1 Introduction

Environmental issues have become increasingly relevant in contemporary highly industrialized and globalized societies. Air emissions, water pollution, soil degradation, and radioactive waste have increased in severity, causing major local and global effects such as climate change, health problems, dying forests, and the contamination of food and water. The World Health Organization (WHO)[1] estimates that in 2012 around 68,000 people died because of ambient air pollution in high income countries. Worldwide the death toll reaches 3.7 million. To illustrate, in high income countries 32 per 100,000 people die annually of air pollution–related causes compared to 8.7 of road traffic death (WHO 2013, 4).

Environmental degradation has also become a significant economic issue for modern societies. Despite the difficulties of enumerating environmental damage in monetary terms, some reports offer cost conjectures of considerable magnitude. For instance, an unpublished UN report estimates that one-third of the profits of the world's 3,000 largest companies would be lost if firms were forced to pay for the use, loss, and damage their activities inflict on the environment.[2] Climate changes alone may cost more than $50 billion per annum for developing countries and even more for developed countries (World Bank 2006; Stern 2007; United Nations Development Programme 2007). This cost could increase substantially if climate change continues (Parry et al. 2009; for an overview see Executive Office of the President of the United States 2014 and OECD 2015). Rising sea levels may engulf valuable land in coastal countries. Hurricanes may increase in number and intensity. Highly developed countries are likewise affected by these environmental effects, which can be demonstrated by devastating weather catastrophes

[1] WHO news release from March 25, 2014: www.who.int/mediacentre/news/releases/2014/air-pollution/en/ (accessed April 2014).

[2] *The Guardian*, Friday, February 19, 2010, page 1 of the main section. Online version from February 18, 2010: www.guardian.co.uk/environment/2010/feb/18/worlds-top-firms-environmental-damage (accessed April 2011).

and water shortages in the United States and Europe. However, there are further severe consequences of environmental degradation such as the sneaking process of food contamination and the increasing scarcity of portable freshwater resources. Environmental degradation has an impact on humans' lives and health that is unparalleled in other areas of society.

The pleas for change of the current lifestyle and the established ways of achieving economic growth have intensified in number and urgency and have moved from the periphery of established politics into its center (World Commission on Environment and Development 1987; Global Commission on the Economy and Climate 2014). Highly developed democracies serve as a role model to change environmentally harmful trends since they have transparent, effective, and noncorrupt political institutions and a high economic capacity, which allows room to maneuver and develop new, less environmentally harmful technologies (Duit 2005). This is the reason why this study focuses on just this set of countries.

Although most of the pollution has been caused by industry, the demand to reduce pollution is mainly directed to the state. With this development, the state entered a new field of regulation, which altered its original functions (Dryzek et al. 2003). In broad terms, one can postulate that state intervention first altered the legal system in order to create a firm ground for trade and business. Initiated by the Bismarckian social security system, many states implemented a wide variety of systems with similar intent, starting in the last decades of the nineteenth century. These social security systems grew in magnitude into social welfare programs after World War II. During the 1920s and 1930s, states took over the task of preventing economic crises and promoting economic productivity. In the late 1960s, the states in highly industrialized societies began regulating environmental pollution, following the general trend of expanding the number of tasks falling within the purview of the state.[3]

This book is concerned with the role political factors play in environmental performance in highly industrialized and globalized democracies. Thus, in order to understand cause and effect, I will conduct a macrocomparative analysis.[4] Macrocomparative analysis is an efficient method to deal

[3] Recently this triggered research on the "Green" or "Environmental State" (Christoff 2005; Jahn 2014a; Duit 2016; Duit et al. 2016). There is also an assumption that developed welfare states are more efficient in their environmental policy (Meadowcroft 2005; Kerret and Shvartzvald 2013; Koch and Fritz 2014; Gough 2016).

[4] Macrocomparative studies are concerned with the comparison of large (macro) units of analysis, mainly the comparison of countries. For general introductions to and discussions of specific challenges of macrocomparative research see Bollen (1993), Kenworthy and Hicks (2008), and the special issue of *International Sociology* 21 (5), September 2006.

with many cases and, in the form of pooled time-series analysis, it is even able to take time and processes into account. That means that I am able to manage a vast amount of data and to reach generalizable results about the environmental performance of highly industrialized democracies.

Despite the increasing importance of environmental challenges in highly industrialized societies, the macrocomparative study of environmental performance in political science is still in its infancy.[5] Thus far, there is only one book-length study focusing on the environmental performance of highly industrialized and democratic countries (Scruggs 2003). This study compares the changes of environmental performance from 1975 to 1990 in seventeen OECD (Organization for Economic Cooperation and Development) countries through a cross-section analysis. Most of the macrocomparative studies that focus on environmental performance have an institutionalist perspective that makes it difficult to identify changes in environmental performance (Crepaz 1995; Jahn 1998; Wälti 2004; Poloni-Staudinger 2008). Very few take into account other political aspects such as the strength of green parties (King and Borchardt 1994; Neumayer 2003; Knill et al. 2010; Jensen and Spoon 2011). There is a research gap for studies in environmental politics in general but in particular for macrocomparative studies when it comes to explaining environmental performance by focusing on differences in the political process – a genuine topic of comparative politics (Duit 2014a). It is therefore a major aim of this study to use an analytical model of the political process as a heuristic device to explain differences in environmental performance.

In the following I outline the basic argument of this investigation. In order to conduct a study along the lines of this argument I introduce a theoretical model, develop new concepts, and apply an innovative methodological strategy, which I will briefly summarize in this Introduction before I outline the structure of the book.

1.1 The Argument

In order to tackle the research question, I analyze twenty-one highly industrialized and established democratic OECD countries. The period of analysis starts in the mid-1970s and finishes in 2012.[6] Analytically,

[5] The lack of studies in political science on environmental issues has been discussed recently by Javeline (2014) with respect to climate change.

[6] This period is defined by data availability. Actually, the dependent variable is available from 1980, but many independent variables go back to the mid-1970s. I would have liked to start the period at least one decade earlier because some countries reacted to the environmental challenge already in the 1960s. Countries that belong to the universe of countries but did not have sufficient data are Iceland and Luxembourg.

the major challenge is to use a specific model for analyzing the political impact on environmental performance, on the one hand, and to control for other relevant factors that determine environmental performance, on the other. While the former stands in line with recent claims in political science to use theoretically informed empirical models (Aldrich et al. 2008; Taagepera 2008; Granato et al. 2010; Clarke and Primo 2012), the latter is more explorative as it tests various factors that might be relevant such as structural change, energy mix, and even climate and weather conditions. Including all these factors in the analysis is necessary in order to test whether the analytical model survives when controlling for other relevant variables. However, because a large number of independent variables may lead to models with potentially confounding factors that could corrupt statistical inferences (Achen 2005), I conduct this analysis with a parsimonious model of the most theoretically relevant variables and an enriched model with several control variables. Although control variables are considered of lesser importance and are often superficially operationalized in many studies, I will devote considerable effort in their proper conceptualization and operationalization in order to make a falsifiable test for my favored model.

There are very few studies focusing on general decision-making patterns in macrocomparative analysis (Bräuninger 2005; Prata 2006) and even fewer comparing more than a handful of countries.[7] If they do so, as in the tradition of the veto player approach (Tsebelis 2002; Tsebelis and Chang 2004), they oversimplify the theoretical assumptions.[8] The model used in this analysis is an *agenda setting power model* (ASPM) for macrocomparative analysis. Its starting point is the assumption that political actors mobilize their resources in order to achieve their desired outcomes. However, political actors are not free in their action but constrained by institutional settings and other political actors with different preferences. The institutional setting determines which political actors may set the agenda. Agenda setters have an advantage as they can determine the content and timing of the agenda. The institutional setting also determines the way in which political actors other than the agenda setter can use their resources to block, delay, or change the policy. In accordance with modern institutional analysis, I refer to these actors as *veto players* (Tsebelis 2002).

[7] Cox has written some papers that consider the formal agenda setting in various countries and he is also writing a book with McGubbins, *Setting the Agenda: Parliaments, Procedural Cartels and Policy Making* (see: http://mccubbins.us/settingtheagenda/index.html [accessed October] 2015).

[8] There are other macrocomparative studies that do not use formal modeling, such as the median mandate model by McDonald and Budge (2005).

The use of the term *resource mobilization* in this study deviates from that of the established resource mobilization approach (Korpi 1983; Esping-Andersen 1990; Garrett 1998; Huber and Stephens 2001), which focuses on the strength of parties and interest organizations. Instead of organizational capacity as the indicator of resource mobilization, I focus on the mobilization of preferences. Preferences can be very different from organizational capacity and may relate to attitudes toward certain issues, preferred goals in politics or society, values considered more favorable, or procedures for how society should work (Hinich and Munger 1997). Because this study does not focus on specific issues, but rather analyzes environmental performance in broad terms, it also needs a broad concept of preference. The conventional method of conceptualizing preferences in such a broad way is to use political ideology. The major political ideological cleavage in modern industrial society is the spectrum between Left and Right (Bobbio 1996). Many empirical studies have shown that this ideological dimension explains most societal conflicts and policies in modern democracies (Klingemann et al. 1994; McDonald and Budge 2005). However, in the field of environmental politics, some claim that there is a green ideological dimension that distinguishes among environmental preferences, thus implying a substantial transformation of society, on the one hand, and the established position preferring increasing economic growth, on the other (Goodin 1992; Dobson 1995). I will call this the *green–growth dimension*. The impact of both ideological positions on environmental performance will be analyzed in this study. A detailed account of how to specify and operationalize this concept will be given in Chapter 3.

The ASPM includes both domestic and international aspects. The agenda setters are governments in parliamentary democracies,[9] environmental movements, and the European Union (EU). Depending on how strongly the agenda setter mobilizes its resources, the political outcome will be changed in the direction of the agenda setter's position. The agenda setter is constrained by veto players who mobilize their resources to block, delay, or influence the outcome. As will be argued later, in some cases, these veto players may support or even reinforce the policy of the agenda setter. The ASPM analyzes the interaction among these actors and their combined impact on environmental performance.

Given the complexity of social phenomena, it is hardly surprising that there are factors other than the ASPM that also influence the

[9] In some political systems such as in the United States, Switzerland, and the EU, the political process deviates from the description provided here. These particular aspects will be discussed in detail in Chapter 4.

development of environmental performance. Actually, the ASPM builds on elements of institutional analysis and resource mobilization. That institutions matter in environmental politics is a generally accepted conclusion. This is not only true for the impact of veto players, whose theoretically assumed function is actually confirmed in research most of the time, that is, that increasing veto player mobilization leads to a delay in changes of environmental performance. Rather, institutional factors such as corporatism also have a significant impact, which is, however, not always as suggested in the previous literature.

The partisan government approach, which has been identified as "the most important factor for variation in welfare state outcomes across countries" (Huber and Stephens 2001, 1), also has high explanatory power in the field of environmental politics. However, the partisan government approach has been modified in this study by moving from the party family approach, which is mainly applied in studies emphasizing different impacts of parties on the party preference approach (McDonald and Budge 2005). It shows that when government parties move to the green or to the left side, this has a positive effect on environmental performance. Interestingly enough, both dimensions are characterized by two different strategies. The ASPM underlines that the interaction in the green–growth dimension is contentious but that the left–right dimension is predominantly based on consensus.

The major alternative approach explaining environmental performance aside from corporatism is ecological modernization theory (EMT). For both these approaches it can be shown that their impacts are highly conditional and do not allow for straightforward conclusions over time.

1.2 The Theoretical Contribution of this Study

The theoretical contribution of this study is above all that it models the impacts of politics on policies and outcomes as a political process. That means that the study does not focus exclusively on the correlation of individual variables but rather that it analyzes the interaction of key variables. In this context, time becomes a very important aspect. Considering politics as a process implies the identification of time sequences. Political actors react to each other, which means that their impact on the dependent variable differs in time. Such a perspective does not allow for analyzing all variables with identical time lags as is normally done in macrocomparative studies. As I point out later, this creates a methodological challenge.

Another analytically innovative aspect of this study is that it combines domestic and international politics in one approach. It is because of this that the ASPM is able to conduct a multilevel analysis in macrocomparative studies. In the case of this study I show how the EU exercises power as an agenda setter that is filtered on the European as well as the domestic level. One could also expand this domestic–international nexus to other aspects of politics, but for the EU it is essential since the EU has become an increasingly integral part of politics for EU member states. Therefore, it is inappropriate to treat the EU as an external actor as many studies do when they use an EU dummy variable.

In the context of this domestic–international nexus, this study also identifies trends in the importance of domestic and international politics. Although I can confirm that international politics has increased its influence on domestic politics over time, this trend is far from the end of the nation state, as some would have us believe. In fact, in some areas of environmental performance the nation state has experienced a revival in recent years.

Finally, the study is one of the first that analyzes the extent that the economic crises in the post-2007 years transformed politics and outcomes. One basic finding of this study is that economic growth is still tightly coupled with environmental performance. This relatively consistent finding challenges the basic principle of EMT. However, "good" news is that the economic crisis has contributed to environmental improvement. That said, there is also the bad news: the decline in environmental pollution did not match the drop in economic growth. That means that growth contributes to environmental degradation, but there is a ratchet effect that prevents an economic crisis from leading to a substantial environmental improvement.

The crisis had several more effects on politics in the highly industrialized democracies studied here. Domestic politics has become more consensual in the crisis years. The reason is that environmental movements and veto players demobilized and corporatist arrangements have become stronger and more benign to environmental concerns. However, partisan government policy changed as well. Left politics reemphasized their core Left ideology at the cost of their ecological profile. The most important change is that international economic factors are very strong driving forces for a deterioration of environmental performance in the years of crisis. In general, there is a return to bread-and-butter politics in the years of crisis.

Another obvious change has been that the political process takes considerably more time in the face of crisis. All these changes lead me

to conclude that the years after 2007 transformed the political process. I therefore speak of "normal politics" before 2008 and of "extraordinary politics" in the years from 2008 onward. In order to conduct the analysis I need to elaborate existing concepts and to develop new ones. This is a challenging task and therefore is also integral to the focus of this study.

1.3 The Conceptual Contribution of this Study

Conceptualization is often underestimated in political science. However, it has a fundamental impact on empirical findings and what we believe is reality. Concepts link theory and analysis and therefore have important theoretical and empirical implications that need to be made explicit. In this study, I introduce several concepts that are essential for macrocomparative politics in general and for the analysis of environmental performance in particular.[10]

Conceptualizing environmental performance is at the center of this study. Some studies use aggregated indices of many environmental issues (Jahn 1998; Scruggs 2003; Roller 2005). Aggregated indices have the advantage that they deal with a broad scope of environmental issues and are therefore representative of environmental performance. However, aggregated indices also conflate aspects that have different, often opposing trends. This renders causal analysis difficult. Therefore, others focus on individual pollutants (Crepaz 1995; Neumayer 2003; Li and Reuveny 2009; Cao and Prakash 2012). It is nevertheless doubtful that single issues can be taken as representative of general environmental issues. Both procedures, however, take it for granted that environmental performance means the same thing in every country. This is not a plausible assumption. For instance, the water issue is much more important for Mediterranean countries than for Canada and Scandinavian countries, where air pollution through energy production for heating is a more central issue. I use two techniques to overcome the dependent variable problem.[11] First, I use factor analysis in order to identify various dimensions of environmental performance. This has the advantage of using many variables with the same dimensionality, which makes causal analysis possible. Second, I develop country-specific environmental performance indices that allow for the consideration of different environmental issues

[10] All these indices can be downloaded from: http://comparativepolitics.uni-greifswald.de/. On this web site are also research papers that describe the indices in a somewhat more detailed way than in the publication that I refer to in the text.

[11] Of course, there are many more problems with the dependent variable in research on environmental performance, which will be addressed in Part II.

in different countries (see Chapter 6). Such an approach is called *contextualized comparison* and has been conducted frequently in qualitative research (Locke and Thelen 1995; 1998; see also Bennett and Checkel 2015). Contextualized comparison has seldom been used in macrocomparative politics. I use contextualized comparative concepts in many respects: in addition to environmental performance, I use it in order to identify ideological positions of political actors and to define who the agenda setters and veto players are in a political system.

Considering country- and time-specific aspects also relates to the analysis of the ideological positions of political actors. For instance, the meaning of Left and Right may have a universal core, but how it is empirically manifested depends on context (Chapter 3; for further details see Jahn 2011). The same is true for the institutional setting of agenda setters and veto players. In parliamentary democracies, the government is the agenda setter, but in the political system of the United States, it is the legislature and the executive is a veto player (Cameron 2000; Tsebelis 1995, 325). Even parliamentary systems are not alike. Depending on their majority rules and their style of decision making, they can be conceptualized rather differently.

Another concept that has been developed within the framework of this study is corporatism. Corporatism was a major variable in many studies during the 1970s, 1980s, and 1990s. This is particularly true for studies in environmental politics. Since then corporatism has been less prominent in studies. The reason could be substantial, that is, that corporatism has been dismissed as a relevant variable. A more plausible explanation for the diminishing use of corporatism in current macrocomparative studies is the shift from cross-section analysis to time-series–cross-section analysis (TSCS). The latter needs time-variant variables, but the indices available for corporatism have been time invariant. There have been some complaints by leading scholars about the lack of a time-variant corporatism index (Huber and Stephens 2001, 63; Jensen 2011, 173–4; Ward et al. 2011, 539). Consequently, I have developed a time-variant corporatism index that covers the years 1960–2012 (Jahn 2016).

Two other indices of general interest concern the EU. In order to estimate the impact of the EU on policies and outcomes of its member states we need to know the position of the EU. The common use of the EU as a dummy variable is arbitrary and ambiguous. I have conceptualized an annually varying positional index for the EU by taking into account the decision rules within and among the EU institutions. Related to this is an index estimating the ideological range between the EU and the agenda setters of the member states. This ideological misfit

comes close – functionally and empirically – to the veto player concept as defined by Tsebelis (2002). Both indices will be presented in Chapter 4 (see for further details: Jahn and Düpont 2015).

Essential for estimating the impact of politics on environmental performance is the use of strong control variables. One aspect that is important for atmospheric emissions and water pollution is climate. This aspect has been neglected completely in the field so far although it is obvious that cold winters lead to higher heating requirements and as a result higher emissions; or hot summers lead to diminishing water availability and lower water levels, which increase the concentration of water pollution. In order to control for these factors, I have developed indices of heating and cooling degrees by combining subnational population and temperature data (Chapter 9; for further details, see Jahn 2013). Applying these concepts for an analysis of the political process requires a specific methodological application to which I turn now in the last section of this Introduction.

1.4 The Methodological Contribution of this Study

Most studies in comparative environmental politics are rather basic in their empirical analysis. As mentioned earlier, most rely on cross-section analysis, leaving out time effects. The established standard in other areas of macrocomparative analysis, such as the application of TSCS regressions, the analysis of interactive terms, and spatial regression analysis, is alien to the repertoire of environmental analysis. Leaving out these methodological advancements misses an opportunity to use the analytical potential of currently available data analysis.[12]

This study is guided by three methodological decisions. The first concerns the modeling of time. The ASPM analyzes the political process. This process is not only based on the interaction of agenda setters and veto players but also on time and time sequences, a highly neglected aspect of macrocomparative analysis (Tucker 1982; de Boef and Keele 2008). By means of a method to identify optimized lags, I depart from the t−1 standard in macrocomparative politics. I define time sequences by determining, for instance, that first an agenda setter must make a move before veto players can react. This makes analytical sense but is seldom taken into account in previous research. In so doing, the analysis breaks new methodological ground by taking time into account more

[12] That said, there are currently environmental studies that take this aspect into account. However, they are often confined to specific issues and are not book length treatments of environmental performance.