Power and Public Goods to the People

A cross-national study on the effect of democracy on climate change policy output

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Abstract

This thesis investigates in what way democracy affect climate change policy output. The aim of the study is to test the positive correlation between democracy and climate change policy output that Bättig and Bernauer (2009) found. A contribution is made in the form of a new database including 193 countries and a newly constructed climate change policy index. The method of regression analysis using ordinary least squares is utilized. The results confirm a significant and substantial positive relation between democracy and climate change policy output. Furthermore, the effect of civil liberties on climate change policy output seem to be stronger than the effect of political rights. The results underline the instrumental value of democracy for sustainable development. To protect and enforce democratic institutions in high emission countries is important to avoid interruption of social and economic development all over the world, due to the consequences of climate change. Additionally, the results speak in favour of democratization aid to avoid a development of carbon dependent economies. Finally, they underline the importance of analysing the possible environmental impact of different kinds of aid. In sum the thesis shows that, democracy can affect the likelihood of collective action and increase the provision of public goods in the form of ambitious climate change policies.

Keywords: Democracy, collective action, climate change policy, sustainable development

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1. Introduction

"Allow me to be blunt. The world is in a mess. Countries and communities everywhere are facing pressures that are being exacerbated by megatrends … But one overriding megatrend is far and away at the top of that list – climate change. Climate change is a direct threat in itself and a multiplier of many other threats - from poverty to displacement to conflict." (Guterres, 2017). These words by the United Nations secretary general António Guterres stress the magnitude of the problem of climate change. Humanity now changes nature to a greater extent than the Earth's natural cycles (Dickinson, 2015). The environmental systems that not only affect but feed our social and economic structures are threatened (Dahlin, 2014). This is also a time of major advancements within development. Never before in history have so many people had so much. Health, wealth, security, longevity; social and economic development has been forceful and swift in many corners of the world (Themnér & Wallensteen, 2013; BBC, 2010; The World Bank, 2018a). Yet, many developmental challenges remain; 795 million people are malnourished, 767 million people live beneath the poverty line and 1.5 million people die each year due to vaccine-preventable diseases (World Hunger Education Services, 2016; The World Bank,2018a; World Health Organization, 2015).

Climate change, caused by anthropogenic activities, pose a large and rapidly approaching threat to human societies. Already poor communities in developing countries will, for example, suffer an increased risk of hunger or famine due to an increased number of droughts (Speeth & Haas, 2006). For a long time, social and economic development has been positive, but climate change severely threatens this development in many areas. Still, global collective action to combat climate change has been continuously hard to achieve (Victor, 2016). There is consequently an urgent need to find roads towards sustainable development, to find ways for continued social and economic development that does not exacerbate climate change.

1.1 Aim and Research Question

The aim of this thesis is to provide an analysis of how national institutions affect the provision of the global public good of climate change mitigation. The main purpose is to test the positive relationship between democracy and climate change policy output that Bättig and Beranuer (2009) found. In order to test their results, 193 countries are studied using linear regression through the method of ordinary least squares (OLS). Additionally, two different aspects of

democracy, political rights and civil liberties, are studied. The aim of this is to test Niemeyer's (2013) theory that a specific characteristic of democracy might have a stronger effect on climate change policies. By presenting this large-N study based on current data the thesis contributes to the debate concerning the relationship between democracy and climate change policy. In turn, the thesis aims to contribute to the larger debate concerning democracy's instrumental value for development.

Furthermore, the constructed database, based on 193 countries, and the presented climate change policy index serves as an important contribution. The database includes information concerning national commitments to climate change mitigation. To my knowledge, no such database for comparisons of post-Paris Agreement policies previously exist. In order to test the possible effect of democracy on climate change policy output, the research questions addressed in this thesis is:

In what way does democracy affect national climate change policy output?

1.2 Relevance

The study of how democracy affects climate change policy is arguably very relevant for sustainable development. Sustainable development is based on a long-term perspective and the inclusion of economic, social and environmental dimensions (World Commission on Environment and Development, 1987). Hence, there is a need for political systems that favours long-term thinking and global public goods provision. The need for climate change mitigation seems clear, yet international cooperation to achieve this has continuously proven to be difficult (Ostrom, 1990). The struggle to achieve cooperation inspired the question addressed in this thesis, concerning what affects governments' ambition to provide the public good of climate change mitigation

Furthermore, the idea of sustainable development entails a need for mainstreaming environmental awareness in development aid. In the words of the former president of The World Bank: "Climate change policies cannot be the frosting on the cake of development; they must be baked into the recipe of growth and social development." (Zoellick, 2007). More information concerning the impact of national institutions could enable further analysis of different types of aid projects. This thesis highlights the possible environmental impact of aid, that at first glance might not seem directly connected to environmental issues.

Plenty of scholars have studied the instrumental value of democracy, and more specifically, whether democracies are better at providing public goods. The resulting debate

has been ambiguous; there are arguments both in favour of and against a possible causal relationship between, for example, democracy and social stability or economic growth (see, for example, Sen, 1999; Zhao, 2010). Several scholars have contributed to this debate by analysing democracy's possible effect on climate change policy (see, for example, Hobson, 2012; Burnell, 2012).

There is currently a lack of empirical evidence to support theoretical arguments concerning the relationship between democracy and climate change policy *output*. More specifically, there is a lack of large-N studies. Existing empirical studies focus on specific cases and climate policy outcome (see, for example, Povitkina, 2018; Beeson, 2010). Bättig and Bernauer (2009) conducted a large-N study and found a positive correlation between democracy and climate change policy output. However, both the degree of democracy in many parts of the world and the nature of international climate change agreements has changed since they conducted their research (The Freedom House, 2018; UNFCCC, 2018). These changed conditions make it interesting to test if Bättig and Bernauer's (2009) result still holds. Additionally, Burnell (2012) called for studies that go beyond solely looking at the relation between democracy and climate change policy and analyse what kind of, or which aspects of, democracy that affect climate change policy. Furthermore, the study of democracy and climate change policy output is relevant as it includes tackling the theoretical challenge of comparing national climate change policies in the post Paris Agreement era, which is important according to Young (2016).

Although the scientific debate over the relation between democracy and climate change policy is cross-disciplinary, the topic arguably has particular relevance for the field of development studies. The reason is twofold, (1) it provides an additional dimension of the instrumental arguments in favour of/against democratization aid. It is important to consider the impact of democratization aid in order to favour long-term, sustainable development over short-sighted projects (Hobson, 2012). (2) A continuous ramping up of developed countries' climate change policies is crucial for many developing countries' continued development. Developed countries' failure to do so could have catastrophic consequences for many developing countries (Young, 2016; Speeth & Haas, 2006). The topic can thus be seen as relevant for the frequent normative discussion concerning 'appropriate' behaviour for developed countries, and their responsibility in relation to developing countries (see, for example, Cupples, 2013).

1.3 Disposition

Following this introduction, the thesis begins with an overview of previous research and theories concerning democracy, climate change, and the relation between the two. This is then used to form the hypothesis. Following, the research design is presented, including a discussion about strengths and limitations, operationalization, validity and reliability, and a presentation of the climate change policy index. The results of the linear regressions are then presented and discussed. Lastly, some suggestions for future research final remarks and conclude the paper.

2. Theory

The aim of this section is to summarize the theoretical debate about the instrumental value of democracy. The section begins with a presentation of different theoretical views on democracy and its contribution to development in general. Thereafter, theories concerning climate change and collective action problems are presented. Lastly, arguments concerning the connection between democracy and climate change are presented.

2.1 Democracy and Development

In order to study the effect of democracy, it is necessary to first define what democracy is. Commonly the catchword 'democracy' is known as rule by the people, but what is really the meaning of 'rule by the people'? Throughout time, democracy has been given many meanings, broadening the concept to the extent that it now seems intangible. Hence, there are many possible definitions of democracy today (Schmitter & Karl, 1991). The limited space in this paper is not enough for an in-depth analysis of the meaning of democracy. Therefore, only two common definitions of democracy, by Robert A. Dahl (1989) and Joseph A. Schumpeter (1966), are presented in this thesis. Schumpeter's definition of democracy reads as follows: "that institutional arrangement for arriving at political decisions in which individuals acquire the power to decide by means of a competitive struggle for the people's vote." (Schumpeter, 1966, p.269). This definition entails a quite unspecific view of democracy in its minimalism, the key to whether a political system can be viewed as democratic appears to lie in whether there are free elections (Barro, 1999). However, the argument has been made several times, notably by Dahl (1989), that democracy includes much more than solely free elections. According to Dahl (1989, p.221) the presence of the following seven institutions are necessary for the realization of democracy (or in his words "polyarchy"):

1. Elected officials: Control over government decisions about policy is constitutionally vested in elected officials.
2. Free and fair elections: Elected officials are chosen in frequent and fairly conducted elections in which coercion is comparatively uncommon.
3. Inclusive suffrage: Practically all adults have the right to vote in the election of officials.
4. Right to run for office: Practically all adults have the right to run for elective offices in the government, though age limits may be higher for holding office than for the suffrage.
5. Freedom of expression: Citizens have a right to express themselves without the danger of severe punishment on political matters broadly defined, including criticism of officials, the government, the regime, the socioeconomic order and the prevailing ideology.
6. Alternative information: Citizens have a right to seek out alternative sources of information. Moreover, alternative sources of information exist and are protected by laws.
7. Associational autonomy: To achieve their various rights, including those listed above, citizens also have the right to form relatively independent associations or organizations, including independent political parties and interest groups (Dahl, 1989, p.221).

Dahl's (1989) more inclusive definition entails a more specific view of democracy. The advantage of Dahl's (1989) definition is that it allows for viewing democracy on a scale, it becomes possible to speak of different degrees of democracy. The definition has had a large impact on the field of political science and is often used in previous research (Hermansson, 2003). Therefore, democracy is in this study defined as a political system that fulfil Dahl's seven criteria.

How then, does democracy relate to development? A well-known advocate for the importance of democracy for development is Amartya Sen (1999). In his 'Capabilities Approach', political freedom has both a constitutive and an instrumental role. In other words, expansion of freedom is both the primary end and the primary means of development. Consequently, political freedom in form of democracy has both an intrinsic and instrumental value (Sen, 1999). People need civic liberties and political rights in order to express publicly what they value, and to able to demand that attention be paid to it. In a democracy, rulers must seek the support of the people in elections, hence they have an incentive to listen to the people in order to avoid criticism (Sen, 1999). Therefore, democracies are more effective in avoiding certain types of disasters, such as famines. There has, for example, not been a famine in India since independence. The present political system with pressure from diverse political parties and newspapers makes it imperative for the government to swiftly organize prevention measures when the risk of famine occurs (Sen, 1983). Beyond increasing the chance of a policy

response to economic needs, the ability to conceptualize such economic needs also depend civic and political rights. A proper understanding of the content and force of different economic needs arguably requires discussion and exchange. Hence democracy pivotal for the generation of well informed and reflected choices (Sen, 1999).

The instrumental importance of democracy for development is supported by theories concerning economic growth and democratic peace. Research has shown both that full democracies are less likely to undergo significant instability, and that democracies do not go to war with other democracies (Donovan et al., 2005; Doyle, 1983). The notion that stable democracies do not go to war with each other is commonly known as the democratic peace theory (Mello, 2014).

The theory that democracy is instrumental to economic growth is usually based on two arguments (Lindgren, 2014). The first is that established and secured property rights is a necessary condition for the daring economic investments that generate economic growth. The second is that investments in collective goods, such as healthcare and education, will be greater in democracies since the winning coalition is larger than in autocratic systems. Arguably, more collective goods give better functioning markets and consequently more economic growth (Lindgren, 2014).

There is however no consensus on the role of democracy for development. There are scholars who disagree with the assumption that democracy is instrumental to social and economic development. An alternative approach to development is called the China model. The China model is based on the rapid economic and social development in countries like China and Singapore during the past decades. Based on these cases the argument is that autocratic political systems, rather than democracy, is instrumental to development (Zhao, 2010). Additionally, some argue that democracy even hinders economic growth. Inspired by neoclassicism the theory is that democracies invest to much in individuals immediate spending and do not invest enough in its capital stock. The expansion of production and consequently the economic growth will therefore be slower in democracies than in autocratic political systems (Lindgren, 2014).

2.2 Climate Change, Consequences and Collective Action Problems

The Earth's climate was relatively stable during the about 11 700 years long Holocene period. However, since the industrial revolution anthropogenic activities has put, and is still putting, an immense pressure on our planet, causing a rapid change in our climate (Steffen et al., 2015). The process that causes our climate to change is known as the greenhouse effect. The

greenhouse effect is a naturally occurring phenomenon that keeps the planet warm through preventing the escape of infrared radiation. The dominant greenhouse gas (GHG) is carbon dioxide (CO_2), additional greenhouse gases include methane (CH_4) and nitrous oxide (N_2O). Human activities have caused a sharp increase of the presence of these gases in the atmosphere, which results in an exaggerated greenhouse effect and thus, a changing climate (Speth & Haas, 2006). The research findings concerning whether human activities are the cause to climate change are overwhelmingly unanimous. Policy makers and the media sometimes assert that the reason for climate change is unclear. However, there is no substantive disagreement in the scientific community concerning the reality of anthropogenic activities causing climate change (Oreskes, 2004). Climate change will have severe consequences for human societies including, but not limited to, an increased number of floods and droughts, significant sea level rise, more severe hurricanes and changed epidemiology. These hazards would bring, among other things, an increased risk of hunger and famine for many of the world's people who depend on coral fisheries and traditional agriculture. The access to freshwater could decrease in many areas. Additionally, rising sea levels will likely lead to the displacement of tens of millions from low-lying delta areas and small island states (Speth & Haas, 2006).

If climate change poses such a serious threat, why has it proven so challenging to overcome this problem? There are several theories concerning why people choose not to cooperate to achieve a common interest, such as climate change mitigation. One classic theory is Hardin's (1968) 'Tragedy of the Commons'. Hardin (1968) describes the problem with the following metaphor. Picture a pasture open to all. Herdsmen will have an incentive to keep as many cattle as possible on the common pasture. For each herdsman, adding one more animal to the herd will have both positive and negative consequences. The herdsman will receive all the positive consequences in the form of additional sales from the added animal. However, the negative consequence in form of overgrazing of the pasture is shared by all herdsmen. Hence, each rational herdsman is locked into a system that compels an unlimited increase of the herd in a world that is limited. "Ruin is the destination towards which all men rush, each pursuing his own best interest." (Hardin, 1968). This pattern can be seen in the emission of greenhouse gases. As each actor receives all of the positive benefits but the negative consequences are shared by all, the incentive is strong to not reduce emissions.

In a similar fashion, Olson's 'Logic of Collective Action' entails that rational self-interested individuals will not act to achieve common interests (Ostrom, 1990). Olson challenges the assumption that the possibility of a collective good is enough to generate needed

collective action. When individuals cannot be excluded from collective benefits they are unlikely to act in the common interest of the group, unless the group is quite small or the individuals experience pressure in form of coercion. According to Ostrom (1990) the core of both the tragedy of the commons and the logic of collective action is the free-rider problem.

> Whenever one person cannot be excluded from the benefits others provide, each person is motivated not to contribute to the joint effort, but to free-ride on the efforts of others. If all participants choose to free-ride, the collective benefit will not be produced. The temptation to freeride, however, may dominate the decision process and thus all will end up where no one wanted to be. Alternatively, some may provide while others free-ride, leading to less than the optimal level of provision of the collective benefit. (Ostrom, 1990, p.6)

Since someone cannot be granted or denied access to the atmosphere based on whether they make an effort to stop climate change, the conditions compel free-riding. There is consequently a strong incentive to not cut down on greenhouse gas emissions, because you want to avoid being the loser that contributes whilst others do not.

These, rather gloomy, theories can make one question whether it will ever be possible to overcome the problem of cooperation connected to climate change. However, Ostrom (1990) offers some hope. She asserts that these models are built upon fixed empirical settings Yet, Ostrom's (1990) research shows that different empirical settings, like institutional design, affects the likelihood of collective action. Institutional design can accordingly facilitate collective action.

Victor (2016) points out certain design flaws in international attempts to combat climate change before the Paris Agreement. The strive for universal and binding emission targets has hindered effective results. Universal targets could only result in a serious watering down of the targets, a serious narrowing of the participants or gridlock. The focus on binding targets results in an inflexibility, hindering governments from making ambitious commitments out of fear that they might not be able to achieve them (Victor, 2016). The new approach with the Paris Agreement in form of the Intended Nationally Determined Contributions (INDCs) offers more flexibility, it enables local adaptation and 'overreach' goals. This new approach increases the chance of a positive outcome according to Victor (2016). This decentralized, or bottom up, approach to international climate change cooperation is more in line with Ostrom's (1990) findings concerning what type of institutions that facilitate collective action. However, the Paris Agreement does not by any means guarantee success in the battle on climate change. The design of the INDCs, with different sorts of targets and baselines, generates problems

concerning verifying and monitoring. Furthermore, success becomes heavily dependent on domestic pressure (Keohane & Oppenheimer, 2016; Young, 2016).

2.3 Democracy and Climate Change Policy

There is an existing theoretical debate concerning the effect of democracy on climate change mitigation efforts. Does democracy facilitate or hinder such efforts? The core of this debate is, in line with the collective action theories previously described, that climate change is not simply a technical issue but deeply political both affecting and affected by the way we rule (Hobson, 2012).

Burnell (2012) summarises several possible theoretical arguments for why democracies would be more likely than non-democracies to care about climate change. The first is that democracies are more responsive to society's expressed concerns and are held more accountable for the way they perform. Arguably, this is a similar argument to the one previously described by Sen (1999) concerning democracy's instrumental value. Additionally, transparency and the electorate's ability to change the government enables experimentation with different solutions and better-informed decisions. Finally, the idea of ruling by consent, and the people's say in forming decision making bodies could foster easier implementation of tough decisions, which could be necessary for successful climate change mitigation (Burnell, 2012). These arguments all point towards a possible causal relation between democracy and more ambitious climate change policies. Furthermore, these different arguments open up for a discussion concerning which parts of, or what kind of democracy has the greatest influence on the outcome. Niemeyer (2013) argues that deliberative democracy has the highest capacity to manage the challenge climate change poses. Niemeyer (2013) claims that the most pressing issue concerning climate change policy in democracies is basic problem recognition. In some cases, the support for climate change action grows weaker even as the urgency of the problem increases. Niemeyer (2013) explains this with saying that the concrete, tangible actions proposed are compared to the perceived vague and distant impacts of climate change. This dynamic can be used by observant politicians, making implementation of actions to combat climate change difficult. However, more focus on public deliberation in democracies increase the chances of overcoming this problem. His experiments show that deliberation increased the salience of common-good issues and the number of outcomes more compatible with the need for direct action connected to climate change (Niemeyer, 2013).

Nevertheless, there are scholars who are not convinced that there is a positive relationship between democracy and more effective climate change policies. For them, the path

to effective action on climate change is to weaken or suspend certain democratic institutions. Beeson (2010) argues that autocratic systems might be better equipped to deal with environmental challenges. He claims that countries with limited state capacity will inherently struggle to deal with problems connected to the environment, since they require uncomfortable and unpopular regulations. Authoritarian regimes, unattractive as they might be, might be more capable to respond to such complex problems. Beeson (2010) uses China's implementation of the one-child policy as an example of an implementation of a tough but environmentally friendly policy. Subsequently, he argues that 'good authoritarianism', where forms of behaviour that is not environmentally friendly is simply forbidden, might not only be justifiable but necessary (Beeson, 2010).

From a more general perspective, Leftwich (2005) argued that there is an institutional incompatibility between democracy and development. Democracy is inherently a conservative system based on two important principles: the losers must accept defeat and the winners must exercise restraint. Therefore, Leftwich (2005) argues that the institutions necessary for democracy are suitable for maintaining a stable status quo but incompatible with the rapid, effective decisions needed for development.

Bättig and Bernauer (2009) empirically tested the relationship between democracy and climate change policy in their article 'National Institutions and Global Public Goods: Are Democracies More Cooperative in Climate Change Policy?'. They studied a cross-section of 185 countries from 1990-2004 and differentiated between policy output and policy outcome. Climate change policy *output* was seen as countries' political commitment whilst climate change policy *outcome* was the actual reduction in greenhouse gas emissions. The results of the study showed a positive relationship between democracy and climate change policy output and an ambiguous relationship between democracy and climate change policy outcome (Bättig & Bernauer, 2009).

Countries climate change policy output is arguably important even when it is studied separately from their ability to implement the policy, the outcome. Ambitious climate change policies show that the problem is salient to policy makers, which according to Pralle (2009) is important to keep the issue on governmental agendas. Furthermore, it can provide 'hooks' for national organizations and interest groups to grab onto in order to put pressure on different actors. In international contexts ambitious climate change policies can be used to shame actors who openly free-ride on the efforts of others and to decrease the acceptance of deviation from climate change cooperation (Keohane & Oppenheimer, 2016).

2.4 Hypothesis

Beeson (2010) was convinced of the need for authoritarianism when it comes to climate action, and Leftwich (2015) argued that there is an institutional incompatibility between democracy and development. Based on these arguments, one would expect not to find a significant correlation between democracy and ambitious climate change policy, alternatively that one would even find a negative correlation. Sen (1999) on the other hand, advocated for the instrumental importance of democracy for development. He claimed that democratic governments are more likely to provide public goods as they are both more likely to make well informed decisions and to be held accountable for those actions. These arguments are enforced by Burnell's (2012) theories that transparency and the idea of ruling by consent should aid ambitious climate action. These arguments for why democracy could be related to ambitious climate change mitigation policies, together with the fact that Bättig and Bernauer (2009) previously found a positive relationship, make up the foundation for the hypothesis tested in this thesis. The hypothesis tested in this thesis is:

More democratic countries adopt more ambitious policies
when it comes to climate change mitigation.

3. Research Design

In this section, the research design of this thesis is described. The analytical framework will be presented first, followed by a discussion concerning the choice of method. Thereafter the operationalization of the different variables is described. Thereafter, a short description of the regression equation and the models is given. The following section deals with the data selection and data collection. Lastly, the validity and reliability of the method will be discussed.

3.1 Analytical Framework

The analytical framework was constructed based on the hypothesis presented above. The analytical framework takes the form of a simple flowchart in Figure 1, which describes the relation that will be analysed in the data. As demonstrated in the flowchart, the Paris Agreement has led to new national climate change policies, the INDCs (INDC, 2018). To test the hypothesis, the appropriate question to ask the material is whether democracy positively affects the ambition of these climate change policies. The operationalizations described under 3.3 can

also be considered part of the analytical framework as they describe in more detail how democracy and climate change policy is measured.
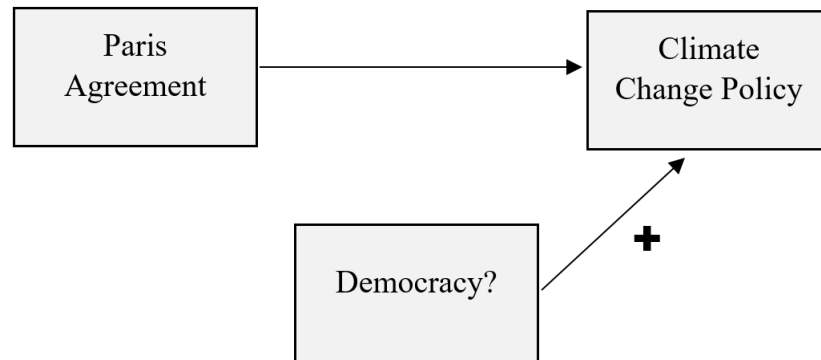

Figure 1. Analytical framework displaying how the data will be analysed.

3.2 Choice of method

In order to test the hypothesis, linear regression is used through the method of Ordinary Least-Squares (OLS). A new climate change policy index was constructed. Data was then collected on 193 countries. This choice of method is heavily inspired by Bättig and Bernauer's (2009) approach, to increase the possibility of comparing the results.

The main strength of linear regression is the possibility to verify counterfactual difference and isolation (Teorell & Svensson, 2016, p.166). This strength, together with the fact that it was the method used by Bättig and Bernauer (2009), is the reason linear regression is used in this study. Analysing the correlation between many cases and the inclusion of additional independent variables should enable reasonable conclusions concerning whether more democracy is related to more ambitious climate change policies. The weakness, however, with linear regression is the resulting inability to verify the chronology of the variables and, especially, to identify the mechanism (Teorell & Svensson, 2016). Nevertheless, the main purpose of this study is to test the results found by Bättig and Bernauer (2009), and their focus was not the mechanism. Hence, this methodological flaw is not considered all too serious. The empirical study of a possible mechanism would rather be a suitable subject for a future qualitative research project.

One could further argue that a weakness of linear regression is the inability to study the correlation with the constructed dichotomous categories, presented in Table 1, separately. To study the correlation with a dichotomous dependent variable logistic regression would have

been more suitable (Edling & Hedström, 2003). Although a valid point of critique, linear regression was still chosen due to the research question's focus on climate change policy over all, i.e. as one coherent dependent variable, instead of sperate more specific components of climate change policy. Since a similar method with one coherent climate change output variable was used by Bättig and Bernauer (2009,) it further makes comparisons of the results easier.

3.3 Operationalization

The independent variable of democracy was operationalized using The Freedom House democracy index (2018). Dahl's (1989) theoretical definition of democracy (or in his words polyarchy) was used which, as previously described, includes the presence of the following seven institutions:

1. Elected officials.

2. Free and fair elections.

3. Inclusive suffrage.

4. Right to run for office.

5. Freedom of expression.

6. Alternative information.

7. Associational autonomy.

The Freedom House index was chosen to empirically measure democracy because it, similarly to Dahl's (1989) definition, includes more than solely elections; the index includes both *political rights* and *civil liberties*. The indicators The Freedom House uses to measure political rights are grouped into three subcategories: electoral process, political pluralism and participation, and functioning government. The civil liberties indicators are grouped into four subcategories: freedom of expression and belief, associational and organizational rights, rule of law and personal autonomy, and individual rights (The Freedom House, 2018). Separate ratings for political rights and civil liberties are presented for each country on scales between 1 and 7. The score for political rights and civil liberties are added together to create one overall democracy score on a similar scale between 1 and 7.

The dependent variable of climate change policy output posed more of a challenge to operationalize. Bättig and Bernauer (2009) distinguish between policy output and policy outcome, the former implies a country's actual policy while the latter describes a country's result of that policy, i.e. their capability to implement the policy. In line with their distinction, the theoretical definition of climate change policy *output* used in this thesis is: the political

commitment to the UN-based climate change mitigation process. In this context climate change mitigation is defined as economywide reduction of greenhouse gases.

In the research conducted by Bättig and Bernauer (2009) climate change output was measured through the creation of categories that assessed countries commitment to the climate change mitigation process, in relation to the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol. Each category was weighted together equally, resulting in one cohesive score on a climate change policy index. A direct use of Bättig and Bernauer's (2009) index is not possible in this thesis due to the changed empirical circumstances after the Paris Agreement. However, a similar operationalization to that of Bättig and Bernauer (2009) is adopted in this study to measure climate change policy output.

Since no database, to my knowledge, concerning the comparison of climate policy output after the Paris Agreement existed, the database used had to be created from scratch. Several categories were constructed and used as indicators to create an index. The data was then collected from the INDC reports (INDC, 2018). The categories were constructed as shown in Table 1.

Table 1. The categories used to create the climate change policy index.

Category	Description	Code
Party to the Paris Agreement	The country is a party to the Paris Agreement.	Yes = 1, No = 0
Ratified	The country has signed and ratified/accepted/approved the Paris Agreement.	Yes = 1, No = 0
INDC	The country has signed, ratified and submitted an INDC.	Yes = 1, No = 0
Mention CO_2	The INDC mentions specifically the need for reduction of CO_2 emissions.	Yes = 1, No = 0
Fixed GHG reduction target	The INDC includes a fixed economywide GHG mitigation target. The target is expressed in percent. If it is not clearly stated that the target is economywide, the following sectors need to be included for it to be considered so: energy, transport, agriculture/forestry, and waste. At least the gases Carbon dioxide (CO_2), Methane (CH_4) and Nitrous oxide (N_2O) need to be included.	Yes = 1, No = 0
Fixed > 10%	The INDC has a fixed GHG mitigation target (that fulfils the criteria described above), which is higher than 10%.	Yes = 1, No = 0
Fixed > 30%	The INDC has a fixed GHG mitigation target (that fulfils the criteria described above), which is higher than 30%.	Yes = 1, No = 0
Baseline year	The mitigation target is relative to a year *earlier* in time compared to when the INDC was written. It is not relative to a possible future scenario (often described as business as usual scenario).	Yes = 1, No = 0
Baseline ≤ 2000	The INDC has a baseline year earlier than, or equal to year 2000.	Yes = 1, No = 0
Target ≤ 2025	The INDC has a target year. The year is described as the main target, not just an interim target, and is less than or equal to 2025.	Yes = 1, No = 0
No conditionality	The contribution is not conditional on any external financial or technological support.	Yes = 1, No = 0

3.4 The Climate Change Policy Index

As shown in Table 1 the climate change policy index is based on 11 dichotomous categories. The aim is that a higher total index score should reflect a rising ambition. To create a coherent index-score the values attained within the different categories were added together. All categories were added with equal weight except for *Baseline year* which was added with double weight. The reason for this is that many countries have adopted an approach called business as usual (BAU) in their INDCs (INDC, 2018). This means that they might adopt a very high mitigation target compared to a BAU scenario by 2030 instead of relative to year preceding the INDC. Consequently, a 10% reduction target relative to 2010 can be more ambitious than a 45% reduction compared to a BAU scenario. Hence, there is a compelling argument for giving the indicator *Baseline year* double weight when it is added to the index. The total maximum index score is consequently 12.

The *Ratified* category was treated as a definitive category. Meaning that if a country gets 0 in this category it automatically gets 0 in all the following categories concerning the INDC. The reason for this is that many countries submitted INDCs in preparation for the Paris Agreement. Yet, if they have not ratified the Paris Agreement the political commitment has still not come into effect. This is considered to constitute a low level of ambition, which is why the content of the INDC is not included if the country has not ratified the agreement.

The final category *No conditionality* is also worth discussing. It has a special relevance for development countries, as many of them have conditional targets. Arguably, ambition is strongly connected to ability. One could argue that unconditional targets, financed with domestic resources, are more ambitious than conditional targets, that are dependent on international aid. There are however strong arguments for opposing this simplistic view. Since developed countries have a greater historical responsibility for climate change, and more financial and technical resources for climate action, it seems unfair to view developing countries conditional targets as less ambitious. On the other hand, if one controls for income, in order to compare countries at a similar level of economic development, unconditional targets could be viewed as more ambitious. In this thesis the effect of democracy is analysed both using the climate change policy index including conditionality and the climate change policy index excluding conditionality. This allows for an analysis of weather the inclusion conditionality has a strong effect on the results.

The scale of the climate change policy index can in a strict sense be considered an ordinal scale. However, it is in this thesis treated as an interval scale, to enable the use of linear regression. This thesis makes no claims to present the exact distance between two scores on the index, or that the distances are perfect in the sense that they do not vary in the slightest. Due to its continuity and the reasonably many possible index-scores, the climate change policy index is, like many other social science indexes (See, for example, Teorell & Svensson, 2016, p.110), considered a sufficient approximation of the actual interval scale characteristics of climate change policies. Therefore, the climate change policy index is treated as an interval scale.

3.5 Control Variables

To isolate the relation between democracy and climate change policy, four control variables are used: *GDP per capita, GDP per capita^2, economic growth,* and *population*. GDP per capita could be an underlying variable, since richer countries have more capacity for climate action and might feel a greater sense of responsibility. Additionally, many stable democracies also have a high GDP per capita (The Freedom House, 2018). Therefore, what appears to be a relation to democracy could actually be a relation to income. GDP per capita^2 is used to control for a possible square relationship. The data concerning GDP per capita was collected from The Freedom House (2018) and is presented in US$.

Economic growth is included since it seems reasonable that the trend of a country's economy lately would affect the ambition of policies for the future. Economic growth was measured using The World Bank's statistics of countries annual economic growth to calculate mean economic growth between 2000-2016 (The World Bank, 2018b). The use of GDP per capita, GDP per capita^2 and economic growth is based on Bättig and Beranuer's (2009) use of these control variables. Finally, population is added as a control variable. As the size of the population can affect the efficiency of democratic institutions according to Dahl (1989), the size of the population could have an effect on the studied relation. The natural logarithm is used for GDP per capita, GDP per capita^2 and population due to the large scale of these variables.

3.6 Regression Equation and Model Descriptions

All the models presented in this thesis are based on the following simple regression equation:

$$y_i = \alpha + \beta_1 T_i + \varepsilon_i$$

The purpose is to examine the effect of the treatment (T_i). The treatment is Democracy on a scale from 1 to 7, where 1 is least democratic and 7 is most democratic.

In model 1 the initial bivariate regression of democracy and climate change policy is presented. Model 2 is an 'empty' model where only the control variables are included: GDP per capita, GDP per capita^2, economic growth and population. Model 3 shows a multivariate regression where Democracy is controlled for all GDP per capita, GDP per capita^2, economic growth and population. Model 4 shows a similar multivariate regression with the difference that the category No Conditionality is excluded from the climate change policy index. In model 5 the effect of one part of democracy, political rights, is presented including all of the control variables. Model 6 similarly controls the effect of Civil liberties using all of the control variables. Model 1.1, 3.1, 5.1 and 6.1 are constructed in the exact same way as model 1, 3, 5, and 6 but they only include Non-Annex 1 countries.

3.7 Data

The countries included in the study are the 193 states of the UN. The reason is that these are the countries included in The Freedom House democracy index (2018). Consequently, The Cook Islands, Niue and the EU are not included although they are parties to the Paris Agreement. The EU acts a one unified actor in climate change negotiations, thus they have submitted one common INDC. They cannot, however, be included as a unified actor in this thesis as the aim is to examine the effect of democracy on a national level. The members of the European Union are therefore all given the same score on the climate change policy index but treated as separate states. This is arguably reasonable as their INDC is formulated in terms of a binding domestic target (INDC, 2018).

Consequently, all of the three main groups of parties to the Paris Agreement are included. The parties to the Paris Agreement are divided into three main groups by the UNFCCC (2018). Annex 1 parties are countries that were members of the Organisation for Economic Co-operation and Development (OECD) in 1992, and countries with economies in transition (EITs), including several Central and Eastern European states and the Russian Federation. Annex 2 parties consist of the OECD members of Annex 1 and they are required to provide financial and technical resources to developing countries. Non-Annex 1 parties are

mostly developing countries which are especially vulnerable to the adverse impacts of climate change and the possible economic impact of climate action (UNFCCC, 2018).

The data collection in itself went relatively smoothly. During the reading of the reports the biggest hardship was that the different structures of the reports. Many reports have a clear structure where most, or all, of the needed information is summarized in a table, see for example Canada. Some reports are vaguer, where the needed information is hidden in long paragraphs or not included at all, see for example Kuwait (INDC, 2018).

3.8 Validity

The validity of an operationalization is commonly defined as whether you actually measure what you mean to measure (Esaiasson et al., 2017). In relation to Dahl's (1989) definition of democracy, the The Freedom House index is a reasonably valid measurement. Although they are not formulated the same way, most of Dahl's (1989) institutions are included in the indicators used by The Freedom House (2018). One could argue that the validity is weak based on that Dahl's (1989) definition of, for example, suffrage might be more inclusive than the one by The Freedom House. However, this is one of the existing democracy indexes that is closest to Dahl's (1989) definition, and the validity is arguably quite strong based on that the index includes both political and civil rights. Furthermore, The Freedom House democracy index is frequently used within social science (see, for example, Rummel, 1983; Bäck & Hadenius, 2008; Reynolds, 1999). Additionally, it was the democracy index used by Bättig and Bernauer (2009). This makes the operationalization appropriate since it simplifies comparisons with both Bättig and Bernauer (2009), and other studies analysing the effects of democracy.

The validity of the chosen measurement of climate policy output is certainly more open to critique. Possible points of critique are that additional categories should be included in the index or that the categories should be weighted differently. One could argue, that the operationalization does not give a valid picture of a country's climate policy output in relation to specific cases. However, such specific measurements were never the purpose of the operationalization. The aim was, rather, to construct a *valid enough* system of measurement to enable large scale comparisons. The used operationalization gives a general, approximate view of countries' political commitment to the UN-based climate change mitigation process, which in this thesis is considered sufficient. Furthermore, it is difficult to completely overcome the obstacles that measurement and comparison of climate change policies face, since they are inherent to the structure of the Paris Agreement. However, this inherent difficulty does not mean that it is not important to *try* to compare climate change policies. Arguably, the difficulty

rather emphasizes the need for attempts to measure and compare climate change policies (Young, 2016; Victor, 2016). The operationalization can thus be viewed as such an attempt which, despite its potential flaws, is an important contribution in form of a new database and a new index.

3.9 Reliability

This thesis strives for high reliability through openness. Although one can disagree with the formation of the tools used (which are questions more concerning validity), one should be able to reuse the tools and reach a similar result. The constructed categories are dichotomous and leave little room for own interpretation. In a few cases the category concerning target year can involve judgment calls. This involves determining what is the *main* target year if it is not clearly stated. If two target years are presented, the later one can be the main target while the previous is an interim target, see for example Korea. However, the first can also be the main target while the later is more of a visual target that is not really a part of the commitment, see for example Brazil (INDC, 2018).

Additionally, the fact that all INDC are not written in English affects the reliability. In these cases, automatic online translations were used and people skilled in the language in question were consulted to verify the results. However, only 14 countries have verified the Paris Agreement and handed in an INDC in another langue than English (UNFCCC, 2018; INDC, 2018). Hence, this flaw is not considered all to serious. In general, it is argued in this thesis that the method can be considered reliable.

4. Results and Analysis

In this section the results are presented and analysed. First some descriptive statistics are presented. Following the bivariate and multivariate analysis results are presented and discussed.

4.1 Descriptive Statistics

Table 2 summarizes relevant descriptive statistics for each variable. All the variables have the same number of observations except for economic Growth where 2 countries do not have any reported data by the World Bank (2018b). This means that 2 countries, Democratic people's republic of Korea and Somalia, are not included in the multivariate analysis. The highest achieved score on the Climate Change Policy index is 11 (for example, members of the EU,

Marshall Islands and Brazil). The lowest achieved score on the Climate Change Policy index is 1 (for example, Uzbekistan, Angola and Iran).

Table 2. Descriptive statistics of variables.

Variable	N	Min	Max	Mean	50%	Std. Dev.
Climate Change Policy	193	1	11	6.487	6	3.069
Democracy	193	1	7	4.627	5	2.054
Log. GDP per capita	193	5.707	12.033	8.584	8.512	1.462
Log. GDP per capita square	193	32.571	144.783	75.809	72.454	25.287
Economic Growth	191	-11.31	5.76	1.744	1.55	2.572
Log Population	193	9.210	21.044	15.561	15.919	2.241

4.2 Regression Analysis

Model 1 and 3 show a statistically significant positive correlation between higher levels of democracy and higher scores on the climate change policy index. When the control variables are included in Model 3 the result is still significant at a 99% level and the effect is substantial as the b-coefficient is 0,7714. The strength and linearity of the correlation shown in the bivariate analysis, Model 1, is shown in Figure 2.

When all the control variables are included in Model 3 the effect of democracy is somewhat weakened compared to the bivariate analysis, but it is still substantial. Neither the results for economic growth or population are statistically significant. GDP per capita and GDP per capita[2] on the other hand shows a significant correlation with climate change policy. However, the relation between democracy and climate change policy does not disappear. This entails that when countries with the same level of income per capita are compared, democratic countries still tend to have more ambitious climate change policies than less democratic countries. An increase with one point on The Freedom House democracy index gives a mean increase with approximately 0.77 on the climate change policy index. Consequently, an increase from 1 to 7 on the democracy index gives a mean increase with approximately 4.62 on the climate change policy index. Therefore, the results support the hypothesis that *more*

democratic countries adopt more ambitious policies when it comes to climate change mitigation.

In Model 4 the indicator no conditionality is removed from the climate change policy index. The democracy effect is, again, marginally weakened. However, the b-coefficient is still 0,7079 and significant when all control variables are included. This entails that there is a positive democracy effect even when unconditional mitigation targets are not considered more ambitious than conditional targets.

Table 3. The effect of democracy on climate change policy output.

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Democracy	0.8554*** (0.0887)		0.7714*** (0.1017)	0.7079*** (0.0951)		
Political Rights					0.6672*** (0.0911)	
Civil Liberties						0.9313*** (0.1068)
Log. GDP per capita		-3.6855* (1.5059)	-3.4481** (1.3193)	-2.8379* (1.2337)	-3.4561* (1.3299)	-3.2659* (1.2721)
Log. GDP per capita^2		0.2687** (0.0870)	0.2286** (0.0764)	0.1858* (0.0715)	0.2335** (0.0769)	0.2123** (0.0738)
Economic growth		0.1401 (0.0798)	0.0959 (0.0702)	0.0871 (0.0656)	0.0916 (0.0708)	0.0908 (0.0676)
Log. Population		-0.0405 (0.0902)	0.159 (0.0833)	0.1327 (0.0779)	0.131 (0.083)	0.2041* (0.0816)
Intercept	2.5291*** (0.4487)	18.1323** (6.6648)	12.5238* (5.8837)	10.9349 (5.5022)	13.1908* (5.9226)	10.7353 (5.6894)
Adjusted R^2	0.3241	0.2162	0.3988	0.3636	0.389	0.4415
Observations	193	191	191	191	191	191

Standard errors in parentheses. Significance: *** $p < 0,01$; ** $p < 0,05$; * $p < 0,10$.
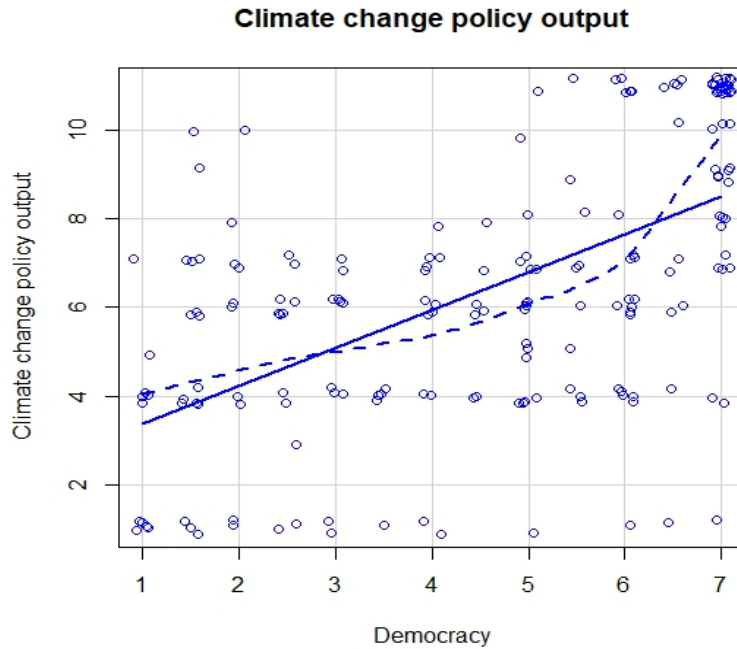
Figure 2. Scatterplot of the effect of democracy on climate change policy output. The independent and dependent variable is jittered. The dashed line shows real mean value.

These results from the regression analysis enables reasonable conclusions concerning contrafactual difference and isolation. A general democracy effect can be argued. Countries with higher levels of democracy seem to have more ambitious climate change policies. GDP per capita, GDP per capita^2, economic growth or population does not substantially affect this relationship. However, it is not possible to exclude that other variables than the ones included in the models could have an underlying effect. Other possible control variables that could be relevant to control for are for example carbon intensity of the economy, region, or natural resource availability. Nonetheless, given the strong correlation shown in the presented models it is not very likely that the effect is completely accounted for by an alternative control variable.

Furthermore, the models do not say anything about the chronology of the variables, but simply that there is a correlation. The effect could be reverse, meaning that more ambitious climate change policy leads to higher levels of democracy. From a theoretical perspective however, such a reverse effect is not very likely. It is possible to imagine a long-term reverse effect when it comes to climate *adaptation* policies. Disasters like famine or floods and increased migration flows put pressure on any form of government (Wisner et al., 2003). Therefore, one could imagine that democracies that have adopted early, ambitious climate change adaptation might be more resilient. However, since the effect of climate change

mitigation is fully shared a similar reverse effect is not likely. In addition to chronology, the models do not reveal any information concerning the mechanism. The models describe what the relation looks like, that there is a substantial correlation, but not the causal chain behind the relation.

The previously mentioned difficulty to measure ambition and compare differently structured targets, see validity under 3.7, also has its implications for the results. This thesis makes no claim to explain every specific case. Some cases might, de facto, be more ambitious than their index score suggests, and some might be less. Uruguay for example, has very specific targets sorted by gas. In relation to a 1990 baseline their conditional targets include: keeping power generation emission below 20 gCO_2/kWh and reducing CH_4 emission intensity per kilogram of beef by 46% (INDC, 2018). This can be viewed as quite ambitious but since they lack a cohesive economywide reduction target they get a quite low score on the climate change policy output index.

Nigeria on the other hand, has a conditional reduction target of 45% compared to a BAU scenario. This means that they get a higher score on the index. In reality though, this means that they currently have emissions of around 2 tonnes equivalent CO_2 (CO_2e). They calculate that without climate action, emission would be around 3.4 tonnes of CO_2e by 2030. Their 45% reduction target in absolute terms means that they aim for emissions around 2 tonnes CO_2e by 2030 (INDC, 2018). Hence, their target does not actually entail an emission reduction from the current state.

However, the aim of the thesis was never to explain every specific case. The correlation found is so strong that a *general* democracy effect on climate change policy output can be argued. The credibility of the result is enforced by that a significant and substantial correlation has now been found by different researchers at different times, since Bättig and Bernauer (2009) also found a positive correlation. Additionally, the models show an important, in spite of possible validity flaws, attempt at comparing post-Paris climate policies that Victor (2016) called for. Throughout the thesis, the aim has been a high level of openness to allow for future improvements.

Furthermore, it is important to acknowledge that these results do not convey any information about the countries actual implementation capacity. As previously mentioned, ambitious climate change policies are, however, important on their own. It increases the chance to shame actors who openly free-ride, and it can be used by national organizations and interest groups to put pressure on different actors (Keohane & Oppenheimer, 2016). To use results like

these, to form institutions that facilitie ambitious climate change policies are therefore important.

The main aim of this thesis was to test Bättig and Bernauer's (2009) results that more democracy correlates with more ambitious climate change policies. There is no point in comparing exact numbers since climate change policy was operationalized differently. The models presented in this study do however confirm the significant and substantial relation from Bättig and Bernauer's (2009) findings. The results imply that even though the state of democracy and the structure of international climate change cooperation have changed (The Freedom House, 2018; UNCCC, 2018) their theory still holds.

The significant and substantial correlation shown in Model 3 supports Sen's (1999) argument that expansion of political freedom has an instrumental value. Sen (1999) argued that democracy is important for the generation of well informed and reflected choices. Model 3 indicates that this is true as authoritarian regimes seem to laggard, even in the face of a growing threat, when it comes to the decision to commit to ambitious climate change mitigation.

An important implication of the results is that they do not support the idea of 'good authoritarianism'. Beeson (2010) suggested that democratic governments would struggle to gain support for climate action. Even though the results presented in this thesis do not convey any information about actual implementation capacity, democratic governments at least seem to have gained support for more ambitious climate change policies. The strong relation between democracy and ambitious climate change policies further disputes Zao's (2010) notion of the 'China model' as a valuable alternative path to development. The models presented in this thesis cannot confirm whether any form of government is stronger related to forceful economic development. The found relationship between democracy and ambitious climate change policies is however enough to cast a shadow of doubt over the arguments behind the instrumental value of authoritarianism for development. In light of the presented results, the arguments presented by Zao (2010) and Lindgren (2014) appear short-sighted. Even if authoritarianism would lead to quick economic development it is then likely that it would result in a long term lower level of both social and economic development due to the consequences of climate change.

The serious consequences of climate change described by Speeth and Haas (2006), such as an increased number of natural disasters and displacement, emphasize the importance of these results. Furthermore, the found relation underlines Hobson's (2012) statement that climate change is not simply a technical issue but deeply political. Consequently, it is important

not to limit the consideration of environmental impact to issues of technology, industrialization or economic growth. The found substantial correlation implies that institutional design on a national level can be important in order to facilitate climate action on global level. This supports Ostrom's (1990) argument that democratic institutions are more effective at overcoming free-rider problems. The finding that the state of government seems to affect the probability of global public goods provision, in spite of climate change generally being defined as a tragedy of the commons, offers hope in the face of grim collective action theories.

An additional observation deserves to be mentioned, although not directly connected to the results. The process leading up to the results confirms Victor's (2016) and Young's (2016) apprehensions concerning the problematic structure of the INDCs when it comes to monitoring and verifying. The different baselines and formulations of mitigation targets indeed complicates comparisons and estimations of ambition. Some countries, for example India, express their targets in emission intensity of GDP, others only include specific sectors, for example Niue, and still others only have sector-specific targets, for example Brunei (INDC, 2018). This is problematic since the positive effects of ambitious policy output previously described, such as the ability to shame others or domestic actors' ability to legitimize their actions, can be assumed to largely depend on the involved actors' ability to estimate other actors' ambition. Consequently, there is a need for defined guidelines concerning the structure of the INDCs. Without tampering with the freedom to determine the content of the targets on the national level, clearer guidelines concerning how the targets should be formulated could be designed.

4.2.1 Non-Annex 1 Countries

Table 4 shows the results of Model 1.1, 3.1, 5.1 and 6.1, which only include the Non-Annex 1 parties to the Paris Agreement. The results show that the correlation is weakened with a b-coefficient of 0.44 in Model 3.1. Which implies that another variable might affect the relation. However, the correlation is still significant and holds when the control variables are added. Neither of the control variables included in Model 3.1 have a significant effect. This means that even if you only look at the countries treated as developing countries in the Paris Agreement, a positive democracy effect can be found.

Table 4. Non-Annex 1 countries, the effect of democracy on climate change policy output

Variable	Model 1.1	Model 3.1	Model 5.1	Model 6.1
Democracy	0.44561*** (0.09335)	0.44444*** (0.11261)		
Political Rights			0.38189*** (0.10020)	
Civil Liberties				0.59540*** (0.12103)
Log. GDP per capita		-1.00736 (1.74779)	-0.85057 (1.75069)	-1.36076 (1.70648)
Log. GDP per capita^2		0.05993 (0.10594)	0.05250 (0.10617)	0.07947 (0.10339)
Economic growth		0.13649 (0.07082)	0.13368 (0.07120)	0.12987 (0.06893)
Log. Population		-0.03745 (0.09688)	-0.05400 (0.09588)	0.01619 (0.09582)
Intercept	3.59666*** (0.42720)	8.03580 (7.32067)	7.81863 (7.34948)	8.12113 (7.12370)
Adjusted R^2	0.1276	0.1328	0.127	0.1778
Observations	150	148	148	148

Standard errors in parentheses. Significance: *** $p < 0,01$; ** $p < 0,05$; * $p < 0,10$.

The correlation between democracy and ambitious climate change policy, that holds even when no conditionality is excluded, or you only include Non-Annex 1 countries, is of great relevance for development studies. As previously mentioned, it supports the instrumental importance of democracy which further means that it could be used as an argument in favour of democratization aid. The result implies that aid which supports democratization is more sustainable and consequently weakens the support for aid that subscribes to the 'China model'. It further emphasises the possible environmental impact of aid projects that might not seem directly connected to the environment. Hence, the results are in line with Hobson's (2012) argument that in order to truly legitimize development strategies, one needs to consider the possible environmental impact, not only the social and financial impact. Based on the found

correlation, the consideration of climate friendly institutional design could lead to later ambitious climate change policies. Hence, the need for rethinking one's whole development strategy once a certain level of economic development is reached is avoided.

4.3 Political Rights and Civil Liberties

Model 5 and 6, respective Model 5.1 and 6.1, show how different parts of democracy are related to climate change policy output. In Model 5 the independent variable political rights is used together with all control variables. In Model 6 the independent variable civil liberties is used together with all control variables. The results show a significant and substantial correlation between both political rights and civil liberties, and ambitious climate change policies. However, the b-coefficient is higher for civil liberties, approximately 0.93, than for political rights, approximately 0.67. This difference is shown in Figure 3. A similar difference can be seen when only Non-Annex 1 countries are included in Model 5.1 and 6.1. The b-coefficient for civil liberties is approximately 0.59 whilst it is approximately 0.38 for political rights.

These results suggest that civil liberties, such as freedom of expression and organizational rights, has a stronger connection ambitious climate change policies, than the sole presence of, for example, a fair electoral process. These results provide an interesting starting point for possible future research focusing on the mechanism. Based on the difference between political rights and civil liberties one might be able to find further support for Niemeyer's (2013) theory that public deliberation is the key component of democracy that is related to ambitious climate change policies. It implies that basic problem recognition might be the key problem and that organizational rights and free debate is important in order to educate the public. Which might in turn cause governments to provide ambitious climate change policies. However, more research would be needed to confirm this casual chain.

4.4 Implications for Future Research and Action

By studying the scatter plot in Figure 2, one can see that there are divergent and representative cases. Azerbaijan and Oman are examples of divergent cases. Azerbaijan has a democracy score of only 1.5 but still has a climate change policy index score of 10. Oman on the other hand has a democracy score of 6.5 but only a climate change policy index score of 1. Both these cases could be used for interesting case studies in future research, in order to generate competing theories.
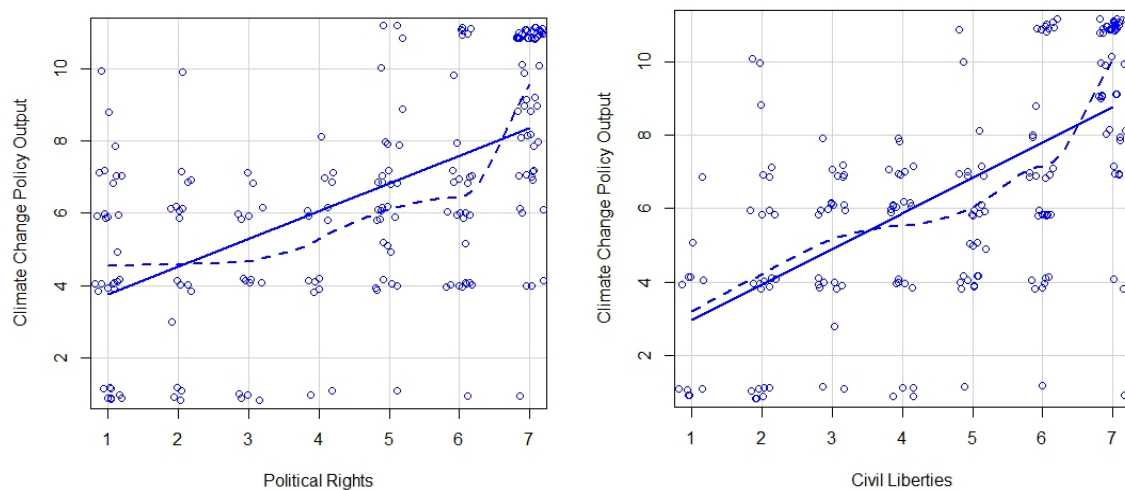
Figure 3. Scatterplots showing difference between the effect of Political Rights (left) and Civil Liberties (right) on climate change policy output. The independent and dependent variables are jittered. The dashed lines show real mean value.

Honduras and the Philippines both make up representative cases that are located on the least-squares line. Honduras has a democracy score of 4 and climate change policy score of 6. The Philippines has a democracy score of 5 and a climate change policy score of 7. These cases could be used in future research to develop our understanding of a possible casual chain relating to civil liberties.

The results presented here have several implications for future actions. First, they imply that democratization of high emission autocracies, and protection of democratic institutions in already democratic high emission countries, is important to facilitate climate action. Climate action, that is crucial in order to avoid the consequences that would constrain developing countries' opportunity to continue developing. Based on developed countries' historical responsibility for climate change, it is reasonable that they should have more ambitious climate change policies (Hobson, 2012). In relation to the results, this underlines the particular importance of protecting democratic institutions in these countries. Consequently, a close eye needs to be kept on the trending populism and attempts to limit civil liberties in high emission democratic countries that are described by The Freedom House (2018). President Trump has already announced the USA's intention to withdraw from the Paris Agreement (Volocovici, 2017). This decrease in climate change policy ambition cannot be allowed to become a trend. On the contrary, a continuous ramping up of climate action ambition is crucial to avoid the

severe consequences that would affect the whole world, and people in developing countries in particular.

Furthermore, the results underline the importance of analysing how aid might impact climate action, even when it does not seem connected at first glance. As institutional design evidently can have an effect, it is important to tread carefully in order to avoid an unconscious support of carbon dependent development strategies. However, it is here worth noting the danger of development blueprints that Easterly (2006) described. Each case is, of course, different and as the scatterplots show, there are divergent cases. What results show is that it is important to analyse the impact of institutional design and that there seems to be a positive democracy effect in most cases.

The most important implication of the presented results to keep in mind in the future is of an optimistic character: that a way forward exists. We should not get locked into thinking that problems of collective action cannot be overcome. The results support the idea that institutional design can affect the possibility to avoid global free riding.

5. Final remarks

In the beginning of this thesis the research question was stated as follows: *In what way does democracy affect national climate change policy output?* The discussion above entails that democracy positively affects climate change policy output, and that this effect is both significant and substantial. This thesis hence contributes to the debate concerning democracy's instrumental value for development. This large-N study presents empirical evidence that supports arguments for democratization in order to achieve a sustainable development. Furthermore, it suggests that civil liberties are the component of democracy that has the strongest effect on climate change policy output.

More research is needed concerning the mechanism and the deviant cases. However, since this relation between democracy and climate change policy now has been found in this thesis and by Bättig and Bernauer (2009), at different points in time, the results are arguably reliable. Based on these results, democratization aid and protection of democratic institutions is important to facilitate climate action. Democracy can affect the likelihood of collective action and increase the provision of public goods in the form of ambitious climate change policies.

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