

Explaining INDCs

A study of causes for developing states varying national goals for mitigation of climate change

Abstract

In this thesis the following research question is posed: "Which factors influence the levels of developing states nationally determined targets for reduction of greenhouse gasses?" The research question is answered through a quantitative study of 47 least-developed, developing and newly industrialized countries. The dependent variable of interest in this study is the level of mitigation targets, which are a part of Intended Nationally Determined Contributions (INDCs). Mitigation targets which are comparable to each other were included in the study, this was decisive for the countries that were included in the sample. The influence of six domestic factors on the levels of mitigation targets is studied with regression analysis. The factors are: the size of the economy, the size of the fossil fuel industry, democracy, gender inequality, domestic environmental standard and environmental vulnerability. These factors are categorized into economic, institutional and environmental factors. The results suggest that the size of the economy of a developing country influences the level of the mitigation target that it adopts positively. The results did not support the other hypotheses.

Key words: INDCs, climate change mitigation, international climate politics, domestic accounts of international relations, developing countries

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1 Introduction

The emergence of nationally determined mitigation targets in 2015 is perhaps the latest significant development in international climate change politics. The “INDCs” (Intended Nationally Determined Contributions) have been adopted and put forward by 185 countries, after the UNFCCC (the United Nations Framework Convention on Climate Change) urged the states to do so (Climate Action Tracker 2014). This means that a host of different national climate goals and policies have been adopted by a large portion of the world’s sovereign states in a short period of time.

States performance in environmental issues, i.e. actual mitigation of emissions, is generally the subject of research in Political Science. Policy aspiration can tell us something about a state’s commitment to environmental issues, but is often included as one measure amongst many of climate performance (Christoff, Eckersley 2011 s. 432-433).

With the current development of INDCs in mind, one could argue that policy ambitions needs further attention in Political Science research. The nationally determined goals that have been put forward in 2015 are crucial to climate politics as a whole. They were firstly the basis for the international climate negotiations in Paris (COP 21). They are also national plans that will condition the kind of national actions and policies that will be put in place in the future, in response to climate change. “Steering by objectives” is becoming increasingly common in state responses to environmental problems in general, Sweden is one example where this is evident (Hildingsson 2010 s.155). Policy ambitions are principally interesting in Political Science since ambition and priority is fundamental for state performance in different issues and the character of political action and policies.

When it comes to the INDCs, the actual ambitions of the mitigation targets seem to vary to a great extent. Barbados has put forward a target to reduce greenhouse gas emissions with 44 % by 2030 in relation to business as usual, while Mauritania has an unconditional target of 2.7 % by 2030 in relation to business as usual for example. This study aims to explain why the levels of the different mitigation targets that can be compared with each other vary greatly. The influence of economic, institutional and environmental factors on these mitigation targets is researched.

Developing and newly industrialized countries are the units of analysis in this study. These terms are used for the purpose of distinguishing between these states and developed (western) countries, which are not included in the analysis. Another similar distinction that can be made is between the “global north” and the “global south”. The states that are included have not been chosen through a random process and cannot be said to represent a larger population of states. The conclusions that are drawn in this thesis apply primarily to the included states, unless otherwise stated. The study researches INDCs before the Paris Climate Conference and does not consider if the mitigation targets have been revised at later stages.

1.1 Purpose and Research Question

The UNFCCC recognizes that there exists different national circumstances that determine how ambitious individual states’ targets are and what is considered a fair target (United Nations Framework Convention on Climate Change 2014). The individual states have discussed their national circumstances and justified their targets in the light of circumstances in their INDCs as well. As a student of Political Science it is crucial to question the actors’ accounts of reasons for their actions. One has to ask: What are the real reasons that a particular states climate goal was high (or low)? Why do the nationally determined goals vary so much? There might be circumstances that influence the nationally determined targets, but they might be completely different circumstances than the ones the states themselves mention. The research question has been formulated as:

”Which factors influence the levels of developing states nationally determined targets for reduction of greenhouse gasses?”

Since previous research has *explained* positions in previous climate change negotiations and *described* INDCs, there should be a relevance in explaining mitigation targets of the INDCs while utilizing the results of the before mentioned studies. This should lead to a cumulative process.

The research question is answered through a quantitative study, which puts developing and newly industrialized states’ mitigation targets expressed in percentages as the dependent variable. Six hypotheses of factors that could influence mitigation targets are presented which produce independent variables. Their influence on the mitigation targets is tested through *regression analysis*.

2 Theory

In the theory section previous research related to the subject is presented and the perspective of how nationally determined climate goals can be understood that is utilized in this thesis is elaborated upon. After that, the hypotheses that are utilized in the study are presented.

2.1 Previous research

The first questions that might be relevant to ask are: how can international environmental cooperation take place? Why do the vast majority of the world's states comply with the demands of the United Nations Framework Convention on Climate Change and adopt INDCs? One answer is based on environmental regimes. A regime can be defined as: "a system of principles, norms, rules, operating procedures and institutions that actors create to regulate and coordinate action in a particular issue area of international relations" (Chasek et al 2014 s. 19). Most regimes are centered on a binding agreement of some sort, in the case of environmental regimes the most common kinds are conventions (Chasek et al 2014 s. 23). Since environmental regimes shape states' actions and they are centered on conventions, the power of the United Nations Framework Convention on Climate Change to demand certain state actions is understandable.

Environmental regimes shape the actions of states through norms (Chasek et al 2014 s. 23). They are not independent entities however, they are created by states in the first place. So how can the creation, implementation and expansion of international environmental regimes by states be explained? What constitutes commitment in international environmental issues? Previous research has identified that this can be explained to a large extent by the domestic political factors of states, which define states interests in different issues (Chasek et al 2014 s. 51).

The Intended Nationally Determined Contributions are new occurrences, the first one was submitted by Switzerland to the United Nations Framework Convention on Climate Change on the 27 February 2015 (The United Nations Framework Convention on Climate Change 2015). As a consequence much of the research that has been conducted of the INDCs is focused on assessing and comparing mitigation targets. The Climate Action Tracker is one example worth mentioning, it analyses mitigation targets of major emitters in relation to the aim of holding global warming

below two degrees Celsius. The Climate Action Tracker presents scientific analysis conducted by four research organisations (Climate Action Tracker 2014).

This is quite logical, when new phenomena is observed it is sensible to describe them in a meaningful way, before explaining them. In fact adequate description of phenomena is essential to be able to put forward explanations and causal relations (Teorell, Svensson 2007 s. 28).

Research that is directed at explaining INDCs or arguing that there exists causal relationships between the level of mitigation targets and independent factors has not been conducted (that I know of). It does seem sensible to assume that higher mitigation targets represent higher environmental commitments, however. As previously mentioned, domestic factors have been utilized to explain state commitment to environmental regimes. Domestic factors are thus assumed to be of relevance for INDCs as well.

I turn now to previous research which has emphasized domestic factors in states positions in climate change negotiations in Copenhagen 2009. Stefanie Bailer and Florian Weiler have investigated how structural, economic, domestic and strategic factors affect the positions states have taken in the issues of Co2-reduction and mitigation finance (2014 s. 43-45). They put forward six hypotheses which in essence state that vulnerability to climate change, economic power, democracy, size of fossil fuel industry, domestic environmental standard and increased IO membership could affect how cooperative individual states are in climate negotiations (Bailer, Weiler 2014 s. 46-50).

They found that economic power and domestic environmental quality had a significant influence on states cooperation in climate change negotiations, when it comes to reduction targets. Increased economic power led to less cooperative positions and increased domestic environmental quality led to more cooperative positions. Democracy, vulnerability to climate change, fossil fuel industry and IO membership did not have statistically significant effects on the states positions in the matter of reduction targets (Bailer, Weiler 2014 s. 58). Other results were found for the issue of mitigation finance, but they are not as relevant for the purpose of this thesis.

There are thus theoretical reasons to suppose that the adoption of mitigation targets by states in international climate change politics are influenced by domestic factors, based on Stefanie Bailer and Florian Weiler's work. Intended Nationally Determined Contributions are ambiguous since they can be considered to be a key part of the international negotiations of the Paris Climate Conference, at the same time they are national policies. Different factors have been linked to different national responses to climate change, which are relevant when considering that INDCs are national policies as well as part of international negotiations.

Democracy is a factor that is considered when it comes to national climate policies. Environmentalists and political theorists generally expect stronger democracies to produce stronger climate policies. The character of domestic (democratic) political institutions can enable or disable ambitious climate policies as well. If the costs of mitigation of climate change are high for a state, this can be expected to lower its ambition. States that are dependent on fossil fuels to a larger extent in exports and domestic energy use might face higher costs of mitigating climate change. National discourses and “framing” of climate change can play a role in the ambition of national climate policy as well (Christoff, Eckersley 2011 s. 440-444).

Overall, the research of international climate negotiations and national climate policy share some domestic factors that are emphasized. Democracy, the fossil fuel industry and domestic environmental standard are factors that are mentioned often, for example. The specific hypotheses that have been formulated, based on the literature, are presented below.

2.2 Factors of relevance for INDCs

In the following segment six hypotheses are derived from the literature of environmental and climate politics regarding factors that influence states’ commitments in climate issues. These hypotheses are categorized into Economic, Institutional and Environmental factors.

2.2.1 Economic factors

The size of the economy of a developing country can be relevant for the level of the mitigation target it adopts. Economic activity is essential in climate politics, since it is the cause of Co₂-emissions and many environmental problems. Industrial development has in fact been driven by fossil fuels (Kartha 2011 s. 510). Developed countries or Annex B –parties have been expected to take the lead in climate mitigation because they essentially created the climate change problem. This is why there has been a “firewall” between Annex B and non-Annex B countries in the UNFCCC (Kartha 2011 s. 513).

Developing countries which are the units of analysis in this thesis generally wish to ensure their right to development. Without economic development deep cuts in emissions will not be made by developing countries (Kartha 2011 s. 505 - 508). Overall, there are aspects of ethics and fairness involved in the levels of mitigation that states commit to. The perhaps most essential fact is that a country has to be

emitting greenhouse gasses and contributing to the climate problem in order to be expected to contribute to the solution and mitigate emissions. This does not mean that bigger economies always commit to environmental issues to further extents, this is certainly not true for developed countries. When it comes to developing countries and least developed countries, one can expect that the countries that have achieved further economic development feel more responsibility when it comes to mitigation than the countries with very small economies and climate impacts (countries with less than 1000 GDP per capita in constant US-dollars for example) however. A developing country or newly industrialized country may have more responsibility to mitigate climate change than a least developed country, for example. Thus, the size of the economy (and in turn the size of the emissions) of a developing country is a factor that can be expected to influence mitigation targets positively.

Hypothesis 1: States that represent countries with more economic activity are expected to pledge higher nationally determined mitigation targets.

The size of the fossil fuel industry in individual states can be expected to influence their environmental commitments negatively. As Naomi Klein puts it “Obama has a hell of a hard time saying no to the fossil fuel industry” (2014 s. 141).

Generally, capital and state are mutually dependent and intertwined. Peter Newell states that capital owners exercise structural power over state officials and that they have great power over state decision-making. There have also been several examples of the leading role played by large companies in vetoing provisions of global environmental agreements (Newell 2012 s. 43). He states further that: “Political elites have major interests in key economic sectors which exact significant environmental damage including commercial logging, mineral and oil exploitation and plantation cropping” (Newell 2012 s. 44).

Stefanie Bailer and Florian Weiler expect domestic interest groups to be more successful in their lobbying of the state when they have a bigger spending capacity and are better organized, which leads them to include the relative economic size of the fossil fuel industry as a variable which could influence states’ climate negotiation positions negatively (2014 s. 48).

Peter Christoff and Robyn Eckersley state that dependency on fossil fuel can be a predictor of negative framing and poor state performance on climate change (2011 s. 445). They also state that it is harder to become a leader in climate change responses if there exists greater fossil fuel dependency in the domestic energy use and/ or the export sector of a state (2011 s. 442).

If the size of the fossil fuel industry is big in a country, the politicians of that state may have vested interests in protecting the industry because of its importance to the economy and conceivable profits from the industry. The representatives of the state may also be lobbied by the industry. All in all, states' environmental commitments such as mitigation of climate change may be reduced if the fossil fuel industry is big within a country, so not to hurt the industry.

Hypothesis 2: States that represent countries with bigger fossil fuel industries are expected to pledge lower nationally determined mitigation targets.

2.2.2 Institutional factors

Democracy can be assumed to have a positive effect on states' environmental commitment. Eric Neumayer has found that there is a positive relationship between democracy and environmental commitment through a quantitative study. He found that democracies sign and ratify more environmental multilateral environmental agreements, they participate in more environmental intergovernmental organizations and put more of their land area under protection status etcetera than non-democracies (Neumayer 2002 s. 139).

The theoretical underpinning of such a positive relationship between democracy and environmental commitment may have to do with the fact that civil society or green movements push environmental issues as political priority (Newell 2012 s. 154-155). If a state is more democratic environmental concerns should have more representation in decision-making processes and environmental commitment should increase as a consequence.

The link between democracy and environmental commitment may also have to do with the fact that individuals that are in power in democracies can be replaced (through the democratic process), this incentivizes these individuals and the state to produce public services of better quality than autocracies (Baum, Lake 2001 s. 587, 590). This should include services and commitment to environmental issues of various sorts.

Hypothesis 3: States with better functioning democracies are expected to pledge higher nationally determined mitigation targets.

Many argue that *gender inequality* is linked to environmental degradation. Patriarchy can be viewed as an expression of the alienation of males, which in turn is materialized through domination over "others". "Others" are nature, women, indigenous people and more. Ecofeminism brings forth this perspective in critique of patriarchy, eurocentrism and colonialism. It argues that these issues are

connected. Domination over nature is a male, patriarchal ambition and the common denominator in different issues (Salleh 1997 s. 40-49).

There are convincing examples of how patriarchal norms are connected to environmental degradation. Colonialization, where men set out to find new lands (while women stayed home), exploited natural resources and enslaved local people might be a good example (Salleh 1997 s. 60). If one views modern capitalism as a patriarchal project then there are countless examples of how patriarchy has led to negative consequences for the environment.

States that represent societies with less gender inequalities should (according to perspectives based on ecofeminism) demonstrate higher environmental commitments. Patriarchal norms should not be as represented in the decision making process in relatively gender equal states and degradation of the environment should be questioned at a higher rate.

Hypothesis 4: States that represent societies with less gender inequalities are expected to pledge higher nationally determined mitigation targets.

Better *domestic environmental standard* should affect nationally determined mitigation targets positively. Bernauer et al assume that states that have put in place strict domestic environmental regulation have fewer political and economic hurdles to overcome when ratifying international environmental commitments (2010 s. 523). There may be lower hurdles and it may be easier to set higher nationally determined mitigation targets as well, when there are well-functioning environmental institutions in place in a state.

Andreas Duit has categorized environmental states (states that manage environmental problems in an active way) through measurement of the states' regulation, redistribution, organization and knowledge generation of environmental issues. Based on this, he finds four types of environmental states: established environmental states, emerging environmental states, partial environmental states and weak environmental states amongst developed countries. Established environmental states set up environmental administrations early in relation to other states, they use taxation to a large extent, they have high amounts of environmental policies and they have average levels of "Green research" spending (Duit 2015 s. 83-86).

One could assume that established environmental states prioritizes the environment more often than other environmental states, or states that cannot be classified as environmental states at all. This could translate to the adoption of higher nationally determined mitigation targets by states with better domestic environmental standard.

Hypothesis 5: States with higher domestic environmental standard are expected to pledge higher nationally determined mitigation targets.

2.2.3 The Environmental factor

One of the most fundamental factors that affects states' behavior in environmental issues is *environmental vulnerability*. As expressed by Detlef Sprinz and Tapani Vaahtoranta: "In most cases environmental policy is a reaction to environmental problems. Without actual or anticipated environmental degradation, there would be no need for environmental protection. Conversely, we hypothesize that the worse the state of the environment, the greater the incentives to reduce the ecological vulnerability of a state" (1994 s. 79). Stefanie Bailer and Florian Weiler also consider environmental vulnerability, but are more precise and expect vulnerability to climate change to have an effect on states' positions in climate negotiations (2014 s. 46). In the absence of a way to operationalize vulnerability to climate change I hypothesize that environmental vulnerability in a general sense make states inclined to prioritize environmental protection, including mitigation of climate change. The state of a country's ecosystems and to which extents they are threatened by anthropogenic and natural hazards could affect the priority that is given to climate mitigation.

Essential here is that countries' environments are vulnerable to different degrees, which conditions states' responses. There is a scientific consensus that planet Earth itself is being subject to climate change, but this fact is not expected to make climate policy ambitions high in itself. As expressed by Sprinz and Vaahtoranta: "Each state is concerned in the first place with its own territory and pays only lip service to the idea of 'spaceship Earth'" (1994 s. 78). This connects to the "tragedy of the commons"-description of climate change as an issue. Individual interests are linked to economic gains and pollution of the atmosphere, while mitigation of climate change is more of a common interest than an individual one (Barker 2008 s. 19). What makes mitigation of climate change an individual interest is if the individual state's environment is vulnerable to disruption. That climate change is happening on a global scale does lead to climate negotiations and adoption of INDCs by states, but the ambition of mitigation targets may have more to do with the individual vulnerability of the countries' environments .

Hypothesis 6: States that represent countries that have more vulnerable environments are expected to pledge higher nationally determined mitigation targets.

3 Material

The data used in this thesis comes from the World Bank, the Center for Systemic Peace, the United Nations Development Programme, the United Nations Environment Programme, Yale University and in some cases partners to these institutions. Data for the dependent variable (nationally determined mitigation targets) has been gathered from the Center for Climate and Energy Solutions comparison table of submitted INDCs and the United Nations Framework Convention on Climate Change (Center for Climate and Energy Solutions 2015). The comparison table makes the information in the INDCs accessible and easily compared. The data has been analyzed in the statistics program STATA.

Originally, unconditional targets that were in relation to Business as Usual-levels and unconditional targets that were in relation to 1990-levels with the target year of 2030 were included as two separate dependent variables in the study. The BAU-targets were considered comparable amongst themselves and the 1990-level targets were considered comparable amongst themselves. Since the European Union has a common mitigation target, the amount of targets that are in relation to 1990-levels drops significantly, they are less than 20. The units of analysis which have 1990-level targets thus become too few for an extensive study and regression analysis is not meaningful to perform on those observations. Only countries with unconditional economy wide BAU-targets are therefor included as units of analysis in this study, they come from (what is commonly referred to as) developing, newly industrialized and some least developed countries. They are 47 in total. The included countries and their mitigation targets can be found in appendix 1.

4 Method

The method used in this quantitative study is *multiple linear regression analysis*. It is commonly used to understand how much one (dependent) variable is altered by the change in another (independent) variable in the data (Teorell, Svensson 2007 s. 167-168). In this study linear regression is used to test if the independent variables influence the level of the included mitigation targets. This study is cross-sectional (the data is taken from one point in time) thus the variation between the countries (in both the dependent and independent variables) is of relevance for the regression analysis.

When using multiple regression analysis issues of multicollinearity can arise. Multicollinearity occurs when two or more independent variables are highly correlated with each other, this leads to problems of understanding which independent variable is actually influencing the dependent variable and technical issues with the calculation of the model (Laerd Statistics 2013). Another potential problem with multiple regression analysis is that large samples are usually needed if the results are to be generalizable. One rule of thumb for social science research is that 15 observations per independent variable is needed (Pallant 2005 s. 142).

To avoid these problems all independent variables are not tested in one multiple regression analysis. Economic variables, institutional variables and the environmental variable are analyzed in separate regression models. In this study there are 47 countries with targets that are considered comparable, which is not a particularly large sample. The number of observations are sufficient if the variables are grouped and analyzed in three different regression models though. When it comes to the institutional factors there are some missing values though, the number of observations are 35. Since there are three institutional factors 45 observations would be needed for more reliable results.

Another issue which can arise in regression analysis is heteroscedasticity of the data, which is when the variance along the regression line differs at different values of the variables. After plotting the data graphically and finding some variables that could be heteroscedastic, robust standard errors were included in the regression analysis. Robust standard errors can be used to deal with failure (of the data) to meet assumptions of the regression analysis, such as heteroscedasticity and residuals that exhibit large influence (UCLA Statistical Consulting Group 2015). The robust standard errors takes the fact that the data is flawed into account, simply put.

Beta coefficients or standardized coefficients are used when interpreting the results of the regression analysis. They are used when the independent variables are made up of different units of measurement (such as dollars and indexes of different sorts) to enable comparison between the influence that each variable has on the dependent variable (Pallant 2005 s. 153). With standardized coefficients the coefficients can be said to be on the same scale.

5 Operationalizations

Since this study is purely cross-sectional, the data of the independent variables should ideally come from a year as close in time to 2014 and 2015 as possible, when the mitigation targets were set. When the independent variables are influencing the dependent variable, they are doing so in 2014-2015 when the targets were set. If data is taken from earlier years there is a risk that the variables have changed with time and are influencing the dependent variable in ways that is not included in the statistical model. Data from 2015 is rarely available since the year is ongoing, thus data from 2014 is considered ideal.

5.1 Independent variables

5.1.1 The size of the Economy

The size of the economy is operationalized through the measurement of Gross Domestic Product per Capita in constant 2005 US-dollars for the year of 2014. The data comes from The World Banks indicators (The World Bank Group 2015). The data stems from a reliable source and is up to date, thus the validity of the operationalization should be good.

5.1.2 The size of the Fossil Fuel Industry

The size of the fossil fuel industry is operationalized through the percentage of GDP that stems from oil, coal and natural gas rents for each country in 2012. The variable is created through adding the separate indicators (Oil rents, Coal rents and Gas rents % of GDP) from the World Bank into one sum.

This measure is used by Stefanie Bailer and Florian Weiler when they operationalize “emitter interests” in their study of negotiation positions of the climate summit in 2009 (2014 s. 56). Since the World Banks data for 2013 had a lot of missing values in these indicators, the data for 2012 has been used instead.

5.1.3 Democracy

The state of the democracy in the individual countries is operationalized through the Polity IV Polity Score for 2014. The Polity IV project is developed by the Center for Systemic Peace. The Polity Score is constructed through a 21-point scale which ranges from -10 (hereditary monarch) to +10 (consolidated democracy). It measures qualities of executive recruitment, constraints on executive authority, political competition and changes in the institutionalized qualities of governing authority (The Center for Systemic Peace 2014).

The Polity Score is beneficial because the effects of democracy and autocracy is measured in one variable, the score is the subtraction of the variables DEMOC-AUTOC in the Polity IV data. It has been used as an operationalization of democracy in earlier Political Science-research (Baum, Lake 2001 s. 605).

Since the developing and newly industrialized countries that are included as units of analysis in this study are a mix between anocracies and democracies it is suiting to choose a democracy index which captures autocratic and democratic qualities of governments.

5.1.4 Gender Inequality

Gender inequality is operationalized through the Gender Inequality Index (GII) for 2013. The GII is produced by the United Nations Development Programme's Human Development Reports. The GII measures different aspects of inequality between men and women, which makes the validity of the operationalization better than other measures. Another operationalization of gender inequality could be the proportion of seats held by women in national parliaments, but that only measures one aspect of gender inequality (The World Bank Group 2015).

The GII measures reproductive health (maternal mortality ratio and adolescent birth rates), empowerment (proportion of parliamentary seats taken by females and the proportion of females and males aged 25 and over who have at least some secondary education) and economic status (female labor market participation) (United Nations Development Programme 2014).

The latest available Human Development Report is the one from 2014, which covers the year of 2013, thus the latest available data is from that year. The index ranges from 0 to 1, with a theoretical score of 0 representing complete gender equality and a score of 1 representing complete gender inequality.

5.1.5 Domestic Environmental Standard

The domestic environmental standard of the individual states is operationalized through the Environmental Performance Index scores in 2014. The Environmental Performance Index is produced by the Yale Center for Environmental Law and Policy and the Center for International Earth Science Information Network at Columbia University (Yale University 2015). The EPI is constructed using 20 indicators that fit into nine different categories, which can be put into the overarching categories “Environmental Health” and “Ecosystem Vitality”. “Environmental Health” measures the protection of human health from environmental harm and “Ecosystem Vitality” measures resource management and ecosystem protection (Yale University 2015).

Stefanie Bailer and Florian Weiler use the measure of SO₂ emissions per capita to operationalize “Domestic Environmental Quality”, but characterize the measure as “rather rough” and part of a trade-off to keep many observations in the analysis (2014 s. 56-57). The EPI has been chosen as the operationalization of domestic environmental standard since it is produced by reliable sources, it also measures state management of environmental issues directly (as opposed to indirectly through measurement of emissions).

5.1.6 Environmental Vulnerability

The environmental vulnerability of the individual countries is operationalized through the Environmental Vulnerability Index (EVI) for the year of 2004. The EVI was devised by the South Pacific Applied Geoscience Commission (SOPAC), the United Nations Environment Programme (UNEP) and their partners. The Environmental Vulnerability Index is a method for characterizing the vulnerability of countries’ environments in an overall sense. It examines ecosystem integrity and how it is threatened by anthropogenic and natural hazards. The EVI classification of countries has been used, which ranges from: 1= Resilient, 2= At risk, 3= Vulnerable, 4= Highly Vulnerable, 5= Extremely Vulnerable (Environmental Vulnerability Index 2013).

The classification of the countries environments is from 2004 and is 11 years old, which could be problematic. Since the vulnerability of countries environments is a variable that changes slowly (in contrast to GDP for example), this should not be too problematic in terms of validity of the operationalization.

Another potential problem with this operationalization is that it measures overall environmental vulnerability and not specifically vulnerability to climate change. Stephanie Bailer and Florian Weiler use a sub-index of the EVI that captures vulnerability to climate change specifically (2014 s. 55). Without the

ability to construct such a sub-index, the EVI classification of environmental vulnerability will have to suffice. The operationalization can be justified because the EVI includes vulnerability to climate change in the classification. Theoretically environmental vulnerability may make states more inclined to prioritize environmental issues as well, as stated in the hypothesis-section.

5.2 The Dependent Variable

The dependent variable (nationally determined mitigation targets) is operationalized through the inclusion of targets that are put forward with a certain type of methodology, to enable comparison between the targets. Unconditional economy-wide mitigation targets that have the base level of BAU (business as usual) expressed in percentages with the target year of 2025 - 2035 are included in the data. Most included countries have adopted goals with the target year of 2030, a few countries that have reached the other criteria which have the target years of 2025 or 2035 have been included as well. This means that 47 targets in total are included that are put forward by states that conventionally are characterized as least developed, developing and newly industrialized. As stated earlier states that set targets in relation to 1990-levels were too few to include in an extensive, quantitative study and were removed.

The level of the mitigation targets is used as the operationalization, since the ambition in climate policies of the included states is of principal interest in this study. A higher mitigation target is considered more ambitious. Costa Rica's target of reducing greenhouse gas emissions by 44 % in relation to business as usual is considered more ambitious than Haiti's goal to reduce greenhouse gas emissions by 5% in relation to business as usual for example. Unconditional targets are used since targets that are conditional on external support are higher because of economic incentives, thus that factor and not the factors that are tested in this study is significant for those kinds of targets. The countries and the targets that are included in this study can be found in appendix 1.

6 Results

The Gender Inequality Index, the Polity IV Polity score and the Environmental Performance Index have missing values for some of the countries in the data. This affects the institutional factors, which contain fewer units of analysis. The total number of countries that are included in the sample is 47.

6.1 Economic Factors

Table 1. Regression analysis. Dependent variable: Unconditional reduction targets in percentages, BAU. Robust standard errors in parentheses.

	Multiple Model beta coefficients
GDP per Capita	.4908325*** (.000237)
Percentage of GDP stemming from oil, coal and gas rents	.2509848 (.1861934)
P> t 	0.000, 0.113
R²	0.2945
N	47

***= p<0,01 **=p<0,05 *=p<0,1 P>|t| = P-value N= Number of Observations
R²= The amount of the variation in X that can be explained by variation in Y

Table 1 shows us that GDP per capita is influencing the mitigation targets positively, the relationship is statistically significant. This means that higher mitigation targets are set by developing and newly industrialized countries that have bigger economies. The results strongly support hypothesis 1.

A bigger fossil fuel industry leads to higher climate goals, amongst the developed and newly industrialized countries that are included in the data as well. The relationship is not statistically significant though. This is the opposite of the relationship that was expected in the hypothesis. This may have much to do with

the fact that developing and newly industrialized countries make up the sample and not developed countries. The results do not support hypothesis 2.

Economic factors as a category seem relevant in the decision-making process of mitigation targets, based on these results. These economic factors are politicized in different ways, which explains their significance for the mitigation targets, as stated in the theory section. The mechanism of their influence on mitigation targets is not based on economic theory, rather economic development is closely linked to discourses of justice and fairness in international climate politics, for example. In total these two factors account for 29, 45 % of the variation in the dependent variable. The interpretation of the results is developed in the analysis-section.

6.2 Institutional Factors

Table 2. *Regression analysis. Dependent variable: Unconditional reduction targets in percentages, BAU. Robust standard errors in parentheses.*

	Multiple Model beta coefficients
Polity IV Polity Score	.1600569 (.3318765)
Gender Inequality Index	-.1676995 (16.23706)
Environmental Performance Index	.2753772 (.1759073)
P> t 	0.272, 0.371, 0.100
R²	0.2147
N	35

***= p<0,01 **=p<0,05 *=p<0,1 P>|t| = P-value N= Number of Observations
R²= The amount of the variation in X that can be explained by variation in Y

Table 2 shows us that the democracy index (the Polity Score) influences the targets positively. The relationship is not statistically significant however and could be the result of random processes. Democracy does not seem to affect the mitigation targets of the included countries in a considerable way, based on these results. The results do not support hypothesis 3.

The Gender Inequality Index influences the mitigation targets negatively in the regression analysis. A negative relationship means that the countries with more gender inequality set lower mitigation targets. A positive relationship would mean that the countries with more gender inequality set higher mitigation targets. The character of the relationship was expected by the hypothesis, however the result is not statistically significant. The result could be a consequence of random processes. Gender inequality does not seem to have a significant effect on the level of mitigation targets of the included countries, based on these results. The results do not support hypothesis 4.

The Environmental Performance Index influences the level of mitigation targets positively in the regression analysis, but not in a statistically significant way. The statistical significance is closer to the significance limits than the other institutional factors, however. The result is on the very limit to being statistically significant on the one-point level. The states' domestic environmental standard does not seem to have a considerable effect on the level of the mitigation targets they put forward, based on these results. The results do not support hypothesis 5.

These institutional factors do not seem to be relevant in the decision-making process of the level of mitigation targets if considered one by one, when it comes to the countries of the sample. None of these factors exhibited statistically significant influences on the dependent variable. Taken together they explain 21, 47 % of the variation in the dependent variable though. Further interpretation of these results will follow in the analysis section.

6.3 The Environmental Factor

Table 3. Regression analysis. Dependent variable: Unconditional reduction targets in percentages, BAU. Robust standard errors in parentheses.

	Multiple Model beta coefficients
Environmental Vulnerability Index	-.1357968 (2.05946)
GDP per Capita	.5025573*** (.0003191)
P> t 	0.426, 0.002
R²	0.2496
N	47

***= p<0,01 **=p<0,05 *=p<0,1 P>|t| = P-value N= Number of Observations
R²= The amount of the variation in X that can be explained by variation in Y

Table 3 shows us that the Environmental Vulnerability Index is influencing the mitigation targets negatively, the relationship is not statistically significant. This means that the countries that have more vulnerable environments that are included in this analysis set lower mitigation targets. This is the opposite of the relationship that was expected of the hypothesis. Since this relationship is far from statistically significant, it is likely that it is a result of random processes.

GDP per Capita has been included as a control variable since small economies often are environmentally vulnerable, island states such as Haiti and Kiribati can serve as example of such states. The economic variable could be suppressing the environmental variable for these kinds of states. This does not seem to be the case however, since the relationship between the Environmental Vulnerability Index and mitigation targets is negative when GDP per capita is controlled for. Environmental vulnerability does not seem to affect the level of mitigation targets of the included countries in a considerable way, based on these results. The results do not support hypothesis 6.

Environmental vulnerability does not seem to be relevant for the decisions on levels of mitigation targets that states make, based on these results. Further interpretation and analysis of the results is presented in the following segment.

7 Analysis

When interpreting the results of the regression analysis, one must consider different circumstances that influence them. In the following segment the results are discussed in relation to these circumstances and the theory that has previously been presented.

Firstly, *the size of the economy* of a country in the sample affects the level of mitigation targets that are adopted positively. Since the relationship is statistically significant on the three-point level this generalization is likely to apply to other developing and newly industrialized countries as well. This confirms that there exist discourses which are based on ‘the right to development’. The right to development refers to the idea that mitigation of climate change can disable access to certain energy sources and technologies which developing countries need to reach a better living standard. Mitigation of climate change should instead be conducted by those that have reached a higher living standard and economic development. With this in mind, developing countries often prioritize poverty over climate change (Kartha 2011 s. 505- 507).

It is unsurprising that poorer countries do not put in place further restrictions on economic activities which can lift them out of poverty. On a practical level, this makes sense. The results may also confirm that there are ethical dimensions to the mitigation targets that decision-makers consider. It is simply not fair that countries that do not contribute to the climate problem in a considerable way should mitigate their emissions to high extents. The term “developmental justice” is telling that developing countries consider mitigation of climate change to be a question of justice and ethics (Kartha 2011 s. 513).

In the UNFCCC the issue of justice has been evident in the way that Annex B (developed countries) have been separated from other countries and have been the subjects of binding reduction targets. The UNFCCC has also asked states to specify how their nationally determined targets are ambitious and fair (United Nations Framework Convention on Climate Change 2014). The issue of justice and responsibility seems to be an integral part of the decision when it comes to INDCs, which illustrates that they should not be misinterpreted as purely national climate policies. They can be viewed as new forms of negotiations within the framework of the UNFCCC. Finally, these results show that developing countries and newly industrialized countries that have achieved further economic development in the sample are willing to take greater responsibility in mitigation of greenhouse gasses.

They do not seem to deflect responsibility to Annex B-countries (developed countries) which are not part of the sample in this study.

The size of the fossil fuel industry influenced the levels of mitigation targets positively as well, not in a statistically significant way though. This is the opposite of the relationship that was expected in the hypothesis. One explanation of this lies in the units of analysis, which are developing and newly industrialized countries. The theoretical arguments that were used for a negative relationship between the size of the fossil fuel industry and the level of mitigation targets are based on the conditions of western countries (the global north). When it comes to developed countries the oil dependency of Australia, Canada and the United States can be expected to lower ambitions in their climate policy (Christoff, Eckersley 2011 s. 442). They have lower mitigation targets than the EU for example and they have chosen different base levels for their goals than the recommended year of 1990 as well (Center for Climate and Energy Solutions 2015). If the sample was made up of developed countries, the relationship would likely be reversed.

The results are surprising still, since non-western oil producers and exporters within the Organization of the Petroleum Exporting Countries (OPEC) have a history of low ambition and blocking progress in climate negotiations (Barnett 2008 s. 1). In the sample of this study six OPEC-countries are included: Angola, Algeria, Ecuador, Indonesia, Iran and Nigeria. The 7 other OPEC-countries have not set mitigation targets that are comparable to the sample. This is a complex issue, the exclusion of some states from the sample makes the interpretation of the results hard. It might be that the oil producers and exporters that do set comparable mitigation targets have a strategy in mind. They may set comparable and relatively high targets to earn credibility and legitimacy in the eyes of the international community. They are also aware that the targets that have been put forward in INDCs are not legally binding under international law, but voluntary (Kinver 2015). Thus there will not be any enforcement of the targets by the UNFCCC.

The oil producers and exporters which are not ambitious in their mitigation targets are not included in the sample since they do not set comparable targets in the first place, this gives the results a bias. The results should not be interpreted as: increased fossil fuel industry leads to increased environmental commitment. The exclusion of important oil producing states, which actually have lower ambitions in climate mitigation, from the sample overstates the positive relationship between the size of the fossil fuel industry and climate goals. The character of the INDCs and the voluntary mitigation targets can lead one to question if high targets always mean high environmental commitments as well. Some states may use the target-setting for mostly strategic purposes.

Still, the oil producing states that are included in the sample have often set rather high climate goals. Gabon has a mitigation target of 50 % and Angola has a target of 35 %, for example. More research is needed to identify if this can be called a strategy to earn credibility, if it is a matter of pressure on decision-makers who are responsible for relatively large amounts of emissions or if it is due to something else.

Environmental vulnerability did not seem to influence the level of mitigation targets in the results, which might seem surprising. As stated in the hypothesis-section, environmental policy is on a fundamental level a reaction to environmental problems. While the results should speak for themselves, there might be circumstances that partly explain this. Firstly, the Environmental Vulnerability Index has been used as the measure, a measure for vulnerability to climate change might have given different results.

Also, environmental vulnerability might not influence the level of mitigation targets, but rather if targets are set at all. Island states that are categorized as extremely and highly vulnerable in the EVI such as Kiribati, Haiti and the Maldives have set relatively low mitigation targets. Other factors, such as perceptions of responsibility for climate change might lead to the level of their mitigation targets. Their vulnerability might instead contribute to the adoption of comparable mitigation targets at all.

The results of this study are conditioned on the countries that have been included, the level of the mitigation targets of the included countries does not seem to be influenced by environmental vulnerability. If this applies to other states such as Annex-1 countries remains unknown.

The results can be seen as an indication that mitigation targets are a highly political and relational matter, states' individual environmental vulnerability is not amongst the most significant factors. The relevance of *individual* state vulnerability and how it is measured can perhaps also be questioned. It is often assumed that individual states care solely for their own territory (Sprinz, Vaahtoranta 1994 s. 78), but is that true? One can point to the 'socialization effects' and norms of appropriateness that international cooperation can have, which might redirect states from their purely self-interested goals (Bernauer et al 2010 s. 516).

Also, decision-makers might define vulnerability in other terms than environmental ones. Climate change is increasingly linked to security issues for example. Human threats to national security that are linked to climate change such as potential climate refugees are increasingly constructed by Realist perspectives (Doyle, Chaturvedi 2011 s. 282-283). There are many perceptions of vulnerability to climate change and what is threatened (the world, nation-states, individuals etc.). To account for different perceptions of vulnerability is no easy task. The five point

scale that the Environmental Vulnerability Index is based on may be insufficient to capture the essence of vulnerability, from the perspective of decision-makers.

The institutional factors did not seem to affect the levels of mitigation targets individually. The importance of the sample must again be stressed. These relationships might not exist for countries that set business as usual-targets. The case might be different for those that set targets in relation to 1990-levels (mostly Annex 1- countries), those that set sector-specific targets and others.

When it comes to democracy and gender inequality the exclusion of some states in the sample might be of particular importance for the results. Some states that are very authoritarian and gender unequal have not set mitigation targets that are comparable. Saudi Arabia, the United Arab Emirates, Egypt, Oman and Turkmenistan are some examples which have not been included in the sample. They have all put forward INDCs which state that some policies, measures and actions will be taken towards mitigation (Center for Climate and Energy Solutions 2015). It might be that gender inequality and authoritarianism is linked to the ambition of mitigation targets, but that these factors lead to the rejection of comparable mitigation targets and adoption of more diffuse policies and measures. Further research is needed on this topic as well.

Still, the sample is made up of states that vary to large degrees on the Polity IV measure of democratic and authoritarian characteristics of government. Vietnam has a Polity score of -7 and a mitigation target of 8 % , while Costa Rica has a Polity score of 10 (the highest possible) and the mitigation target of 44 % , for example. It is surprising that stronger democracies do not seem to produce further commitment in mitigation of climate change. The positive relationship between democracy and environmental commitment has been researched and confirmed with quantitative methods (Neumayer 2002).

It is important to mention that while the hypotheses of Democracy, Gender Inequality and Domestic Environmental Standard have not been supported through the results, these hypotheses are not rejected. The operationalizations and method used in this study captures one way in which climate goals can be influenced by these factors. The influence of these factors might work in ways that are not captured in this study. As mentioned earlier, the institutional factors do explain a considerable amount of the variation in the mitigation targets, which confirms that they are not irrelevant when it comes to INDCs.

The highest amount of explanation for the variation in the mitigation targets of the regression analysis was 29.45 % ($R^2 = 0.2945$ for Economic Factors). While this is a considerable proportion, the variation in the mitigation targets is largely unexplained in the results. This can be viewed as an indication that other factors than the ones that are included in this study are of importance. The character of the

INDCs, that they are voluntary and not legally binding may play a role in this. The factors that are commonly linked to states' environmental commitment may not be as relevant for the context of INDCs. Countries with high targets may be incentivized by the prospect of increased credibility and legitimacy in the eyes of the international community at large and the lack of enforcement of targets may spur them on. Even though a state does not have sophisticated environmental institutions and may not be able to deliver actual mitigation of emissions for example, it could still set high targets if the actual results are not scrutinized.

Andy Kerr has found that only four of 21 developed countries with national climate programmes which were put in place to meet binding reduction targets under the Kyoto Protocol had lowered emissions, only one country had statistically significant reductions (2007 s. 418). This was the case for legally binding reductions, the possibility of setting high voluntary mitigation targets in INDCs and not delivering results is apparent.

The lack of explanation of the variation in mitigation targets in this study could also suggest that international factors, coalitions and relations have been overlooked. The study does focus on domestic factors as possible explanations for the targets. Practical factors, the actual capacity to invest in renewable energy for example, may play a large role for the levels of mitigation targets as well.

8 Conclusions

The results of this study are conditioned on the countries that have been included in the sample. Whether or not a country has set a comparable Business as Usual-target is not a random process, it is rather a political process in itself. Thus, the results should be interpreted with caution.

The general claim that can be made based on the results of this study is that economic development leads to higher mitigation targets, when it comes to developing countries. The results found regarding the positive relationship between the size of the economy and the mitigation targets were statistically significant on the three-point level. This generalization is likely to apply to other developing countries that have put forward INDCs that are not comparable to this sample.

A positive relationship between the size of the fossil fuel industry and mitigation targets was found as well, which was not statistically significant however. This result should be interpreted with caution, the exclusion of some oil producing states from the sample can overstate the importance of this relationship. This result should be seen as specific to this sample and not applicable to developing countries in general. It is definitely not applicable to developed countries. Since the result could be biased and the relationship is not statistically significant, the relationship between the size of the fossil fuel industry of a developing country and mitigation targets remains undetermined.

When it comes to the four other hypotheses; they have not been supported, any further conclusions are difficult to make. There may not exist a causal relationship between the factors and the levels of the mitigation targets. There may also exist problems with operationalizations, or the factors could influence mitigation targets in ways that are not studied in this thesis. The institutional factors do explain a considerable proportion of variation in the mitigation targets (21, 47 %) which confirms that they are relevant to some extent when it comes to INDCs.

Finally, the regression analyses explains the variation in the level of the mitigation targets to relatively low extents. This suggests that factors which have been linked to state environmental commitment previously are not as relevant when it comes to INDCs. The voluntarism of the targets and lack of enforcement could mean that high targets are put forward for other reasons than environmental considerations and commitments. The lack of explanation in the regression analyses could also mean that domestic factors are overstated in this study, international

factors and relations could be more fruitful to research in relation to this topic. More research is needed to understand the considerations and priorities which shape the adoptions of national climate policies.

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Appendix 1

Country	Unconditional reduction targets % in relation to Business As Usual Target year 2025 - 2035
Albania	11.5
Algeria	7
Andorra	37
Angola	35
Argentina	15
Bangladesh	5
Barbados	44
Benin	3.5
Bosnia and Herzegovina	2
Burkina Faso	6.6
Burundi	3
Cameroon	32
Chad	18.2
Colombia	20
Costa Rica	44
Cote d'Ivoire	28
Djibouti	40
Ecuador	20.4
Gabon	50
Georgia	15
Ghana	15
Guatemala	11.2
Haiti	5
Indonesia	29
Iran	4
Jordan	1.5

Country	Unconditional reduction target % in relation to Business As Usual Target year 2025 - 2035
Kiribati	13.7
Kyrgyz republic	12.62
Lebanon	15
Lesotho	10
Macedonia	33
Maldives	10
Mauritania	2.7
Mexico	25
Morocco	13
Niger	2.5
Nigeria	20
Paraguay	10
Peru	20
Senegal	5
Solomon Islands	30
South Korea	37
Sri Lanka	7
Thailand	20
Togo	11.14
Turkey	21
Vietnam	8