG mitigation within the EU 25 Member States are considered and explicitly investigated in this research paper. In the first section, I outline how political power resources influence party interests in climate policies. The veto-player approach and patterns of democracy as institutional capacities are applied to the specific topic of climate policies in Section 2. It is demonstrated that increasing the number of access points for environmental interests in a country also increases the political support for climate instruments. Section 3 extends the investigation from the general effort to the diversity of climate policies within EU Member States. It is argued that countries follow national specific pathways when implementing certain climate policy instruments. The following section then describes the analytical background of the performed analyses. Results for the general effort are presented in Section 5. For the qualitative diversity of climate policy strategies, the results are shown in Section 6. Finally, Section 8 concludes with a discussion and general remarks.

## **1 Climate policy and capacity by political representation: the power resource approach**

*Policy* refers to the substantive dimension of political action. The formulation of policies can be done by institutional and/or non-institutional actors. Since climate policies are mainly implemented through the political sphere, I use the term *policies* in a rather narrow sense referring only to public state actions by actors like national governments and public institutions. *Climate policy* then refers to a policy whose 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 effort and the character of climate policies between countries (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 standards and agreements (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 heavily depend on existing institutions and social structure of each country (Eckersley 2006; Jahn 1998).

In order to explain these differences in the national effort in climate policies, I follow a theoretical argument which serves to describe the expansion of general interests in public policies as a result of political conflicts between social classes and the distribution of political power: the power-resource approach (Esping-Andersen 1993a; Esping-Andersen 1993b; Gough 1979; Korpi 1989; Korpi 1983; Korpi 1985). This approach is very prominent in welfare state research but will be used as an analogy in order to illustrate the expansion of a public interest for climate policies. In the context of social policy expansion, political parties and trade unions have been the central power-resource for the working class in order to implement policies which serve the workers' interests. Hence, strong left parties represent an opportunity structure for labor interests which allows strong redistributive welfare policies. Applying this approach to the context of climate change, it is the (new) middle class which mainly has an interest in climate policies (Gelissen 2007; Markham 2008). I assume that this interest in environmental issues is most successfully addressed in countries with parties that put the topic of CC on the political agenda. The higher the emphasis on environmental issues on the parties' agenda is, and the more successful these parties in national elections are, the higher is the chance of climate policies to be implemented. The strongest influence of parties as power-resource is expected to come from a green party in government.

Following the argument of the power-resource approach, political parties may also serve to explain the postulated correlative relationship between the (social democratic) welfare state and the amount of implemented climate policies as it is outlined by Recchia (2002) and Dryzek (2008). Political parties are the relevant actors for both the historical expansion and maintenance of the welfare state, and the implementation of climate policies. The correlative relationship between welfare state and climate policies may be spurious in the sense that it is generated by the same power-resource, so to say, the same political party or party family. Recent studies, for example, show that welfare state services are cut significantly less in countries with strong left parties (Korpi 2003; Korpi and Palme 2003). Consequently, left or green parties may serve as a power-resource for both the implementation of climate policy and the maintenance of existing social security arrangements if they equally address environmental issues and social aspects.

In relation to climate policies, the ideological orientation of the parties that support environmental issues does not per se play an important role as long as there is enough general electoral support and a strong emphasis on the environmental issue by these parties. Let us briefly assume that all parties in parliament emphasize environmental issues equally and gain the same electoral support. Differences between party families then would account only for differences in the type of climate policy strategy that would be implemented. Nuclear power production, for instance, could be framed as a *climate friendly* energy source by economically liberal parties, whereas green parties would strongly reject this interpretation. However, the weighting of pro-environmental issues embraced in the parties' agenda is expected to be very different according to the ideological orientation or party family. Economically liberal parties, for example, have been very critical towards CC for a long time. Furthermore, the electoral outcome of these parties varies dramatically. Green parties, on the one hand, strongly stress environmental protection, but suffer from low levels of electoral support. On the other hand, the social-democrats obtain a higher proportion of parliamentary seats but the topic of CC is not of first priority. Both factors, the emphasis of environmental issues as a general topic and the electoral support, matter in relation to the political implementation of climate policies. I expect higher levels of climate policies to be implemented in countries where the importance of environmental protection of the parties in the cabinet is high (Knill, Debus, and Heichel 2009).

The underlying mechanisms which explain why a political party stresses issues of environmental protection can be very different. It is argued, for instance, that left parties support climate mitigating policies because new social movements and environmental

movements are rooted within the left political wing and traditionally support left parties (Jahn 1998; Klitschelt 1993; Markham 2008; McCormick 1998; Neumayer 2004; 2003). A related argument concerns strategic coalitions with environmental movements or economic associations on the one side and political parties on the other side. Environmental movements usually build coalitions with green parties (Müller-Rommel and Poguntke 2002; Richardson and Roots 1995). Green parties have the advantage of a strong environmental focus, but often lack political power. Therefore, environmental movements also seek relations with left parties, such as the social democrats, which often have more political power, but a lower interest in environmental issues, particularly when traditional working-class-related interests are also at stake (Kriesi, Koopmans, Duyvendak, and Giugni 1992). Economically liberal parties, on the other hand, mainly represent business interests and support climate policies especially when this serves to increase the national economy's status in international competition due to new energy-efficient technologies. Additionally, left parties also prefer institutional solutions to social problems. Therefore, we can expect that left-wing governments act earlier and prefer more institutional solutions, such as the creation of a ministry of environment, compared to governments consisting of other party constellations (Evans 1999; Jahn 1998; King and Borchardt 1994; Neumayer 2004; 2003).

Summing up, climate policies are more likely in countries where parties with a strong interest in the environment are part of the parliament and/or a government coalition. Moreover, the selected policy instruments will differ according to the strength of different parties since their ideology leads to different forms of regulation and interests in different policy sectors. As a result, political power resources are expected to affect both the overall intensity of climate policy efforts and the *quality* of policies in terms of differences in policy instruments.

## 2 Climate policy and institutional capacity of decision making: *Patterns of Democracy and Veto Players*

Power resource approaches are useful because they draw our attention to the importance of political actors and their relative power as national capacities in the decision-making process. But it is also important to note that these actors are embedded in typical institutional structures that enable and restrict distinct political action and, thus, serve as institutional capacities in order to reduce GHG emissions (Immergut 1994; Peters 1999). The political system, for instance, influences the number of parties and, therefore, the relative significance of small and big parties within the decision-making process. In the United Kingdom, for example, the green party fails to enter the parliament and the cabinet because of the majority electoral system. The most relevant and highly discussed aspect of the political system is the number of access points in the process of policy making and its influence on political change or policy output.

Lijphart's (1984; 1999) classification of political systems into *majoritarian* and *consensus* democracies postulates a positive influence of the number of access points within the political system on *policy outcomes*. Even though his approach aims at the quality of political decision-making (*policy outcome*), it is also very useful in order to explain *policy output*. According to Lijphart (1984; 1999), *majoritarian* democracies are characterized by central political structures with one-party-dominance executive and by interest group pluralism. *Consensus democracies* rely on a multi-party-system, bicameralism, federalism, and interest group corporatism. Both systems are assumed to have different effects on policy outputs. Majority-oriented democracies allow fast decision-making processes and are more affected by special interest groups' lobbying. Due to a higher number of veto-points in the consensus-oriented system, political decision-making is more time-consuming, but includes also diffuse group interests like environmental ones. Consequently, it should allow implementing more climate policies.

Lijphart's (1999) concept of *majoritarian* and *consensus* democracies was mainly applied to political outcomes. He identified consensus democracies, for example, to perform better on Palmers' (1997) index for environmental performance and energy efficiency. A similar but more output-related perspective is Tsebelis' (2002) *veto player* approach, which explains political change as a consequence of the presence of veto players as access-points of external interests to the political system. According to Tsebelis (2002), veto players can be collective (composed by individuals but possess veto power only as collective), institutional (related to, for example, parliamentary chambers) and partisan. He further argues that the actual influence

of veto players on the political process depends on three factors: the number of potential veto players, their preference distance in the policy space and their internal coherence. In contrast to Lijphart (1999), he assumes a negative influence of the number, distance and coherence of veto players on political outputs. The more veto players within the political system and the higher the preference distance and coherence is, the less likely political change becomes. In his model, policy change does not depend on political institutions per se, but on actors and actor-constellations within the system. The inherent absorption rule of Tsebelis' construct takes, for example, differences in party ideology and party constellations into account. Therefore, second chambers in a bicameral political system are counted as a separate veto power only if they differ in their ideological majority. On partisan level, parties in coalition governments are only seen as separate veto players if they are positioned on the extreme poles of the ideological spectrum or of specific preference extremes.

Following Tsebelis (1995; 1999; 2004; 2002) means to assume a negative effect of the number of access points (veto players) in the political decision making process. Since Lijphart's (1984; 1999) classification of consensus democracies is characterized by a high number of access points, these countries should implement less climate policies than their majoritarian counterparts. The openness of the political system towards lobby groups of special interests, however, does not per se mean a negative impact on the implementation of climate policies, but it depends on the character of the interest. Tsebelis understands veto players as a constraint towards processes of political change because oppositional interest may have more opportunities in order to gain influence on the process of policy making. However, high number of access points can also be understood as a chance to counter-balance foremost dominant lobbying groups and to enable new interests to influence the process of policy making. Multi-level governance and corporatist structures, for example, allow a consensus-based informational policy and also include public and non-governmental actors in the political decision making processes (Crepaz 1995; Lundqvist 2001; Scruggs 2001; Scruggs 1999; Wälti 2004). On the one hand, climate policies, broad forward by green parties in parliament, are more likely to be rejected by economic interests groups, if they benefit from higher numbers of access points. On the other hand, these access points, may also serve environmental actors to influence decisions about economically beneficial but environmentally disastrous policies. So, the number of access points is positively related to climate policies if there is a strong environmental lobby which makes use of them. Environmental movements, therefore, are capable to counter-balance the strong influence of economic interest on political decision making processes towards CC in democracies characterized by higher numbers of



access points to the political sphere (Eckersley 2006; Goldstone 2003; Kitschelt 1986; Kriesi, Koopmans, Duyvendak, and Giugni 1992; Kriesi 1991; Raustiala and David 1998; Tarrow 1983; Tarrow 1989; Tarrow 1991).

### 3 Varieties of climate policies and styles of regulation

Until now the paper has focused on factors influencing the national effort in mitigating climate change. Political representation of special interests on climate policies through powerful left or green parties or the number of access points into the political system and political debate are hypothesized to influence the political willingness of implementing adequate climate policies (Winkler et al. 2007). I argue that beyond the quantitative number of climate policies, it is important to consider national differences in the qualitative choice of specific policy instruments. Countries with equally high efforts in GHG mitigation may choose very different pathways of climate mitigation. These pathways derive from differences in historical trajectories and priorities for specific policy forms, for example, for market-based instruments and against administrative regulation. As Burch & Robinson (2007) state, [...] *response capacity is much more easily mobilized for forms of adaptive or mitigative responses that reflect such priorities (e.g. market-based instruments) than for forms of response characterized by more traditional command-and-control policies (p. 331)*. Consequently, I expect variation in climate policies between EU Member States not only in quantitative terms concerning the overall number of climate policies implemented in the country, but also in the qualitative character of these policies by following specific institutional pathways of regulation.

I apply more general, but theoretically elaborated approaches to analyze the variation in the development of specific domestic mitigation policies for CC. One of these approaches is the historical institutionalism theory. In general, historical institutionalism assumes that political choices on institutions that are constituted in one point in time predetermine future political obligations and decisions. This early political agreement for one specific idea becomes embodied into a structural form. It, thus, provokes future consequences by self-supporting (social) feedback mechanisms since new interests derive from the institution and changes are hard to make due to high switching costs (Hedström and Swedberg 1996; Peters 1999; Pierson 2000). Consequently, institutional costs are higher the more institutional change deviates from the existing institutional pathway. In order to avoid higher costs of institutional change, new policies rarely result in different but the traditional policy pathway as it is demonstrated, for example, by Duit (2007) for the special case of Swedish emission control. Following this line of argument, traditional but stable political institutions should also affect new policy fields with respect to general public interests and political preferences for specific policy instruments. Thus, apart from policy diffusion through international regulations across countries (Albrecht and Arts 2005; Holzinger, Knill, and Sommerer 2010), I expect policy transfer of country

specific policy instruments from one domain like, for example, social policy to the more recent policy field of climate change.

On the one hand, this transfer derives from common interests for specific policy instruments, which are equal in both the origin and the new policy domain. As it was discussed in Chapter 1, political institutions derive mainly from power constellations and general interests. Thus, cross-national differences, for example, in welfare institutions can be interpreted as a consequence of traditional social cleavages and power constellations of certain socio-economic groups within the European Member States (e.g. van Kersbergen and Manow 2009). I argue that the welfare state also creates a special interest in climate policies among these socio-economic groups in two ways. First, social security arrangements restructure social and economic conditions by reducing poverty (e.g. through income maintenance in situations of risk) and income equality (e.g. through income redistribution through taxation) (Esping-Andersen 1998a; 2002). The welfare state further provides access to extended health, child-care and elderly services and, therefore, creates new social status positions through increased employment in the (public/private) service sector. Despite this universal trends, Esping-Andersen (1990; 1998a) showed that depending on the institutional setup of the welfare state, countries show differences in poverty and equality outcomes which are low for social-democratic and high for liberal welfare regimes. Following this line of argument, national arrangements of the welfare state influence a person's general value orientation and objective preference structure according to their emphasis on redistribution, status maintenance and the extension of the service sector. Since policies are rarely made in absence of electoral support, because policy-makers have an electoral incentive to follow public opinion in their decision-making, these interests play a major role for the implementation of national climate policies (Burstein 1998; Marquart-Pyatt 2007; Tanguay, Lanoie, and Moreau 2004). It is most likely that these special interests represented and maintained by the institutional setting of social policy also influence the character of climate policies in order to serve interest groups' benefit.

On the other hand, welfare regimes are characterized by differences in their styles of regulation. The Social Democratic regime, for example, relies on a more universalistic character which provides equal benefits for all income groups and is mainly tax financed. Consequently, I expect these countries also to favor climate policy instruments which are under the responsibility of public authorities. In contrast, countries of the Conservative regime outsource contribution-based social policy instruments to social insurance systems and are also expected to prefer climate policies which are managed by external entities. Another

relevant dimension is how much public policy is in favor of market regulation, as it is the case in a Liberal regime, or whether social policy follows a *politics against markets* approach (Ebbinghaus and Manow 2001). This dimension is conceptualized as (de-) commodification by Esping-Andersen (1990). Labor market regulations, for example, are either more passively, oriented toward means-testing social security, or more actively, involved in labor market by employment stimulation policies and labor protection. Accordingly, climate policies might be implemented either more actively taking labor market stimulation or social impacts into account, or they follow a more passive logic of markets.

Both the degree of political involvement (external vs. internal solutions) and a country's preferences for or against market-based instruments highly influence a country's political abilities and power to implement specific climate policies in all relevant sectors. Vogel (2003), for example, argues that the institutionally powerful British government is sharply limited by its informal approach to enforcement and minimal use of prosecution against environmentally negative businesses. In contrast, the French government *does have a variety of instruments at its disposal by which it can both shape the direction of industrial activity and minimize access to the political process by various nonindustrial constituencies, particularly organized labor and middle-class pressure groups* (Vogel 2003: 287). Thus, focusing on institutional variation only is misleading since informal access and enforcement practice might be of major importance underneath official government-business regulations. Comparative analysis, for example, concerning water pollution of the Rhine in Europe and the Great Lakes of America indicate higher levels of intervention by mainly business interests but also higher ecological standards in the US than in Germany (Verweij 2000). Surprisingly, these standards do not result in better water quality but in greater conflicts between local administration and polluting business companies. In contrast, European states are characterized by higher levels of trust in the local authorities and a more consensual oriented organization of the economy. Business companies in these countries meet eco-standards even more than it is demanded by official regulation.

These findings suggest a more holistic approach which includes national variation in the production regime and level of privatization. Following the *varieties of capitalism* approach (Hall and Soskice 2001), variation across countries in production regimes at the end of the 1980s and in the first half of the 1990s fall into one of two main patterns. Countries like Germany or Sweden are characterized by business-coordinated market economies with considerable nonmarket coordination directly or indirectly between companies, incorporated labor interests and a framework policy of the state. In contrast, state regulation and nonmarket

coordination between companies is weak in liberal market economies such as the UK and Ireland. Since climate policies mainly affect business companies, these differences in the business-public administration relationship is crucial for explaining variations in the character of national instruments of emission reduction. One link between climate policies and business patterns is political influence. As Callaghan (2009) states, varieties of capitalism and, more specifically, ownership structures, affect political preferences of both upscale socioeconomic groups and working-class clientele. Thus, these business patterns lay the ground for political support of left parties in coordinated and right parties in uncoordinated democracies (Amable 2003). Furthermore, support for shareholder capitalism is greater in the uncoordinated regime than in the coordinated one (Callaghan 2009). State influence on business regulation is rather weak and limited to only framework policies in the former regime whereas public administration allows all levels of intervention concerning service provision, regulation and financing in the latter regime (Obinger and Zohlnhöfer 2005). Thus, governments in uncoordinated regimes with higher levels of privatization simply lack political influence and power to implement regulatory instruments which are against certain business interests. The level of privatization, in this respect, is argued to influence the states' capacity of investigating GHG mitigation. Recent research indicate higher levels of privatization resulting from political interest representation (right wing parties), access points of the political system (majoritarian), political preferences for market-based policy instruments as well as the starting level of public owned enterprises (low) (Obinger and Zohlnhöfer 2005). Consequently, the level of privatization, I argue, is the necessary consequence of all other factors mentioned in this research paper.

Summing up, I argue that differences in the character of climate policy strategies result from institutional pathways of welfare state development, varieties of capitalism in business regulations or, more directly, through levels of privatization. These factors either shape political electoral support through general interests for specific policies among the general public (e.g. of the middle class), directly but informally lobby business interests for market-based solution of climate mitigation (e.g. in the uncoordinated market regime) or just indicate a lack of power in state regulations through intense privatization.

#### 4 Data, methods, variables

The analysis of this paper is based on country-specific data for EU 25 Member States (excluding Malta and Cyprus due to lack of data availability) from 1990-2007. In order to categorize climate policies as the dependent variable, I use data from the International Energy Agency for 1991-2007 which provides databases for all national programs to CC, energy efficiency and renewable energy. The first step of the analyses applies a measure of the cumulative number of climate policies per year implemented in each country which allows investigating the national effort of mitigating GHG emissions. Since policies follow political decision making with a delay, I include a one year gap between political institutions/ indicators of cabinet orientation and climate policies. Climate policies are further categorized according to the International Energy Agency categories (see Table 1 for a detailed description). The basis for the cluster analysis represents the number of policies for each category implemented by the EU Member States until 2005 and 2008 respectively.

As independent variables, political macro indicators and indicators on party orientation are derived from the Comparative Manifesto Project (Klingemann, Hofferbert, and Budge 2006) including political left-right calculations of Franzmann and Kaiser (2006) and own calculations for environmental issues. Unfortunately, the dataset only provides one indicator for measuring the environmental orientation of political parties. Political orientations of the cabinet are proportionally weighted by the party's cabinet strength and are summed across all cabinet parties. Political institutions are based on the Comparative Political Dataset III (Armingeon, Careja, Potolidis, Gerber, and Leimgruber 2008). The dataset provides seven out of ten indicators of Lijphart's *executive disproportionality* and *veto player* index. 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' dimension of *executive disproportionality* (1984; 1999). The *veto player* index is constructed as the sum of federalism, judicative control and the form of legislative which were scaled between zero and one. This operationalization is leaned on Tsebelis' (1995; 1999; 2004; 2002) approach. However, this measure only considers the number of potential institutional veto-players but does not reflect on their preference distance in the policy space or their internal coherence. In this early stage of this draft, it serves as a first orientation but will be operationalized more carefully in later versions. The analyses further include the Gross Domestic Product (GDP) in purchasing power parities (US dollar based) as a control for the economic development, as well as national

per capita GHG emission levels collected from Eurostat. Table 1 shows a detailed description of the variables included in the analysis.

\*\*\*Table 1 about here\*\*\*

Due to the longitudinal structure of the data, pooled cross-sectional time-series regression models are applied in order to investigate the influence of institutional capacities and political preferences of the national cabinet on the number of climate policies in the first step. Since climate policies are count for each year and country, a Poisson distribution should be assumed. The analysis is therefore based on Poisson models including year-dummies. In order to control for robustness of the results, they are compared to an ordinary least squares estimation with panel-corrected standard errors (Kmenta 1997).

In a second step, the character of national climate policy strategies is investigated by cluster analysis for 2005 and 2008 applying Euclidian Distance *Wards linkage* procedure. Since national developments are quite different, a comparison of the most recent date and the year 2005, when the EU Climate and Energy Package was negotiated, seems most adequate. The cluster solution will be discussed in the following section and is shown in Appendix 1 and Appendix 2. The countries that have not implemented climate policies so far were excluded from the cluster analysis. The results constitute the dependent variable which clusters countries into climate policy regimes and will be applied in further analysis concerning the influence of national levels of privatization, welfare state institutions, national styles of regulation and varieties of capitalism. Unfortunately, this final step is not included in this recent draft version but will be investigated in an updated version.

## 5 Results – Explaining national climate change mitigation efforts

The following analysis investigate whether climate policies are caused by political interests in environmental protection, left orientation of the cabinet parties, and institutional capacities allowing general environmental interest to enter the political arena through a higher number of access points. Table 2 shows the results of the pooled cross-sectional time-series analysis using two different approaches (Poisson vs. panel-corrected standard errors OLS). Basically, both methods indicate identical results indicating the robustness of the estimated effects.

\*\*\*Table 2 about here\*\*\*

The basic aim of this research paper is to identify national capacities beyond economical strength measured in GDP as it is applied within the EU ESD. The analyses control for economic factors using GDP per capita in purchasing power parities and the national GHG emission level per capita. The results support the idea that wealthier countries show more effort in emission reduction as indicated by the positive and statistically significant effect of GDP on the number of climate policies within the countries ( $p < 0.01$ ). In contrast, countries with higher overall emission levels are characterized by lower numbers of climate policies ( $p < 0.10$ ).

Controlling for these factors allows estimating conditional effects of cabinet parties' interests and institutional factors which are interpreted as economically independent national capacities. The analyses reveal no significant effect for the cabinets' interest in environmental protection on the number of climate policy instruments implemented in the country. Two reasons may explain this finding. First, since the interest in environmental protection of the cabinet parties is measured by only one indicator, it is very difficult to capture the multidimensional spectrum of the overall concept of environmental politics as it may be addressed within the party manifestos. Thus, liberal parties would argue for environmental issues as well as green parties, even though they follow very different policy strategies and may understand environmental protection in oppositional terms. Unfortunately, there is no other data available which allows testing for these differences within a comparative approach as it is applied in this research paper. Second, looking at the development of this issue in the party manifestos over time, even green parties reduce their emphasis on environmental issues in order to broaden their perspective for other political topics and address a greater variety of voters. Since the overall number of climate policies which are implemented in one year increases over time, the most positive effect of environmentally concerned cabinets in the early 1990s is weighted down by the decreasing overall importance of the topic *environment* in



competition to other issues like, for example, social (financial) security and unemployment. Thus, political parties might be of greater awareness of the more specific issue of climate change but not of the more general issue of environmental protection which cannot be distinguished by the data of the Comparative Party Manifesto Project. It is also important to consider the role of the environmental issue as a valence or position issue (Franzmann 2010, forthcoming). Thus, environmental protection may emerge as a topic for niche-parties like, for example, the Greens or Socialists, in order to focus on special voter groups in one country, but may be a topic of general concern which is equally addressed by established political parties in another state. Consequently, the overall effect of the environmental issue as expressed with the party manifestos is rather weak.

As it was discussed in Section 1, left parties seem to provide power resources for general public interests in climate policies. Countries with cabinets which are characterized by a politically left orientation also implement more climate policies over time than countries with cabinets with more politically right-wing cabinets. This effect is only significant for the analysis with panel-corrected standard errors ( $p < 0.05$ ). However, it reveals a more robust influence of economically left cabinets on the number of climate policies since the separated analysis of economical and non-economical issues confirm a positive and significant influence of economically left cabinets ( $p < 0.01$ ) but not for non-economically ones. Thus, it is the importance of issues with an emphasis on economics and how they are addressed by the national cabinets which makes the difference in the number of implemented climate policies.

Independently from the cabinets' preferences for left or right policies, political institutions and access points to the political systems in form of veto players show the expected positive effects. Looking at the *executive disproportionality* index, consensus oriented democracies provide significantly more climate policy instruments than majoritarian states ( $p < 0.10$ ). This result confirms the assumption that higher numbers of access points into the political system enables general interests in climate policies and environmental issues to counter-balance existing and powerful business lobbies. In contrast, the veto-player index of Lijphart (1999) does not reveal a significant effect ( $p > 0.10$ ). One reason for that result is that the significant positive influence of the *veto-player* index of Tsebelis is highly correlated with the *executive disproportionality* index. Hence, Tsebelis' idea of veto players is only weakly measured since the *veto-player* index only identifies the number of potential veto players, but not their preference distance in the policy space or their internal coherence.

## 6 Results – Varieties in the character of climate policies

The second step of the analysis is going beyond the effort of EU Member States to mitigate climate change measured in numbers of climate policy instrument. It provides an understanding of differences in the character of national policy strategies across the country sample. This preliminary draft version only takes the first step of this analysis. Country clusters characterizing specific patterns of climate policy strategies among EU Member States are investigated via cluster analysis. A second step uses these clusters and applies multinomial regression analysis in order to test for effects of the welfare state, national styles of regulation, varieties in the production regime and levels of privatization. However, this analysis is not included in this draft but will follow in an updated version.

Concerning the results of the cluster analysis, it is important to note that some climate policy instruments are more often applied than others across all countries. Political processes, one specific policy category, are most often implemented followed by incentives and subsidies, whereas public investment and tradable permits are least likely found. Further investigation, therefore, focuses on differences of the countries compared *within* each policy instrument. Table 3 shows the separate cluster solutions for 2005 and 2008 respectively. The table indicates the focus on specific climate policy instruments for each country in relation to other states (see also Appendix 1 and Appendix 2). A country cluster has a *strong* focus on a specific climate policy category if the cluster implements about two times more climate policies of this category than the cluster with a *medium* emphasis and three times more climate policies than the cluster with a *weak* emphasis on this policy instrument. Applying both recommended stopping rules of Calinski/Harabasz pseudo-F index and Duda/Hart  $Je(2)/Je(1)$  index, the analysis reveals five country-clusters for 2005 and six country-groups for 2008. The increasing number of clusters from 2005 to 2008 is quite intuitive given the fact that EU Member States have to follow binding regulations by the EU ESD and, therefore, increasingly implement climate policies. Since a single policy instrument, like, for example, public regulation, is limited in its mitigation effect and scope, I expect higher variation in policy measures within a country to follow higher numbers in overall climate policies.

Apart from changes in the country selection within the clusters, two basic effects are suggested by the results. One dimension demonstrates differences in overall levels of climate mitigation policies. Thus, the first cluster includes countries which are characterized by very high levels of climate policies of almost all categories for both years (UK, SE in 2005; UK in 2008). In contrast, the last country cluster reveals a group of states that implement only minor

climate measures, independent from the character of the specific instrument. This groups is rather large in 2005 (ES, GR, HU, PL, PT, SK, SL) but splits into more diversified two clusters in 2008 (GR, HU, LU, PL, SL and CZ, DK, PT, SK). As stated above, this effect can be interpreted as a *natural* diversification within the process of increasing domestic efforts in order to meet the criteria of the EU Climate and Energy Package and the Kyoto-Protocol. However, some countries develop slower than others (compare for example Spain, which has a rather late but fast development, and Poland, which displays slowly increasing levels of climate policies) or even remain with the same level of climate policies (e.g. Luxembourg). The same effect can be found in the two top-clusters. United Kingdom and Sweden are equally well prepared to mitigate climate change through climate policies in nearly all categories in 2005. Sweden, however, and also Germany or Denmark remains at about the same level in their effort to implement adequate climate policies. In contrast, United Kingdom and, for example, Finland increasingly intensifies their national policy implementation from 2005 to 2008. Even though the development of the United Kingdom and Spain is quite impressive, it is important to note that the chosen time frame is rather small and national political developments highly depend on a long term perspective.

\*\*\*Table 3 about here\*\*\*

The second dimension outlined in Table 3 is differences in the character of chosen mitigation instruments between clusters. One finding reveals the minor importance of public investments in the United Kingdom which clearly supports the liberal understanding of the role of the state to be limited to framework policy. In contrast, the second cluster in 2008 characterizes a group of countries which follow an understanding of a *strong* state with high levels of public investments, incentive strategies, regulatory instruments and voluntary agreements, but only weak market-based instruments like financial and tradable permits. A very interesting case is Germany which belonged to this cluster and was also characterized by very high levels of public investments in 2005, but dramatically reduced its effort in this category until 2008. One explanation for this change might be the political shift in governmental power from the Social Democrats/Green coalition to a cabinet of Social Democrats and the Christian Democrats in 2005. The new cluster of Germany, Austria and Ireland in 2008 can be interpreted as a *strong but parsimonious* state since these countries concentrate on incentives and subsidy-based approaches, political processes and public regulation in major. The opposite case is demonstrated by a rather new cluster of the Netherlands and Sweden. Since Sweden was not able to follow up the dramatic development of the United Kingdom, it rather concentrated on specific policy instruments. Both countries

reveal high levels of financial policy measures, but also rely heavily on voluntary agreements. Given the fact that these countries belong to the Social Democratic welfare regime which basically finances social benefits through tax redistribution (Esping-Andersen 1990), financial instruments in the field of social policy may serve as standard of good practice in order to reach both social goals of GHG emission reduction and provision of public welfare. Additionally, since the tax system is very much developed, these countries have strong means and personnel capacities in knowledge and experience in order to effectively influence national GHG mitigation levels through regulations on taxes. Furthermore, the Netherlands and Sweden are prototypes of the business-coordinated market economies with considerable nonmarket coordination. They are characterized by strong cooperation (directly or indirectly) between companies, incorporated labor interests and the framework policy of the state. Consequently, these countries further benefit from existing relationships between business groups, trade unions and the government which allows voluntary agreements to become much more effective and relevant.

## Conclusion

This paper provides a first attempt to specify theoretically and measure empirically the influence of national institutional and partisan capacity on the number of climate policies. Following power-resource theory, general interests in environmental protection are most successfully implemented into climate policies if they are represented by political parties. The more the political parties' emphasis of environmental issues in their party manifesto is and the stronger their electoral support is, the higher is the likelihood that climate policies are implemented. However, this interest representation is expected to be mediated by the number and character of access points to the political system (Eckersley 2005; Lijphart 1984; 1999; Tsebelis 1995; 1999; 2004; 2002). It is demonstrated, that economically left cabinets indeed influence the number of climate policies more than economically right cabinets. Unfortunately, no effect is found for the environmental orientation of the cabinet. Thus, cabinets that emphasize environmental protection do not implement more climate policies than cabinets in which environmental issues are less represented in party manifestos. Given the fact that data on the environmental dimension is scarce and the topic of environmental protection might constitute a valence issue in one country but a position issue in another state, the postulated influence of political environmental orientation remains uncovered and asks for further investigation. The results of the time-series analyses also provide support for the hypothesis that a higher number of access points to the political systems allow for general interest representation of environmental protection. Higher number of access points increases the opportunity to counterbalance prominent business lobby groups. Yet, the measurement for the veto player index proposed by Tsebelis (1995; 1999; 2004; 2002) has no significant effect on country's climate policy effort. This could be due to the restricted measurement of veto players which does not take differences in preferences into account.

This paper further gives detailed insights into the character of climate measures across time as they are differently implemented across EU 25 Member States. It is demonstrated that countries indeed differ in their national strategies and preferences for climate policy instruments. Comparing country-groups of 2005 with 2008, differences in the development of but also in the preferences for very specific combinations of climate policies suggest the existence and importance of national specific capacity resources, given the fact that these preferences are similar to other institutional structures and pathways within the countries. These preliminary but promising results demand more detailed investigation looking at the overall development from 1990 to 2008. Next steps of this research paper will provide a more holistic mapping of very specific strategies of national climate mitigation efforts and will test

explanations as they are discussed in Section 3. Thus, the welfare regime, national styles of regulation, varieties of capitalism and levels of privatization will be further discussed and their effects on the national choice for specific climate policy instruments will be tested empirically.

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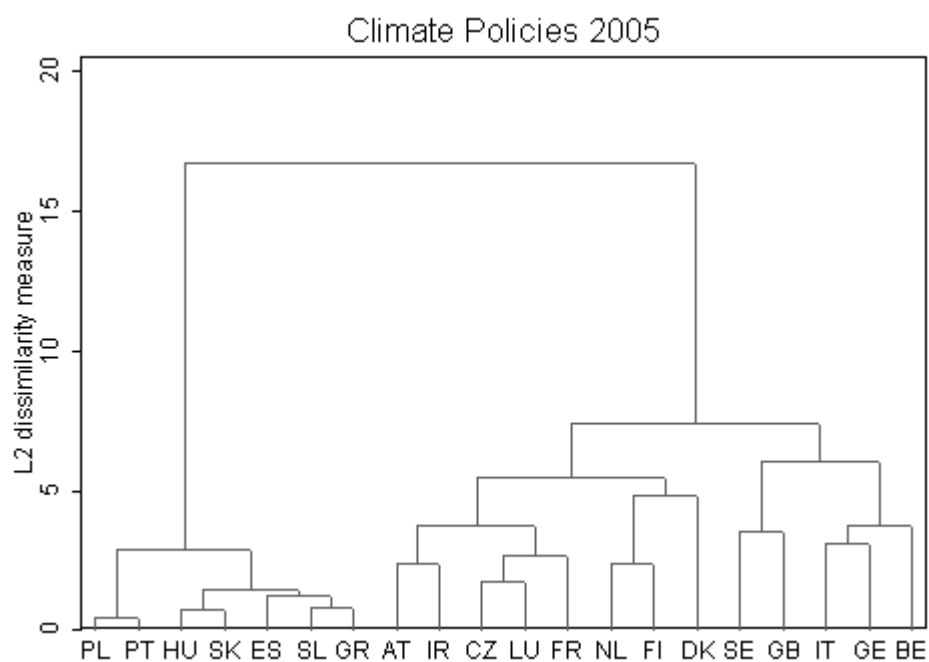


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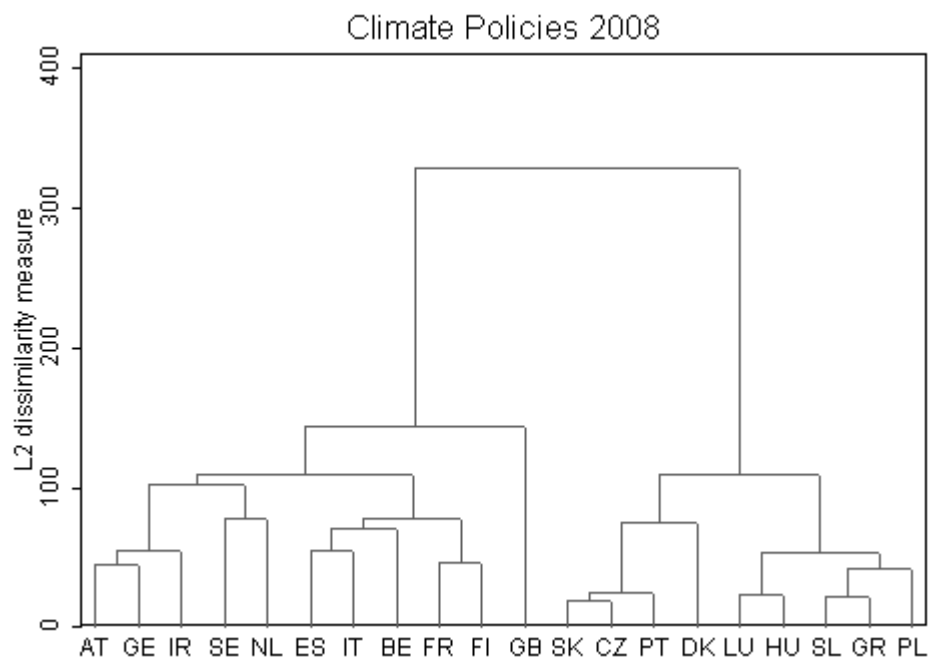
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**Appendix 1: Cluster solution climate policies 2005**



**Appendix 2: Cluster solution climate policies 2008**



**Table 1: Description of national indicators**

Variables/Indicators	Description	Source
<i>Dependent variable</i>		
Climate policy instruments	Number of climate policies; categories: education and outreach, financial, incentives and subsidies, political processes, public investment, research and development, public regulation, tradable permits	International Energy Agency Databases on renewables, climate change and energy efficiency, 1991-2008
<i>Independent variables - cabinet orientation</i>		
Left-right orientation	Left-right calculation by Franzmann and Kaiser (2006) for each cabinet party, summed and weighted by cabinet proportion	Comparative Manifesto Project Data 1990-2006
Economic left-right dimension	Left-right calculation by Franzmann and Kaiser (2006) for each cabinet party, summed and weighted by cabinet proportion Left-right calculation by	Comparative Manifesto Project Data 1990-2006
Non-economic left-right dimension	Left-right calculation by Franzmann and Kaiser (2006) for each cabinet party, summed and weighted by cabinet proportion party	Comparative Manifesto Project Data 1990-2006
Environmental cabinet orientation	Environmental Protection, summed across cabinet parties and weighted by cabinet proportion of party	Comparative Manifesto Project Data 1990-2006, own calculation
<i>Independent variables - institutional characteristics</i>		
Executive disproportionality	Additive index of effective number of parties in parliament, legislative-executive relationship (dominant vs. balanced), the elective system (majority vs. proportional) and the executive form (one-party vs. multi-party coalition cabinet all scaled (0-1); positive = consensus democratic	Comparative Political Dataset III
Veto player (Lijphart)	Additive index of judicial review, bicameralism and federalism, all scaled (0-1); positive = consensus democratic	Comparative Political Dataset III
Veto player (Tsebelis)	Additive index of federalism, bicameralism, judicial review, effective number of parties in parliament, the executive form, legislative-executive relationship, required referendum, popular referendum, popular veto and popular initiative, scaled (0-1); positive = higher number of veto points	Comparative Political Dataset III
<i>Independent variables -controls</i>		
GHG emissions	Per capita in t	Eurostat 2010
Gross domestic product	Per capita purchasing power parities	Eurostat 2010

**Table 2: Cross-Sectional Time Series estimations of the number of climate policies in EU-25 Member States from 1991-2007**

	Poisson estimation including year-dummies					Estimation of panel-corrected standard errors				
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
GDP (in 1000 Eur)	0.05 <sup>***</sup> (0.00)	0.06 <sup>***</sup> (0.00)	0.05 <sup>***</sup> (0.00)	0.06 <sup>***</sup> (0.00)	0.06 <sup>***</sup> (0.00)	0.04 <sup>***</sup> (0.00)	0.04 <sup>***</sup> (0.00)	0.04 <sup>***</sup> (0.00)	0.04 <sup>***</sup> (0.00)	0.04 <sup>***</sup> (0.00)
GHG emissions per capita	-0.07 <sup>*</sup> (0.04)	-0.07 <sup>**</sup> (0.04)	-0.06 <sup>*</sup> (0.03)	-0.08 <sup>**</sup> (0.03)	-0.07 <sup>**</sup> (0.04)	-0.04 <sup>***</sup> (0.01)	-0.05 <sup>***</sup> (0.01)	-0.04 <sup>***</sup> (0.01)	-0.05 <sup>***</sup> (0.02)	-0.04 <sup>***</sup> (0.01)
Environmental cabinet		0.05 (0.04)	0.04 (0.04)	0.04 (0.03)	0.05 (0.03)		-0.00 (0.02)	-0.01 (0.02)	-0.01 (0.02)	-0.00 (0.02)
Left cabinet		0.15 (0.12)					0.09 <sup>**</sup> (0.04)			
Economically left cabinet			0.13 <sup>**</sup> (0.06)	0.17 <sup>***</sup> (0.05)	0.16 <sup>***</sup> (0.06)			0.11 <sup>***</sup> (0.02)	0.12 <sup>***</sup> (0.02)	0.12 <sup>***</sup> (0.02)
Non-economically left cabinet			-0.03 (0.11)	-0.05 (0.09)	-0.04 (0.09)			-0.07 (0.04)	-0.06 (0.04)	-0.06 (0.05)
Executive disproportionality				0.09 <sup>*</sup> (0.05)					0.06 <sup>***</sup> (0.02)	
Veto-player index (Lijphart)				0.05 (0.06)					-0.02 (0.05)	
Veto-player index (Tsebelius)					0.10 <sup>**</sup> (0.04)					0.05 <sup>**</sup> (0.02)
<i>N</i>	349	349	349	349	349	349	349	349	349	349

Source: International Energy Agency 2010, Comparative Manifesto Project 1990-2003, Comparative Political Dataset III

Note: Standard errors in parentheses, <sup>\*</sup>  $p < 0.10$ , <sup>\*\*</sup>  $p < 0.05$ , <sup>\*\*\*</sup>  $p < 0.01$ , number of Countries: 25, number of years:17

**Table 3: Cluster Solution of climate policy instrument across EU-20 Member States**

2005	Education and outreach	Financial	Incentives and subsidies	Political processes	Public investment	Research and Development	Regulative	Tradable permits	Voluntary agreements
UK, SE	Strong	strong	strong	strong	Medium	strong	strong	strong	medium
BE, DE, IT	Strong	weak	strong	strong	Strong	medium	strong	weak	medium
DK, FI, NL	Strong	medium	weak	strong	Weak	weak	medium	weak	strong
AT, CZ, FR, IR, LU	Medium	Weak	medium	medium	Weak	medium	weak	weak	weak
ES, GR, HU, PL, PT, SK, SL	Weak	Weak	weak	weak	Weak	weak	weak	weak	weak
<b>2008</b>									
UK	Strong	strong	strong	strong	Medium	strong	strong	strong	strong
ES, BE, FI, FR, IT	Medium	weak	strong	medium	Strong	weak	strong	weak	strong
NL, SE	Medium	strong	medium	medium	Weak	weak	weak	weak	strong
AT, DE, IR	Medium	weak	strong	strong	Weak	medium	medium	weak	weak
CZ, DK, PT, SK	Weak	weak	weak	weak	Weak	weak	weak	weak	weak
GR, HU, LU, PL, SL	Weak	weak	weak	weak	Weak	weak	weak	weak	weak

Source: International Energy Agency 2010

Note: Malta, Cyprus, Estonia, Latvia, Lithuania, Bulgaria, Romania are excluded from the analysis due to the lack in climate policies

