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Does good governance have a positive effect on environmental performance?: a cross-national analysis of developing countries

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RESEARCH REPORT

Does good governance have a positive effect on environmental performance? A cross-national analysis of developing countries.

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Declaration of Authorship

I, Monique Jessica Bennett, declare that this research report titled, "Does good governance have a positive effect on environmental performance? A cross-national analysis of developing countries." and the work presented in it are my own. I confirm that:

- This work was done wholly or mainly while in candidature for a research degree at this University.
- Where any part of this research report has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated.
- Where I have consulted the published work of others, this is always clearly attributed.
- Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work.
- I have acknowledged all main sources of help.

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Date:

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Abstract

Does good governance have a positive effect on environmental performance? A cross-national analysis of developing countries.

by Monique Jessica Bennett

In a small but growing body of literature in the social and environmental sciences, scholars debate the effect of democracy on environmental governance. Some argue that democracy reduces environmental degradation while others claim that it does not. Currently, empirical evidence is limited and there isn't much certainty around whether a clear-cut causation exists between the two. This research report examines whether the quality of governance and institutional structures have an impact on environmental policy execution, specifically in developing countries. Today, ecological destruction and resource scarcity are some of the most challenging issues faced by countries in the global South. Environmental regimes may well be apart of the problem and solution to solving environmental crises. To address the weakness of using a single environmental indicator, this paper uses a measure that includes 24 different environmental pressures (eg. tree cover loss, air pollution, water and sanitation, air quality and biodiversity) known as the *Environmental Performance Index* (EPI). A cross-national analysis is conducted to test whether dimensions of *good governance* have an effect on the environmental policy performance of developing countries for 2018. The analysis also includes a dichotomous *democracy* measure that tests whether democratic regimes perform better in terms of environmental policy performance than non-democratic countries. Government effectiveness and regulatory quality are shown to be positive and significant in effecting the outcome of environmental performance, all else being equal. Insignificant scores for regime type (dummy variable) and voice and accountability suggest that democracy is yet to have an effect on environmental policy performance in developing countries. The central finding is that *democracy* alone is a weak predictor of environmental policy performance. The nested cased analysis provides further explanation on this finding and contests whether the empirical results are able to reveal the unique political contexts in both Equatorial Guinea and Namibia.

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My boyfriend

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Mom, thank you for your positive attitude and daily reminders that it'll all turn out fine. Dad, thank you for your unconditional love, even through my moments of stress and worry.

r/AskAcademia

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1 Introduction

Across each of the last four decades, the Earth's surface has warmed successively and some regions have experienced some of the most extreme temperatures on record (IPCC 2014). Today, ecological destruction and resource scarcity are some of the most challenging issues faced by the international community and sovereign states (eg. warming of the air and sea, snow and ice diminishing and sea level rise). Political institutions have become focal points around this topic, and as Young suggests, they may well be apart of the causes *and* solutions to the world's environmental problems. This research report examines whether the quality of governance and institutional structures have an impact on environmental policy execution, specifically in developing countries. Concerns about how human activity is reshaping our planet's complex ecosystems is a near daily feature in the news. The world's rapid development and subsequent globalisation caused a new geological age, the *Anthropocene* (Waters et al. 2016). The Intergovernmental Panel on Climate Change (IPCC) most recent synthesis report begins with the statement that "(h)uman influence on the climate system is clear, and recent anthropogenic emissions of greenhouse gases are the highest in history. Recent climate changes have had widespread impacts on human and natural systems" (IPCC 2014, 2). Definitive conclusions have yet to be be made on what climatic outcome might we experience if certain *tipping* points (eg. collapse of the ice sheets) are surpassed (Nordhaus 2013).

The most recent Conference of Parties (COP25) failed to reach an agreement on new more ambitious targets for the reduction of CO_2 emissions worldwide. This raises questions about whether or not the international system is capable of inspiring unity amongst nations on issues of environmental degradation. The complexity of both the earth's planetary systems and our current era of geopolitics makes coming to a unified agreement difficult. Intervening factors such as income level, human development, population growth, urbanisation and natural resource dependence make cooperation and coherent policy decisions a challenge for nation states. Political divide in the United States (US) on the issue of climate change, for example, has made it difficult for some 'developing' nations to get onboard and begin implementation of CO_2 targets set by the United Nations Framework Convention on Climate Change (UNFCCC). The Notre Dame Global Adaptation Initiative index (ND-GAIN) ranks the majority of low and lower-middle income countries as the most vulnerable to climate change and the least prepared to improve its resilience the effects (Notre Dame Global Adaptation Initiative 2017).

Knowing this information, it remains crucial that developing countries consider their impact on the environment whilst executing development policy, else the progress that's been made will be jeopardise in the coming future. But as the countries who emit the least, if the 'developed' states like the US, Australia and China, fail to set precedent and implement ambitious domestic policy, it is unlikely less developed nations will cooperate.

Scholars in environmental and political sciences are beginning to debate how *governance quality* and *democracy* may affect environmental degradation or environmental regimes (Burke et al. 2016; Davidson and Frickel 2004; Mak Arvin and Lew 2011; Payne 1995; Winslow 2005; Leitão 2010; Barrett and Graddy 2000; Lim and Tang 2002) . Some argue that democracy reduces environmental degradation while others claim that it does not. Currently, empirical evidence is limited and there isn't much certainty on whether a linear causation exists (Midlarsky 1998; Scruggs and Rivera 2008). Most of the literature investigated the relationship between a single indicator of environmental degradation (eg. CO_2 emissions) and regime type across varying sample sizes (due to limited data). Having just one environmental indicator limits the scope conditions to which the theory "democracy improves environmental performance" can be applied because environmental issues are not homogeneous (Winslow 2005). The most commonly used numerical measures to operationalise 'democracy' are *political rights* and *civil liberties*. Both these measures are positively correlated with democratic-like regimes and thus are commonly used to define the political system of a country. Scholars like Welsch (2004) examine whether corruption levels (defined by "[countries] perceived levels of public sector corruption, as determined by expert assessments and opinion surveys" from Transparency International) and find that it does have an effect, particularly in low-income countries. Gani (2012) goes further by looking at five dimensions of governance by the World Bank and measuring them against CO_2 emissions across 99 developing countries. Gani (2012) finds that there is a strong negative correlation between several of the governance indicators and the output of CO_2 emissions. However, at the time of his study the availability of CO_2 emissions data for developing countries was limited. Scruggs and Rivera (2008) argue that examining only a single environmental problem fails to generate a broader picture of *environmental policy performance* in countries, which may prove more useful when wanting to improve or restructure existing institutional arrangements.

To address this weakness, this paper uses an environmental indicator that includes 24 different environmental pressures (eg. tree cover loss, air pollution, water and sanitation, air quality and biodiversity, see Table 3.1). A cross-national analysis is conducted to test whether dimensions of *good governance* have an effect on the environmental policy performance of developing countries for 2018. The analysis also includes a regime type variable that tests whether democratic regimes perform better in terms of environmental policy performance than non-democratic countries. To help isolate the effects of governance quality, factors such

as income level, trade openness, resource rents and population density are controlled for, so as to avoid potentially confounding effects. The results from the cross-national data analysis is used to help identify two case studies that have differing governance quality but similar outcomes on environmental performance: Equatorial Guinea and Namibia. A "nested case study" is presented on the each country in order to examine further whether a potentially causal relationship exists between government effectiveness and environmental performance. The case selection is guided by the statistical analysis conducted across all countries, where the selection is based on *model testing*. The cases are 'least-similar' in that they vary along the primarily explanatory variable but share a common outcome on the dependent variable.

The main findings are that apart from two 'good governance' dimensions, *democracy* is a weak predictor of environmental policy performance across 101 developing countries. Government effectiveness and regulatory quality are shown to be positive and significant in effecting the outcome of environmental performance, all else being equal. Insignificant scores for regime type (dummy variable) and voice and accountability suggest that democracy is yet to have an effect on environmental policy performance in developing countries. The cases indicate that because many developing states rely on mineral resources for economic stability, the environment is mentioned in policy planning and design. However, this does not necessarily translate into the 'protection' of environment resources. The dynamics in the case studies reveal that it is difficult to truly assess the policy ambitions or outcomes of non-democratic states, like Equatorial Guinea, where there is limited accountability and transparency of data and policy information. The analysis is limited in that it cannot be done in a time-series manner, since the construction of the environmental performance indicator is not the same (or similar) with previous years. In the case of Namibia, the urgency of drought has pushed the government to improve in the formulation of climate change policy and conservation efforts (UNEP-WCMC 2016).

The research report proceeds in the following manner: chapter two provides the theoretical approach which forms the framework for the study's analysis. The reasoning behind the choice of topic and the expected causal relationship is expressed here. Next, chapter three provides an outline of the variables along with their data sources and underlying concepts. Here, the variables are operationalised before a linear regression analysis is presented. Then a focused nested case study is provided in order to understand the statistical results at a deeper level and explain the variation amongst certain countries in the sample group. Finally, the conclusion is presented in chapter five that aims to summarise the main findings and present both the limits and opportunities for a study of this kind.

2 Theoretical Approach

Over the past two decades, environmental challenges have come to the forefront of international and domestic politics. Scholars of environmental economics and social sciences have since been examining how states must address global environmental issues. Environmental problems are inherently challenging to solve because they are embedded in complex biological systems. These kinds of issues challenge both short and long term policy-making due to the impacts that may be time-lagged, such as sea-level rise or global mean temperature change. There is growing concern that humanity's environmental impact will worsen economic and social conditions in the developing world.

Reliable and effective institutions will be necessary to mitigate and adapt to the changing natural environment. Most recently, Southern Africa witnessed one of the most severe *El Niño* events on record, affecting nearly 60 million people. The *El Niño* weather cycle is part of the region's natural climate variability cycle. However, global warming is predicted to exacerbate the effects of this variability (Romm 2018, 34). Severe drought undermines human development and threatens the livelihood of many vulnerable communities. Governments and the international community must attempt to find a compromise in what is scientifically necessary and politically possible. The concept of governance and the realm of global politics may be what decides the fate of future generations on this issue.

Environmental quality is what characterises a set of public goods. Clean air and water, public parks and other natural resources or landscapes are some examples. Assigning a monetary value to these goods and ensuring these avoid negative externalities is a difficult task. Externalities are the costs or benefits incurred by a good that is not accounted for in its value. These externalities (negative or positive) can be felt by the consumer, producer or outside party (Grieco, Ikenberry, and Mastanduno 2018). Minimising negative externalities from manufacturing, energy production, transportation and the agricultural sector is the challenge politicians and the international community are facing today. In developing countries, income constraints and governance challenges make this task even more challenging.

During the 1990s, particular attention was paid to the relationship between income level and environmental quality (Grossman and Krueger 1991). Environmental quality is measured using environmental indicators "defined as a number indicating the state and development of the environment or conditions affecting the environment" (Alfsen and Saebo 1993, 416).

Grossman and Krueger argued that as a country reached a certain income level, environmental quality would improve. This hypothesis became known as the Environmental Kuznets Curve (EKC) and implied that rather than viewing economic development as a threat to the environment, it might lead to environmental improvement (Stern 2004). (Grossman and Krueger 1991) also assert that the link between environmental quality and income growth would also need a public policy response, likely stemming from popular demand for better environmental quality. What has followed in the literature since the Grossman and Krueger article is further examination into the kind of governance characteristics that might lead to increased environmental protection. Theoretical and empirical studies by (Scruggs and Rivera 2008; Payne 1995; Lim and Tang 2002; Silva 1996; Shandra, Esparza, and London 2012; Aklin and Urpelainen 2014; Winslow 2005; Grieco, Ikenberry, and Mastanduno 2018) have attempted to explain the effect of democracy (or regime types) on one or more environmental quality indicator. This chapter will focus on reviewing this collection of literature in order to contextualise the proposed research question. Existing literature on the question of democracy is currently divided into two opposing views: those that support the idea that democracy improves environmental quality and those who do not.

2.1 Democracy improves environmental quality

The central argument for scholars who believe democracy improves environmental quality is that it facilitates the demand for the protection of these 'public goods'. Given the value of these public goods for the health of a population and their livelihoods, it is in a government's interest to protect or improve these goods in order to secure political support. In more democratic societies, the citizens are the controlling group, so the costs and benefits of these public goods are equated to the average citizen (Scruggs and Rivera 2008). In authoritarian regimes, policies are adopted to reflect the 'costs and benefits' of serving a small elite group. However, more recently, China is an example that goes against this due to their provision of public goods to the most rural and vulnerable populations in the country. Duckett and Wang (2017) argue that authoritarian regimes are just as susceptible to the influence of external shocks such as the Asian financial crisis of 1997 and international policy ideas on public environmental goods. The question this raises is, to which specific governance characteristics of democratic regimes do more to help govern the environment more effectively than non-democratic regimes? Payne (1995) identifies four reasons why democratic governments achieve better environmental outcomes; "accountability, freedom of the press, freedom of speech, civil society participation and international cooperation". Other characteristics may include the strict rule of law (or lack of corruption) and effectiveness as well as the efficiency of governance.

Accountability is a vital aspect of good governance within a democratic state. Accountability allows organisations and institutions of government to be challenged by the concerns of their constituents and voters. Lim and Tang (2002) study the effects of previous authoritarian rule and present-day democracy on environmental politics in South Korea. Their findings show that democratisation has given way for the diffusion of environmental concerns in the decision-making process. Similarly, in Chile, Silva (1996) finds that democratisation provides more incentive for governments to improve environmental quality. Generally, organisations and institutions are held accountable by those who are directly affected by certain decisions and actions taken. The enforcement of accountability is only possible through an impartial legal system and outright transparency of actions/decisions by institutions and organisations.

Effective environmental governance requires a fair legal framework and an empowered civil authority. Without the 'rule of law', industries or individuals that pollute cannot be effectively regulated. Democratic regimes value rule of law as an essential mechanism of governance which promises safety and justice for society at large. In this regard, polluters can be monitored and subsequently regulated. The government and industry can then be held accountable if they fail to pass or enforce specific environmental laws. Transparency within the process of the law is similarly essential. This ensures that those who are affected by the decisions made by the civil authority are fully informed.

Access to information and free media are also essential characteristics of a healthy democracy; they help ensure citizens are made aware of environmental issues. Public awareness can assist in informing better business practices and consumer choices. Environmental groups and activists are more likely to exist in democracies; they are more able to organise and participate in decision-making and implementation of state policies. Shandra, Esparza, and London (2012) find, in a cross-national study, that the ability for domestic non-governmental organisations (NGOs) to deal with the causes of deforestation is enhanced when the state is democratic.

Much of the scholarship on democracy and the environment has focused on the issue of deforestation (Meyer, Van Kooten, and Wang 2003; Buitenzorgy and Mol 2011; Ehrhardt-Martinez, Crenshaw, and Jenkins 2002; Bhattarai and Hamming 2002; Obydenkova, Nazarov, and Salahodjaev 2016). An interesting pattern has emerged from the research which identifies middle-range democracies as having higher rates of deforestation than fully democratic or autocratic regimes. One possible explanation is that democracies in transition lack the capacity in their institutions to restrict groups that tend to overexploit resources (Grieco, Ikenberry, and Mastanduno 2018). Ensuring the effective allocation and sustainable of resources is a critical component of democratic governance. Welsch finds that the presence of corruption in low-income countries increases pollution levels. This demonstrates the

importance of having effective and efficient regulatory actions by institutions to ensure the protection of environmental quality.

Aklin and Urpelainen (2014) claim that democratisation encourages good environmental practices and sensitises nations to international pressures. Interactions between domestic environmental ministries and international organisations encourage and assist in the sharing of information, environmental aid and regulatory techniques (Winslow 2005). International-domestic interactions on environmental treaties are usually shared among more democratic states; however, whether the implementation of treaties into domestic policies occurs due to democracy alone is questionable (Aklin and Urpelainen 2014).

In contrast, authoritarian regimes are less likely to protect environmental quality. The leadership of authoritarian regimes are not held accountable as efficiently; power is concentrated among a powerful elite group rather than shared equally. Those in power often seek to profit from activities that are associated with high degrees of environmental degradation. Limited free press in these regimes may restrict information or facts about environmental issues. Lastly, limited long-term investment in environmental quality may not foster due to short-term economic ambitions by leaders and the elite. There are examples of authoritarian regimes working towards better environmental quality, however, much of the research indicates that they have an overall poor record of environmental performance (Leitão 2010; Egbetokun and Ogundipe 2016; Barrett and Graddy 2000; Meyer, Van Kooten, and Wang 2003; Welsch 2004). The next section will explore these claims further and provide evidence from the opposing position.

2.2 Democracy does not improve environmental quality

Democracy may worsen or fail to improve environmental quality due to several economic and political mechanisms. First, the widely cited *Tragedy of the Commons* by G. Hardin (1968) cautions that users of the "commons" (i.e. water, air, forests and oceans) will inevitably be caught in the cycle of its destruction. Hardin (1968) warns that "when property rights if natural resources are not strictly defined, and hazards are left unchecked, it is likely that free individuals or interest groups will mismanage, ignore costs and overuse these resources" — a pessimistic view of the human prospect no doubt. Second, Paehlke (1996) claims that democracy functions at a national and local level, thus its ability to effectively deal with global environmental challenges in a globalised economic setting is not easy. Some countries may freeload on the policy decisions of other countries, thus making it difficult to solve current and future environmental problems.

Third, democracies tend to have free market economies and Dryzek (1987) argues that corporate interests will have considerable influence. Dryzek (1987) argues that corporate businesses are not always concerned with environmental quality but rather maximising profits, which is, of course, in the interest of the government for overall economic growth. It may also be in political leaders favour to support business needs and interests in order to maintain support. Lastly, environmental groups and businesses in democracies often have competing ideas on environmental issues that are dragged out in courts and the media, and often it does not translate into public policy action by leaders (Midlarsky 1998).

Although one would expect democracy to be correlated with better environmental quality, research has produced mixed results. Midlarsky (1998) analysed the direct effects of different economic and political freedoms on several environmental performance indicators. This study found that democracies may have a negative effect on CO_2 emissions, deforestation and soil erosion with no evidence of democracies improving soil erosion or freshwater availability. Similarly, Ehrhardt-Martinez, Crenshaw, and Jenkins (2002) show that weak democracies are powerless to reduce levels of deforestation and similarly, Carlsson and Lundström (2003) found that political freedom does not significantly reduce levels of CO_2 emissions. However, Buitenzorgy and Mol (2011) found evidence for an inverted-U shape relationship between democracy and deforestation. Their empirical evidence suggests that nation states in democratic transition (or earlier stages of democracy) have higher deforestation rates than autocratic regimes and mature democracies. Bhattarai and Hamming (2002) make the point that deforestation is closely linked to the development process in the developing world. The control of deforestation then is determined by the economic decisions made by agents (the state, farmers or loggers) who reason using the opportunistic costs of the unpoliced action. Walker (1993) argues that in developed states forest production contributes positively to national income, which explains why levels of deforestation have substantially stabilised in these regions.

It is important to clarify that while democracy and autocracy are types of governance, these do not automatically suggest a level of governance 'quality'. Governance can be defined as the actions taken by a state within structures such as the legislative and judicial alongside the executive and administrative bodies (Ogundiya 2010). In the field of international relations, the concept of governance has extended beyond just state level, looking at the way in which individuals and institutions around the world manage their affairs (Weiss 2012). The concept of 'good governance' has, in recent years, been closely in sync with development discourse and aid funding (Kaufmann, Kraay, and Zoido 1999). Much of the literature described uses one or few indicators of governance quality to determine the relationship between democracy and the environment.

2.3 Conclusion

Much of the literature discussed in this chapter argues that governance does indeed matter. Democracies that exhibit good governance qualities are likely to govern the environment better than non-democratic states with a poor governance record. However, most of the research has examined environmental quality using single indicators such as deforestation, CO_2 emissions and other greenhouse gas emissions. Using single measures of environmental quality do not give an accurate or parsimonious depiction of environmental quality or policy performance. The natural environment is complicated and it varies greatly between continents and across sub-regions. Therefore measuring the quality of a single environmental indicator and then comparing it across vastly different regions could generate biased results. Income level, for example, could result in a country having higher CO_2 emissions than those countries with lower income, but high-income countries do tend to have increased institutional capacity to manage environmental degradation in the short and long-term, whereas lower-income countries may do more immediate damage at a seemingly 'smaller' scale in the name of development. Although the former country has higher emissions, they may be doing more in terms of policy design and implementation to ensure the protection of air quality at present. This report is interested in understanding further if several dimensions of governance in situations of *low* income (developing country sample group) have a positive relationship with environmental policy performance as measured across multiple areas of environmental *regimes*.

3 Cross-national evidence: governance and environmental performance.

During the 1990s, much of the developing world lacked democratic political regimes. At the end of the Cold War, slowly but surely, the politics of developing countries largely transitioned into democratic-like political regimes. Political and economic liberalisation begun to spread across Asia, South America and parts of Africa. Today, democracies in the developing world are young relative to the states in Western Europe and North America. Environmental degradation, resource depletion and pollution pose as the new threat to current and future economic and human development in the developing world. If good governance improves environmental governance, then developing countries that have higher governance quality and are democratic should have better environmental performance. Does good governance have a positive effect on environmental performance specifically in developing countries? Using the most recent available data from the World Bank and Yale's Center for Environmental Law and Policy, this chapter aims to try answer the question posed above by systematically measuring good governance and environmental performance for 101 developing countries. What follows is an empirical analysis of the empirical relationship between governance and environmental performance, controlling for the effects of other variables.

The regression models estimated are used to see whether countries with higher levels of good governance on average translate to higher levels of environmental performance in 2018. Democracy and non-democracy are controlled for first, using the Lexical Index of Electoral Democracy (Skaaning, Gerring, and Bartusevičius 2015). Trade openness, income measured using Gross Domestic Product (GDP), resource rents and population density are the remaining control variables used to keep all the conditions as similar as possible between governance and environmental performance. The first section of this chapter will discuss the measures used for good governance and environmental performance together with their data sources. Next, the logic behind the choice of the control variables will be provided. Finally, a discussion on the empirical association between governance and environmental performance across the sample group of developing countries will be illustrated in a regression table followed by a concluding discussion.

3.1 Measures and Data

The sample in the study includes 101 countries classified into three income groups: 'low', 'lower-middle' and 'upper-middle' for which data was available.

3.1.1 Environmental Performance Index

Subsequent literature that examines the relationship between politics and the environment focuses on one or two measurements of degradation or quality. Common measurements used include CO_2 emissions, deforestation, greenhouse gases, sulfur dioxide and lead content of gasoline. One problem with this approach is that it fails to capture the information gap of environmental policy performance. The information gap has been another problematic aspect of this type of research because previously many countries in the developing world have not collected reliable data on local environmental indicators. This explains why many studies on environmental governance have limited their environmental indicators in order to include a larger sample size. Midlarsky, Li and Reuveny and Scruggs and Rivera are exceptions in that they each examine 6-8 different indicators of environmental indicators with fairly large samples. Each paper ran separate models for each environmental indicator, testing them against democracy and other governance indicators. This approach may be problematic in that some countries may have uneven levels (high and low) of performance across indicators. Since the year 2000, Yale's Center for Environmental Law and Policy have been developing a single environmental performance index that attempts to show a clearer overall picture of cross-national environmental performance. To avoid excluding any environmental performance indicators and test overall policy progress, this study will use the country scores from Yale's 2018 Environmental Performance Index (EPI) as the dependent variable (see table 3.1).

The EPI measure was developed in response to the shift towards data-driven policy-making within the field of sustainable development. In order for countries to address what's been outlined in, for example, the United Nations Sustainable Development Goals (SDGs) and the Paris Agreement, they must include environmental performance metrics in policy decisions. Environmental metrics included in the EPI help gauge progress or lack thereof in environmental policy and reveal insights into sustainability challenges (Wendling et al. 2018). The EPI is a composite index with 24 individual metrics of environmental performance. The metrics are divided into two overarching frameworks—*ecosystem vitality* and *environmental health*. Within these categories, the metrics are aggregated into 10 specific areas covering of air quality, water and sanitation, heavy metals, biodiversity and habitat, forests, fisheries, climate and energy, air pollution, water resources and agriculture. The EPI data is sourced from various

TABLE 3.1: Environmental Performance Index (EPI) variables

Environmental Health	Ecosystem Vitality
Air Quality	**Biodiversity & Vitality**
Household Solid Fuels	Marine Protected Areas
PM 2.5 Exposure	Biome Protection, National
PM 2.5 Exceedance	Biome Protection, Global
Water & Sanitation	Species Protection Index
Drinking Water	Protected Area Representativeness Index
Sanitation	**Forests**
Heavy Metals	Tree Cover Loss
Lead Exposure	**Fisheries**
	Fish Stock Status
	Regional Marine Trophic Index
	Climate & Energy
	CO_2 Emissions Intensity (total)
	CO_2 Emissions Intensity (power)
	Methane Emissions Intensity
	N_2O Emissions Intensity
	Black Carbon Emissions Intensity
	Air Pollution
	SO_2 Emissions Intensity
	NO_x Emissions Intensity
	Water Resources
	Wastewater treatment
	Agriculture
	Sustainable Nitrogen Management Index

international organisations, research institutions and government agencies. The final score for each country is on a scale of 0-100 and uses a "distance-to-target technique for indicator construction" in order to situate each country relative to targets for worst and best performance. Some indicators may not be applicable to every country so the EPI attempts to deal with this by setting appropriate weights for each indicator. The EPI is a multidimensional concept and provides a quantitative base for comparing and analysing environmental performance across a significant number of countries.

3.1.2 Good Governance and Democracy

In almost every study where scholars have examined the relationship between democracy and environmental quality, measures by Polity IV or Freedom House are used as governance indicators. These studies employ measures of civil liberties and political freedom to define regime type and/or the level of democracy across the sample group. Those who have examined

the role of corruption in environmental degradation have used the World Bank's index on control of corruption. For the purpose of this paper, the main explanatory variable will be measured using the latest *Worldwide Governance Indicators* (Kaufmann, Kraay, and Mastruzzi 2009). The WGI draws from a variety of different data regarding the perceptions of governance across over 200 countries. Each indicator is based on several hundred variables from 31 different sources as reported by survey respondents, NGOs, businesses and public sector institutions (Kaufmann, Kraay, and Mastruzzi 2010). The WGI indicators are constructed in such a way that they can be divided into six dimensions. The way in which governments are selected, observed and replaced is captured by *voice and accountability* (ie. freedom of expression and free media) and *political stability and absence of violence* (ie. likelihood that the government could be destabilised). The effectiveness of policy formulation and implementation is captured by *government effectiveness* (ie. quality of public services) and *regulatory quality* (ie. ability to implement sound policies and regulations). Lastly, the respect commanded by citizens and the state for the institutions that govern over economic and social activities is measured by *rule of law* (ie. quality of contract enforcement and property rights) and *control of corruption* (ie. public power is used for individual gain). Due to the high correlation among the WGI measures, they are modelled separately to show their individual effects on EPI.

Democracy is included in the empirical analysis using the Lexical Index of Electoral Democracy (LIED) to create a binary dummy variable (Skaaning, Gerring, and Bartusevičius 2015). The authors of LIED operationalised electoral democracy through a number of necessary and sufficient conditions arranged on an ordinal scale of 0-6. The index incorporates binary coding based on factual characteristics of regimes, each binary code is aggregated using the cumulative logic of a lexical scale across seven levels (1439). The lexical approach towards measurement is driven by the concept, which in this case is electoral democracy. Attributes of electoral democracy are extensively surveyed by the authors and then used as the necessary-and-sufficient conditions within an ordered scale. The levels of this lexical scale have an asymmetric relationship to each other, which means one attributed might be considered more *central* to the concept or the dependence of B on A is what makes A assume a lower level on the scale. The seven levels are as follows:

L0: No elections.

L1: No-party or one-party elections.

L2: Multiparty elections for legislature.

L3: Multiparty elections for legislature and executive.

L4: Minimally competitive, multiparty elections for legislature and executive.

L5: Minimally competitive, multiparty elections with full male or female suffrage for legislature and executive.

L6: Minimally competitive, multiparty elections with universal suffrage for legislature and executive.

The dichotomous *democracy* variable is constructed by dividing the sample group of countries using the LIED scale above. Countries that met the minimum threshold for what LIED classifies as a full electoral democracy (L6) are classified as democratic (coded as 1) and those who only met the attributes between level L0 to L5 are non-democratic (coded as 0).

Table 3.2 summarises the descriptive statistics for the variables mentioned in the study. The table presents the mean, median, standard deviation, minimum, maximum and number of observations for the environmental performance measure, governance measures and the control variables. The distribution for EPI is measured on a global scale with a mean of 50.9 and a standard deviation of 10 is reasonably normal/symmetric. The WGI indicators are similarly distributed across measurements, most notably the mean, which are all negative. Voice and Accountability saw countries like Turkmenistan, Equatorial Guinea and Sudan score worst while most countries defined within the region of East Asia and the Pacific scored best. The lowest scoring countries for Government Effectiveness included predominantly Sub-Saharan African countries alongside Libya and Haiti. The best scoring countries included

TABLE 3.2: Descriptive Statistics

Statistic	Mean	Median	St. Dev.	Min	Max	N
Dependent Variable						
EPI	50.89	51.49	9.73	27.43	67.85	101
Independent Variables						
Democracy dummy	0.65	1	0.48	0	1	101
Voice and Accountability	−0.34	−0.18	0.76	−2.14	1.15	101
Political stability	−0.40	−0.28	0.87	−2.75	1.19	101
Gov Effectiveness	−0.47	−0.45	0.62	−1.91	1.08	101
Regulatory Quality	−0.45	−0.39	0.61	−2.28	1.12	101
Rule of Law	−0.49	−0.48	0.60	−1.79	0.82	101
Corruption	−0.49	−0.54	0.62	−1.56	1.65	101
Controls						
log(Resource Rents)	−1.07	0.06	3.52	−6.98	3.63	101
log(Trade Open)	46.28	46.20	3.81	37.30	57.87	101
log(GDPpc)	7.95	8.15	1.01	5.60	9.39	101
log(PopDensity)	4.21	4.35	1.34	0.67	7.24	101

Mauritius, Malaysia and Georgia, which scored positively across most of the remaining WGI indicators. The correlation between the democracy dummy is positive across all WGI indicators, the highest being 0.76 with Voice and Accountability and 0.42 with Regulatory Quality. The democracy dummy is slightly left-skewed with most countries in the sample found to be "democratic".

3.1.3 Control Variables

The empirical association between environmental performance and good governance is estimated controlling for *trade openness*, *GDP per capita*, *resource rents* and *population density*. By holding these variables constant, we are able to see whether the relationship between the main variables hold. The environment is a complex system that is impacted by many different intervening variables within a particular region. The level of a country's trade openness[1] is argued by Li and Reuveny to affect the environment in two ways: first, by changing the patterns of production and consumption to match domestic ability or strengths and by adopting certain technologies to supply other countries. For example, the main exports of sub-Saharan Africa and Latin America are raw materials (ie. petroleum, gold, copper and iron) and have an obviously negative impact on the natural environment unless under strict regulation. Second, the adoption of international environmental regulatory agreements may encourage or require trading partners to improve domestic environmental standards in order to continue future trade relations. Trade openness also encourages economic growth, which can change consumption behaviour of a population over time.

GDP per capita is included to control for the varying income level across countries. A significant amount of literature argues that economic growth has competing effects on environmental performance. If an economy generates a large amount of output in production and manufacturing then it is likely to produce more waste and pollution. The Environmental Kuznets Curve (EKC) argues that once income reaches a certain threshold, environmental quality will improve. The argument goes that citizens in higher income countries will demand greater care for environmental goods and insist on the protection of the environment. The dominant means of production for higher income countries tends to shift away from exporting raw materials towards finished goods and human capital. The EKC will not be tested in this empirical analysis but it is important to mention since it dominates much of the empirical studies done on environmental performance outside of the sciences. In this study, GDP per capita is important to include as it may help explain whether income level is a necessary requirement for better environmental performance alongside good governance.

1. $\frac{(Exports+Imports)}{2\times GDP}$

Resource rents[2] controls for the industrial production of each country with the exclusion of manufacturing. As mentioned before, most developing countries rely on raw materials for trade as well as public service delivery, namely electricity and transport. Mining of minerals and excessive burning of fossil fuels has a negative effect on the health and vitality of many aspects of the environment. In the case of this study's sample group, it should be held constant to ensure the correlation, significant or not, found between the main explanatory variable and the dependent variable is accurate.

Population density (population divided by land area) is the final control variable included in the study. The effect of population density may depend on certain indicators within the EPI measure. For example, CO_2 emissions may be higher in countries with a larger population density, who would inevitably consume more and produce more waste. Water pollution is another major issue in densely populated areas like Asia, for example, where persistent organic water pollution is found (Minh et al. 2006). Agriculture and the demand for food rises when population increases and so the effects of large-scale farming on ecosystem vitality is evident in several developing regions. The depletion of soil fertility and lack of access to fertilizers in sub-Saharan Africa is a growing concern as population continues to grow at 2% per annum.

All the control variables are taken from the World Bank's *World Development Indicators* database (World Bank 2019) (see Table 3.2). Trade openness uses data from 2015, resource rents from 2017 and all remaining variables are 2018 data points. The two former variables had issues of missing data, hence the decision was made to use the most recent years with the most complete data for all countries in the sample. Table 3.2 shows the descriptive statistics for the study's control variables and indicates that they have each been transformed by logarithm. This was necessary to normalise the distribution of the variables which had inevitably far right-skewed distributions prior to the transformation.

3.2 The association between governance and environmental performance.

This section provides evidence on whether developing countries with good governance scores were more or less likely to have higher EPI scores in 2018. In addition to this, the aim was to also discover whether democracy has a positive and significant association with environmental performance amongst the sample group. The control variables are included in each model to consider the possibility that the association between governance and environmental performance is driven by other factors.

2. $MineralRents(\%ofGDP) + FuelRents(\%ofGDP)$

TABLE 3.3: Main Regression Estimates

	Dependent variable:					
	EPI2018Score					
	(1)	(2)	(3)	(4)	(5)	(6)
Voice & Accountability	2.22					
	(1.49)					
Political Violence		1.21				
		(1.05)				
Government Effectiveness			**3.04****			
			(1.41)			
Regulatory Quality				**2.73****		
				(1.35)		
Rule of Law					2.08	
					(1.40)	
Control of Corruption						1.12
						(1.32)
Democracy dummy	−2.58	−0.33	−0.88	−1.33	−0.82	−0.57
	(2.19)	(1.48)	(1.48)	(1.56)	(1.53)	(1.55)
Log(Trade)	−0.39*	−0.32	−0.50**	−0.50**	−0.41*	−0.41*
	(0.22)	(0.25)	(0.22)	(0.22)	(0.22)	(0.23)
Log(GDPpc)	7.12***	6.89***	6.48***	6.91***	6.98***	7.21***
	(0.78)	(0.91)	(0.87)	(0.78)	(0.81)	(0.81)
Log(Resource Rents)	0.54**	0.50*	0.49*	0.52*	0.53**	0.49*
	(0.27)	(0.26)	(0.26)	(0.26)	(0.26)	(0.27)
Log(Pop Density)	0.62	0.55	0.36	0.38	0.46	0.56
	(0.63)	(0.63)	(0.63)	(0.63)	(0.63)	(0.63)
Constant	12.76	10.03	23.73**	19.95*	14.62	11.80
	(9.46)	(9.40)	(11.06)	(10.36)	(9.73)	(9.53)
Observations	101	101	101	101	101	101
R^2	0.55	0.55	0.56	0.56	0.55	0.54
Adjusted R^2	0.52	0.52	0.53	0.53	0.52	0.51
Residual Std. Error (df = 94)	6.73	6.76	6.65	6.67	6.73	6.78
F Statistic (df = 6; 94)	19.19***	18.87***	20.07***	19.86***	19.19***	18.65***
Note:						*p<0.1; **p<0.05; ***p<0.01

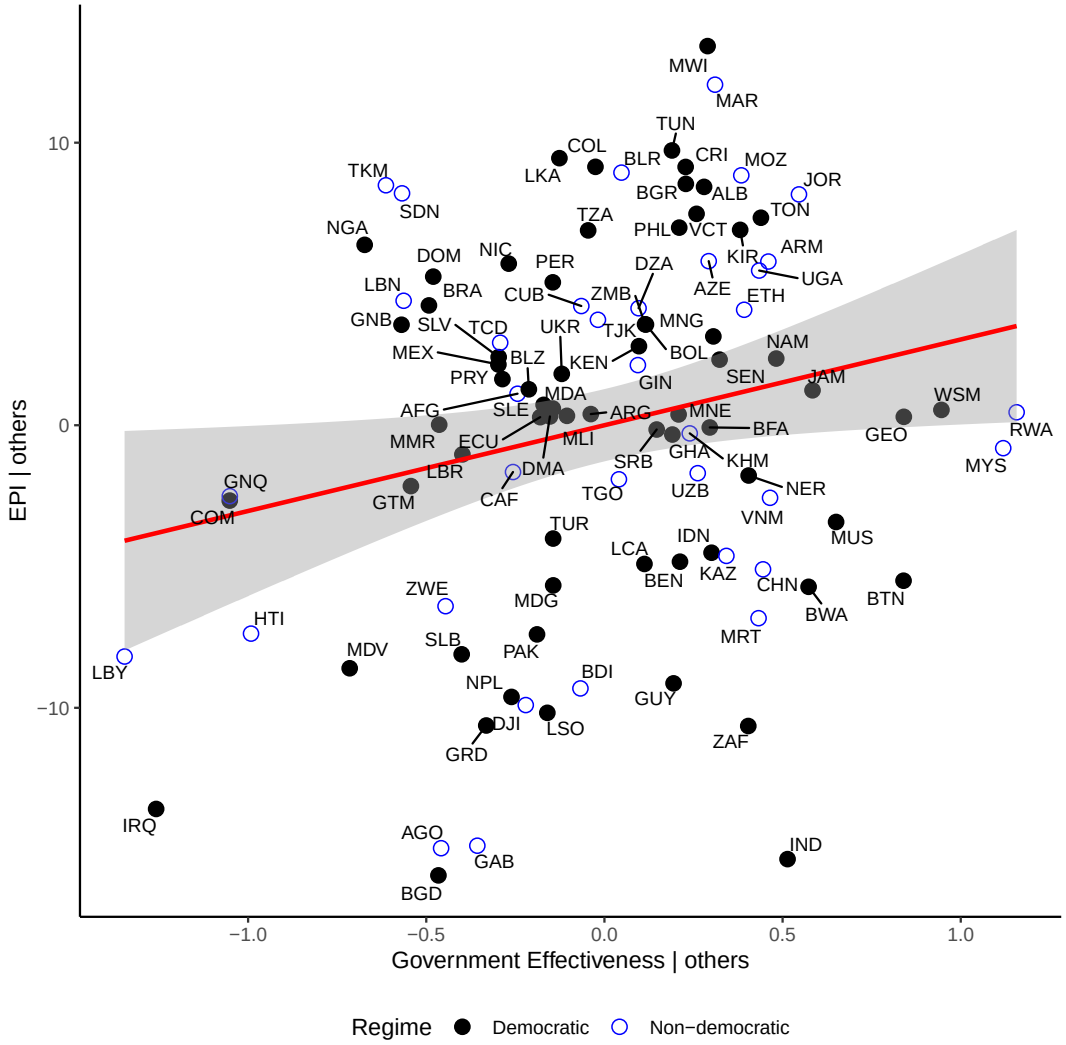
The regression estimates in Table 3.3 provide results for the association between governance and environmental performance scores for 2018 holding all else constant. The coefficient estimates of model (1), (2), (5) and (6) reveal a positive but insignificant relationship between voice and accountability, political stability, rule of law and control of corruption and environmental performance measured by EPI across the sample of 101 countries. Similarly, the democracy dummy results were negative and insignificant across all models. This insignificant result could suggest that the perceived relationship between democracy and environmental

governance is not as clear-cut when using an environmental policy indicator that includes a range of environmental indicators. Due to the insignificance of the estimates, definitive statements cannot be made, rather, improved modeling techniques possibly done in a time-series manner could reveal results with greater significance. The two governance indicators that estimate a positive and significant association with environmental performance are government effectiveness and regulatory quality, models 3 and 4. This association seems logical in that both of these explanatory variables relate closely to decision-making and implementation of domestic policy. Therefore, if these governance indicators are strong, there is a higher likelihood that policies involving the protection and improvement of environmental quality will be enforced.

In terms of the control variables, there is a significant effect of both trade openness and GDPpc on EPI. 'Trade openness', as expressed earlier, may have a negative effect on environmental performance for developing countries due to their need to drive economic growth through the trade of raw minerals and unfinished goods. Businesses and state owned enterprises in developing countries may not favour strong regulations around environmental protection as it could hurt economic growth policies centered around trading readily available resources like oil, coal and raw metals. GDPpc has the highest and most significant coefficient results across all models. This suggests that countries with higher than average income levels across the sample group are likely to have higher EPI scores and thus implement or set precedent for better environmental policies. The question remains whether higher income will directly translate to improved environmental quality over time in the context of developing countries? This result suggests that income level does matter for EPI scores in 2018, but whether overtime this will continue to translate into a positive relationship is moot if rates of CO_2 emissions, deforestation and pollution continue to increase in developing regions.

Figure 3.1 graphically represents the regression estimates of model (3) through the use of a partial regression plot. The graph shows the association between government effectiveness and the environmental performance index scores across all 101 developing countries. The iso3c code of each country is used to identify each point on the graph and the key specifies the regime type of each country. The fitted line is combined with a grey outline that provides the confidence interval for the regression result. Both the regression line and confidence interval guide the case selection following this section. Around the fitted line, there is a clear pattern that can be distinguished among the points. The sample of countries are spread out above and below the line, with a large portion concentrated near the centre of the figure. It is evident that most of the countries in the sample have similar WGI scores for government effectiveness (between -0.5 and 0.5) with few countries scoring higher or lower than -1 and 1. Interestingly, there is a fairly even spread of non-democratic and democratic countries above and below the line. This suggests that regime type does not have a significant effect on EPI scores in the developing world

FIGURE 3.1: Partial Regression Plot



as yet. Countries such as Malawi (MWI) reveal a fair score for government effectiveness but a high score for EPI. Others, such as Equatorial Guinea (GNQ) have equally low scores for EPI and government effectiveness and can be found on the fitted line. Namibia (NAM) also rests very near the fitted line and within the confidence interval but scores higher on both 'government effectiveness' and the EPI score.

The analysis conducted thus far has sought to test whether governance has a positive effect on environmental performance. What follows is an attempt to explain how and why these two factors are related to one another to gain a further understanding of the processes between the cause and effect (Lieberman 2005). To test the validity of the hypotheses presented earlier, the cases will be selected based on the regression results found for *government effectiveness*. Namibia and Equatorial Guinea provide contrasting contexts, one is democratic the other not and both rest on opposite ends of the scale for government effectiveness. These contrasting

contexts will be explored further in the following chapter.

3.3 Conclusion

The major findings are that government effectiveness and regulatory quality (out of the six WGIs) do have a positive and significant effect on environmental performance amongst developing countries. The 'democracy' indicators, namely voice and accountability and the dummy variable failed to exhibit a strong positive relationship with environmental performance. The three *economic* indicators: GDPpc, trade openness and resource rents that were controlled for across all models showed either positive and/or significant associations with the outcome scores of environmental performance. This means that the economic context of a developing country matters in relation to environmental policy-making. What seems to be a consistent challenge for politicians and policy-makers alike is the impact of global trade on the environment. Trade openness has become a fundamental mechanism for economic growth and development amongst the world's nations. In contradiction, the results suggest a strong and positive relationship between GDPpc and EPI scores meaning higher income could assist in improving environmental protection. The path towards increased prosperity amongst developing countries will threaten natural systems but governance is what could slow or prevent complete destruction in the foreseeable future. Overall, policy coherence and the quality of public services are positive predictors of environmental performance across the sample of developing countries.

4 Nested case analysis: Equatorial Guinea and Namibia

The empirical evidence thus far indicates that on its own *democracy* is a weak predictor of environmental performance. However, governance indicators like government effectiveness and regulatory quality have a positive significant effect on the environmental performance indicator. The results suggest that public service delivery and policy coherence in developing nation states provides a clearer indication of environmental governance. The next section will explain the case selection choice followed by an analysis of the two case studies. The nested case studies are two countries sub-Saharan Africa that have fairly similar environmental performance scores but differing regime types. The contrast of the two countries is aimed at finding out what aspects of their individual institutional structures explain their particular outcomes on environmental governance.

4.1 Case Selection

The two cases (Equatorial Guinea and Namibia) were selected based on their corresponding values in terms of *government effectiveness* and by their positions "on-the-line" and for being located within the model's confidence interval of 95%. Lieberman's methodology of a *nested case analysis* suggests that when model testing, providing an analysis of a small case is one way to explore the cause and effect of the explanatory variable by selecting "cases based on the widest degree of variation on the explanatory variable" (Lieberman 2005, 444). In this case, for government effectiveness Equatorial Guinea scores -1.29 and Namibia scores 0.11. The former is classified by the lexical index as having multiparty elections for legislature and executive (L3) and is thus a non-democratic state. The latter (Namibia) is classified as minimally competitive, multiparty elections with universal suffrage for legislature and executive (L6), and is therefore a democracy. Although both states are upper-middle-income according to the World Bank's income level classification, Equatorial Guinea's GDP nearly doubles that of Namibia. This chapter aims to analyse the political environment of each country whilst uncovering environmental governance trends within the past decade. The trends in both public service

delivery and policy coherence were looked at to help explain the linkage between broader institutional structures and environmental governance within each country.

4.2 Equatorial Guinea

Equatorial Guinea is located in central West Africa, borders the Atlantic Ocean and lies between Cameroon and Gabon. The territories are divided into two main parts: Río Muni, located on the mainland of Africa and offshore insular islands known as Bioko, Annobon, Corsico and Elobey. Its maritime borders are shared by Nigeria and São Tomé and Príncipe within the Gulf of Guinea. The capital, Malabo, is located on Bioko Island but is expected to be replaced by a new capital, Oyala, currently under construction on the mainland. Equatorial Guinea has a population of 1.3 million people (2018 World Bank estimate), which is split by two main ethnic groups—the Fang and Bubi. The country has a tropical climate and is covered mostly by forest landscapes of about 28 000km^2. The former Spanish colony gained its independence in 1968 after a general election was held to appoint a President and National Assembly. Francisco Macías Nguema became the country's first president through what has become known as the country's only free and fair election since independence.

In 1979, Macías nephew, Teodoro Obiang Nguema, initiated a violent coup and successfully seized control of the government. Obiang remains in power today and is the second longest-serving president in Africa. Before colonial independence, Equatorial Guinea exported mostly cocoa, coffee and timber but in 1996 oil reserves were discovered off the country's Atlantic shores (McSherry 2006). The country is among the largest oil producers in Africa and is estimated to have 1.1 billion barrels of reserves as of 2017 (U.S Energy Information Administration 2017). Despite having an abundance of oil, the country has faced declining production since 2015, prompting it to join the Organisation of Petroleum Exporting Countries (OPEC) in 2017 to encourage foreign investment. The country's most important trading partners include the USA, China, India and South Korea. Since the oil boom, its GDP per capita has risen to become the highest on the African continent. Unfortunately, this has failed to improve human development levels with nearly 50% of its population living below the poverty line (Index Mundi 2020). Poor water quality and poor sanitation remain critical issues facing the country's poorest where only around half have access to adequate drinking water (Tennyson 2020). The next subsection provides the broader political context which will set the scene for the analysis of the link between governance and environmental performance in Equatorial Guinea. The aim is to reveal how the political system of Equatorial Guinea is impacting environmental policy and decision-making at the time of the EPI score.

4.2.1 Political overview

Under Spanish colonial rule, Equatorial Guinea's market economy and service sector were controlled mostly by Nigeria and Spain (McSherry 2006). During this period, the majority of the population remained small-scale subsistence farmers with little access to their market economy. Virtually no infrastructural development happened outside the main town centres and most Equator-Guineans had limited access to education and healthcare services. Gross underdevelopment left the state in a weak economic and political situation with no effective state institutions left by its colonial rulers (McSherry 2006). Regrettably, not much changed after the election of the country's first president, Macías Nguema, who installed an oppressive and violent regime that centralised his power and drove the country into economic disrepair. Nguema installed close family members and fellow *Esangui* (clan of the Fang people) tribesman as his government officials. Besides internal security, most functions of government were neglected by Nguema (Wood 2004). Intellectuals and traditional leaders and other opposed were either executed or exiled under his presidency and vocal discrimination against the Bioko and Budi people caused widespread ethnic tensions. Finally, Teodoro Obiang Nguema came into power after a successful coup against his uncle, Macías Nguema, and remains president today after 41 years. Obiang has maintained the dictatorship installed by his uncle and has gained the reputation of running a 'criminal state' (Wood 2004). Human rights violations, corruption and non-existent civil or political rights have plagued the country's human development since the colonial era. Freedom House ranks Equatorial Guinea amongst the 'Worst of the Worst' as of 2019, placing it between North Korea and Saudi Arabia (Freedom House 2019). The 'criminal' element of the state's enterprises very much involves the exploitation and pollution of their surrounding natural environment. Deforestation and toxic waste dumping are two major environmental issues that will be investigated in the following sub-section.

4.2.2 The link between environmental performance and governance in Equatorial Guinea

This section will examine the link between Equatorial Guinea's environmental policy ambitions and past to presents trends in aspects of public service effectiveness and policy coherence, which are broadly measured by *government effectiveness* and *regulatory quality*. Young (2003) argues that by examining institutions we are better able to understand the causes of environmental issues (deforestation or hazardous waste dumping) and how to design appropriate responses to these issues with a sure enough chance of succeeding. The individual EPI indicator 'tree cover loss' measures the percentage change since 2000 in the total area of

deforestation within areas with more than 30% tree canopy cover. Equatorial Guinea shares its rainforest with the Congo Basin, a larger forest ecosystem that includes Cameroon, the Central African Republic, the Democratic Republic of the Congo, the Republic of the Congo, and Gabon (Erickson-Davis 2019). Equatorial Guinea scores extremely low (20.76 out of 100) in this area and it is estimated to have lost 12.3% of its forest cover between 1990 and 2005 (Mongabay 2020). Large-scale logging began in the 1980s by a Malaysian enterprise but they have since scaled back their activities in the region after an export ban was placed in 2007. The ban has failed to stop illegal logging in the region and increasing concern over the lack of taxation and formal regulations over the foreign companies in operation there is being raised by environmental groups in the region (Erickson-Davis 2019). Teodoro (Obiang's son), a rather controversial figure, served for 15 years as the Minister of Agriculture and Forests. During his time as Minister, he spent lavishly on homes and cars in France, South Africa, Beverly Hills and California, neglecting to instil expertise within the ministry and allow NGOs to operate on environmental issues facing the country (Nations 1997).

More recently though the Equato-Guinean government has committed to the adoption of a framework known as the National REDD+ Strategy (NRS). This UN derived policy framework integrates biodiversity concerns into domestic environmental programmes to encourage reforestation (Central African Forest Intiative 2019). The REDD+ Strategy stands for "countries' efforts to reduce emissions from deforestation and forest degradation" (United Nations 2020). The study by Di Gregorio et al. suggests that in order for NRS policy to succeed it requires the restructuring and capacity building of existing institutions. The institutional arrangements of Equatorial Guinea make it unlikely for a strategy such as the NRS to be fully adopted into national environmental programmes. The framework requires inclusiveness of political and non-political actors, such as international NGOs, in the design and decision processes of the policies. Sectors that drive deforestation are inextricably linked to state council members in Equatorial Guinea and if business is to carry on as usual, transformation of institutional structures are unlikely to occur (Wood 2004). Di Gregorio et al. study suggests that high dependency on natural resource exploitation for economic development poses a major challenge towards shifting political and economic structures already established. The resource boom cannot be blamed for the existing state of institutions (which predates the oil boom), but unless the revenues are utilised for the development of the country's people and their society, it will not serve to improve current institutional quality.

For a number of years, large-scale toxic waste dumping on the insular island of Annobon has become a well-established illegal enterprise since Equatorial Guinea's independence (Wood 2004; Ajibo 2016). Chemical manufacturers and oil refineries are examples of sectors that produce toxic waste and are seen as harmful to both humans and the environment. Stricter environmental laws in industrialised countries have caused a transboundary waste

dummy industry to emerge (Dimah 2001). Soon after Obiang came into office, British and US companies signed an agreement to allow for the dumping of toxic waste on Annobon and in nearby waters. Many of the inhabitants of Annobon were exiled to Bioko to serve as slaves on plantations, while those who remained were abandoned to carry the burden of the waste's environmental impact. In 1988, the Nigerian government approached Obiang's government and objected to deals being made with French, British and US companies to dump almost two million drums of toxic chemical waste on the island (Wood 2004). Desperate to prevent further ecosystem damage, Nigeria paid off Obiang's government to suspend an impending deal with the British government, but this was no guarantee they would cease future deals in the trade (Dimah 2001). In 1994, Obiang imposed a military blockade around the island on Annobon due to reports of radioactive and chemical waste being dumped on the island (Wood 2004). International activists have attempted to make the issue known but access to the islands are restricted by the government's military. The country's political structures lack the necessary transparency and accountability in order for non-state actors to assist or play a role in going against this type of environmental malpractice.

Equatorial Guinea has been an active member in the UN and served as a non-permanent member of the security council between 2018-2019. Its government has since signed (but not ratified) treaties relating to the protection of the environment such as: Biodiversity, Climate Change-Kyoto Protocol, Desertification, Endangered Species, Hazardous Wastes, Law of the Sea, Ship Pollution. Despite this active involvement in international environmental agreements, the loss of biodiversity and unsustainable agricultural practices persists. Thorhaug's provides a detailed account in this regard and details that there is minimal protection of marine ecosystems, threatening a large number of species and the health of the ecosystem. In a 2016 report by the UN Environmental Programme, they review the state of biodiversity in Africa and assess progress reports of each country that signed the Convention on Biological Diversity treaty (UNEP-WCMC 2016). In a 2016 report by the UN Environmental Programme, a review of the state of biodiversity in Africa is provided along with an assessment of the progress on targets set by countries who signed the Convention on Biological Diversity treaty (UNEP-WCMC 2016). The report reveals that Equatorial Guinea has yet to submit the post-2010 'national biodiversity strategies and action plans' that serves to assist in the implementation of the Convention (UNEP-WCMC 2016). The FAOLEX database contains a number of other 'national action plans' relating to food security, climate change adaptation and land degradation but little evidence exists on either the Equatorial Guinea government website nor was there evidence of scholarly studies that indicate successful implementation of these plans.

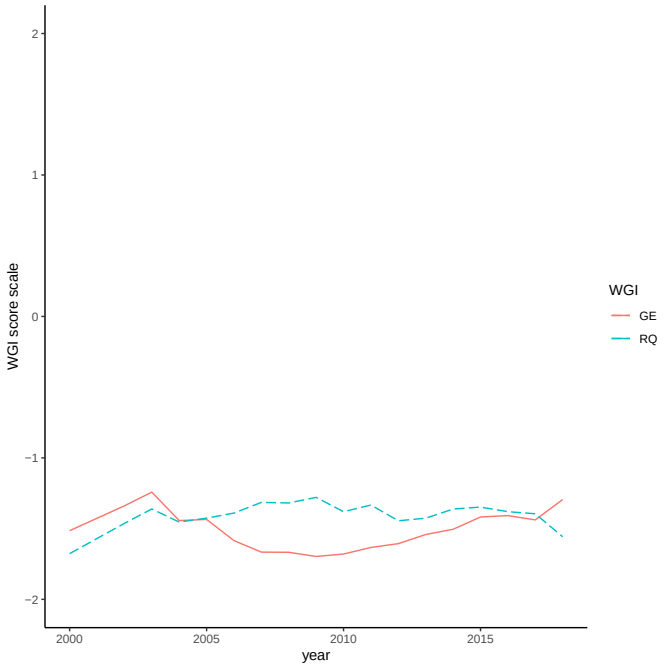
The lack of coherent information on the status of environmental policy implementation in Equatorial Guinea makes it difficult to broadly assess its subsequent policy announcements. In

2003, the government published *Ley reguladora del Medio Ambiente*, a legislative document outlining a legal framework for environmental management and regulation in the country (FAO 2003). The document expresses a deep concern for the environment and gives a comprehensive outline on how best to govern as well as protect its natural environment. But there is little evidence that suggests what is outlined in the document has been acted out by Obiang's government. The natural resource operations are controlled by well-organised industry groups, which inevitably include Obiang's close council and the oil companies, thus making it difficult for management agencies to effectively implement strict regulations and oversight (Young 2003).

The institutional arrangements in Equatorial Guinea are structured in a way that only the president's family and close council members of his ethnic clan are able to hold important and strategic positions of government. Much of the economic activities conducted in the country are closely linked to the President's political elite via ownership, control or taxation. The Equatorial-Guinean government has centered the economy around oil, and in order to exploit the resource they depend heavily on the external input of international petroluem corporations, such as Exxon Mobil and Kosmos Energy (Smith 2019). Export-led growth is what fuels policy in this case and it is what that serves the interests of the government council and the respective companies involved. Equatorial Guinea has no refining capacity and although the government announced project plans for a government-owned refinery in Mbini, there is no evidence of its completion as yet (U.S Energy Information Administration 2017). Local industries have seen little inclusion into the development of industry and most of the service sector relies on imports, indicating that little money from the resource is being used to develop the broader economy (McSherry 2006). The economy remains in the hands of international oil prices and few linkages have been made between oil and non-oil sectors in the country. Large-scale infrastructure projects have been the priority of the government budget allocation rather than basic service delivery particularly in areas of health and education. In 2011, the International Monetary Fund (IMF) and World Bank have openly criticised the country's budget priorities (Saadoun 2017). In 2018, the IMF completed its first economic and financial review under the 'Staff-Monitored Program' (SMP) in Equatorial Guinea. The project aims build capacity in fiscal management and economic growth strategy whilst encouraging better governance practices. The report indicated that authorities now intend to increase expenditure towards housing, medical facilities and education (IMF 2018). But IMF staff continually express concerns over the public-sector capacity to implement recommended fiscal adjustments and necessary structural reforms.

Figure 4.1 shows the trends in government effectiveness (GE) and regulatory quality (RQ) scores between the years 2000 and 2018 for Equatorial Guinea. The graph confirms the argument that the Equatorial-Guinean authorities have done poorly in the area of public

FIGURE 4.1: Equatorial Guinea's GE and RQ scores between 2000 and 2018



service provisions and policy coherence since the discovery of oil. The solid line represents the GE score, which shows poor improvement over the 18 year period. Overall, the graph shows no significant change in the GE, but towards the more recent years there looks to be an upward trend. But as Young suggests, developing countries face the challenge of economic incentives taking the priority over establishing strong environmental regimes.

4.3 Namibia

Namibia is located on the western coastline of Southern Africa, sharing majority of its borders with Angola, Botswana, South Africa as well as a river border (The Caprivi Strip) that is shared with Zambia and Zimbabwe. The territory is divided into 14 regions, with the capital, Windhoek, located in the central Khomas region. Namibia is the driest nation in sub-Saharan Africa receiving the least amount of rainfall than any other country in the region. The oldest desert in the world, the Namib desert, is located along the Skeleton Coast which is one of five different geographic areas in the country. To the east, a large stretch of the Kalahari desert is shared with Botswana and parts of South Africa. As a semi-desert, the region hosts a huge and diverse range of animal and plant life. The country has a population of 2.6 million people, most of whom are located around the central to more northern parts of the country, where most of the arable land can be found (CIA 2020). The country has eight different ethnic groups, the principle groups being: the Ovambo (around 50%), Kavango, and White Nambians (of whom

are a mix of Afrikaner, British, German and Portuguese decent). The official language is English, but majority of the population speak Oshiwambo languages, Afrikaans and other traditional languages (CIA 2020).

Namibia became a colony of the German empire for three decades between the late 1800s until 1915 (post-World War I), after which it became a British colony under the administrative rule of South Africa. Diamonds were discovered under German colonial rule, which sparked small infrastructure development in order to exploit the resource, Namibians remained excluded in the economic gains and were used as the main source of labour. The remnants of German influence remain visible today in buildings, street names and cultural festivities. Under South African rule, the country also endured racial classification laws similarly to what was known as *apartheid* under South Africa's National Party. Discontent and demands for political rights began during the later part of the 20th century, which resulted in the territory demanding independence from South African rule. In 1973, the South West African People's Organisation (SWAPO) was recognised by the UN as official representatives of the native Namibian people, who subsequently went to war against South Africa during the late 1980s. Finally, Namibia gained independence in March 1990 and the SWAPO party came into power and Sam Nujoma was made their first president. At the time of independence, the country faced high levels of poverty, unemployment and inequality (World Bank 2020).

President Nujoma pursued free-market economics after independence in order to develop the country's commercial sector, create jobs and encourage foreign investment into the country. Namibia's economy depends predominantly on the export of primary commodities such as diamonds, uranium, livestock, fish and several other mineral resources. The Namibian Dollar is pegged to the South African rand in order to stabilise the exchange rate between the two countries, which have a very close trading partnership. The mining sector continues to expand (around 11% in 2018) and infrastructure development has largely been driven by the private sector. Economic depression faced by the members of the Southern African Development Community (SADC) has been challenging for the growth of Namibia's economy, particularly in trying to manage high (43.4%) unemployment among the youth. To make matters worse, during 2019 the *El Niño* weather event brought on one of the worst droughts in the region's history, causing a state of emergency as half a million Namibian faced food insecurity and water shortages. Climate change and water governance are two recurring themes that feature in both academic literature on the country and within the Namibian government's environmental policies. The next subsection will provide greater political context which analyse of the link between governance and environmental performance in Namibia. The purpose is to reveal how the political system of Namibia impacted on environmental policy and decision-making at the time of the EPI score.

4.3.1 Political overview

For over a century Namibia internal affairs were largely dictated for by colonial powers and external authorities (Heyns 2005). During its time under German colonial rule, very little institutional capacity was developed owing to the German's having focused on extracting the resources they desired and building infrastructure that served only this purpose (Forrest 2001). When South Africa gained control of the territory after World War I and *apartheid* laws were enforced and new institutional regimes were set-up in mirror image of South Africa's own laws and regulations. The South African government deprioritised the development of regions where black residency was permitted and focused on the provision of services and resources for an elite minority. For example, the prevision of water supply during this period prioritised the needs of commercial-led livestock farms and the mining industry concerns of South Africa, rather than the needs of the majority Namibian population. South Africa privatised much of Namibia's economy prior to its independence in order to facilitate private capital outflows from the country. Ultimately this led to a fragmented economy that was (and still is) highly dependent on South Africa for economic growth and stability (Electoral Institute for Sustainable Democracy 2009). In 1989, the first general election (with universal suffrage) was held in Namibia to elect a constitutional assembly, SWAPO retained 57% of the vote and the following year independence was granted. The new government aimed to deal with the historic issues of inequality, poverty and poor development of the majority population. Water and land have become central themes in the politics of SWAPO's governance since its country's independence from South Africa. Namibia is classified as a multiparty democracy but the ruling party, SWAPO–has remained in power since the country's independence. Constructing new institutional arrangements was the new task set by the government as much of what was left before neglected the needs of the native Namibian people. Issues that the government sought to address included socio-economic and environmental rights alongside the development of an inclusive healthcare and education system (Heyns 2005). Namibia's constitution became one of the first in the world to acknowledge the protection and maintenance of its unique indigenous ecosystems and valuable natural resources, emphasises that the government and its people are accountable to their actions in the environment. In 1992, the Earth Summit proposed a new development agenda which advocated for *decentralisation* and *community-based* governance of natural resources, particularly aimed at the global South (Schnegg 2016). This inspired much of the policy design for the governing of water resources in Namibia. The next section examines the developments of water policy in Namibia in order to discuss what aspects of their political regime is a cause for their current environmental performance.

4.3.2 The link between environmental performance and governance in Namibia

Post-independence Namibia's leadership promised to prioritise the construction of new water supply points across the sparsely populated country in order to address the unequal delivery of services and resources under colonial rule. Water became a central theme for SWAPO in order to improve the socio-economic situation of its population and of course, its future voters. Namibia's population density is estimated at 3 persons per km^2, making it one of the least densely populated country's in the world (Worldometer 2020). However, this challenged the ability for government to supply enough water and sanitation services to its rural and remote populations around the country. In light of the challenge, the Namibian government adopted the 1993 Water Supply and Sanitation Policy (Heyns 2005). Prior to the adoption of this policy, the existing Department of Water Affairs took a centralised approach to policy design and implementation, but soon realised that they lacked the capacity and technical know-how to manage the difficulties of supplying water to the most rural and arid parts of the country. The introduction of the new 1993 policy hoped to deal with these challenges by intensifying the construction of boreholes and pipelines (Forrest 2001). In theory, the focus on the supply and provision of water to the Namibian population seem enough, as long as it served to provide for the needs of the population. What the policy did not take into account enough was the prospect of developing infrastructure that might drain their future supply of water in a region already arid in absolute terms. In the hast of delivering on the national states interests, recent evidence suggest that the government failed to take into account watershed sustainability in water supply projects (Namibian 2020). Arguably though, water has been the most important demand expressed by Namibians because without a supply of this essential resource, communities cannot use their land for subsistence or commercial purposes (Falk, Bock, and Kirk 2009). With only 50% of the rural population having access to a reliable water, the Namibian government sought to carry out a large-scale expansion of water infrastructure to reach those who had no or little access to the resource under the apartheid South African government.

In order to increase the supply of water to remote parts of the country the government undertook a macro-scale plan that would combine the drilling of more boreholes and the extension of existing pipelines to areas where boreholes were not an option (Forrest 2001). However, after dissolving the previous Department of Water Affairs (mostly staffed with South Africans) there was a lack of adequately trained staff and coordination between different ministries related to the provision and supply of water resources. For example, in the development of new schools, the lack of coordination between relevant ministries meant that water availability nearby was not factored into a school's development. In attempt to deal the

lack of capacity, the government created a inter-ministerial committee that would assist local government offices with the distribution of water to local towns and rural settlements.

The decision to commercialise water supply activities was made in 1997 so the government could fund the development of large-scale water infrastructure and the cover the costs of maintenance. The belief was that a commercialised water supply would ensure efficient supply of good quality water services to the people of Namibia (Heyns 2005). The Namibia Water Corporation or "NamWater" was formally established to begin accelerated infrastructure development, with a focus on macro-scale projects such as dams, extended pipe and carrier networks as well as hydroelectric systems. NamWater was also justified by the desire for the government to reduce the size of the public service sector to cut costs and renew the previously fragmented water ministry. However, this became problematic because the staff who were retrenched came from the divisions of engineering, construction and maintenance, leaving a gap in the capacity of the Department of Water Affairs to properly execute proposed policies and subsequent projects. Nevertheless, the government pushed on with the expansion of borehole drilling, relying predominantly on groundwater to supply rural towns and settlements. Groundwater is advantageous in that is allows for isolated communities to have a direct access to water supply, but Heyns argues that over the long-term the draining of Namibia's subterranean watershed could case desertification in the long-term.

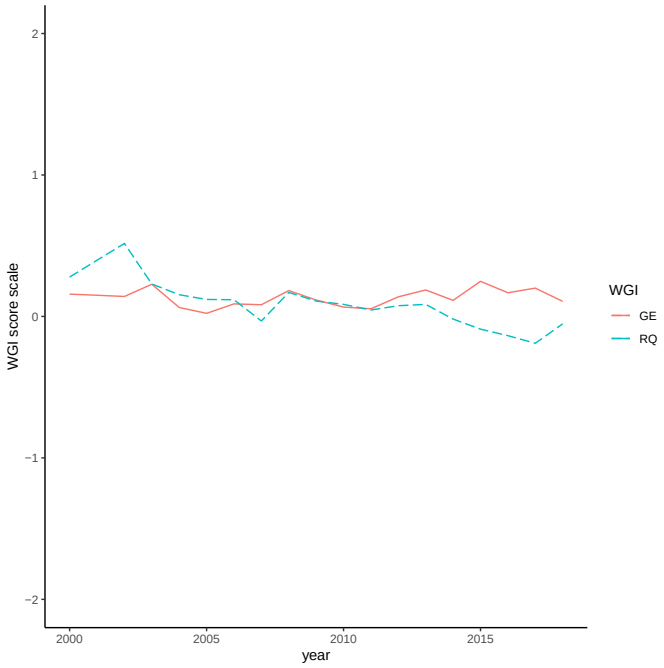
The most ambitious 'mega' project *Epupa* was intitated by President Nujoma's government to solve the water supply issue at a mere $700 million (Workman 2003). The Epupa hydroelectric dam would supply more water than the country needed as well as electricity. The dam would link with the Cunene River, adjacent to Namibia's border with Angola. Prior to its construction, experts warned that the water levels of the Cunene River were already under strain due to existing piplines supplying the northern parts of the country. If the government were to go ahead with its construction they would also need to build an artificial floodplain, which would result in large ecosystem damage and risk the availability of water in local farming areas nearby (Workman 2003). The *Himba* people living in the northern region of Kunene would have over 100 permanent dwellings and their ancestral lands flooded if the dam were to be built (*The Epupa Debate* 1998). The *Himba* minority had no representation in the newly elected government so opposing them dam's construction required assistance from non-state actors. The World Commission on Dams (WCD), formed by the World Bank and World Conservation Union, played an important role in stalling the construction of the dam by allowing activists and NGOs to assess the project's plans and ensure the protection of the Himba people's rights (Pottinger 2020). In this case, allowing the involvement and input of international experts and NGOs helped ensure cultural and environmental risks were not take unnecessarily.

Current statistics indicate that the government have improved the drinkable water supply

by over 80% for rural areas since independence (CIA 2020). In the case of Namibia's service delivery effectiveness and policy coherence in the supply of water, there is a positive trend. Namibia give an example of how practical water policies alongside reasonable administration capacity and legislation can produce successful outcomes in the delivery of water supply. But what remains particularly challenging still is integrating long-term environmental protection and the supply of water as an important resource for development. Yale's EPI indicator for *water and sanitation* score Namibia at 15.5 (out of 100 points), indicating that the quality of sanitation services and water treatment is poor. Access rates for sanitation are 53% for urban and 16.7% for rural (Nghipangwa 2017). Although the *supply* of water has improved significantly across the country, the quality of water services remains problematic. The government agreed to the integration of the UN-backed framework of Integrated Water Resources Management (IWRM) at the time of NamWater's creation and it attempts include issues of economics, water quality and the environment into national water policies (Heyns 2005). But in order for the framework to filter through into policy design and implementation, employees require all the necessary expertise and experience to execute the IWRM framework. Heyns argues that the regulation and legal constraints of water use must considered in the development process, it cannot only be viewed as a *public good* to be exploited at the expense of long-term ecosystem stability. Micro-scale projects such as rainwater harvesting, small storage dams, desalination and fog catchment should also be included in policy design and project development, particularly for rural settlements (Woltersdorf, Jokisch, and Kluge 2014). In a cost-benefit study by Woltersdorf, Jokisch, and Kluge they find numerous financial, social and environmental benefits for local communities in Namibia to adopt rainwater harvesting technologies. In comparison to Equatorial Guinea, the Namibian government have embraced the input and support of non-state actors in development projects, whereas in Equatorial Guinea it remains challenging for non-state actors to assist and become involved in projects concerning its people and environment. That being said, democracy in the case of Namibia, could prove beneficial for the protection of the environment as long as they remain involved in international dialogue and regional cooperation.

Figure 4.2 shows the trend in government effectiveness and regulatory quality in Namibia between 2000 and 2018. The graphs shows a fairly stable but small progression over the period. However, overall there seems to be almost no significant improvement in governance since post-independence. Most recently, the Minister of Fisheries, Bernhard Esau, and state lawyer Sisa Namandje, were implicated in a large corruption scandal with Icelandic fishing conglomerate (Kleinfeld 2019). An investigation by *Al Jazeera* gives evidence that the minister of fisheries and some of his close relatives (involved in the state-owned Fishcor company) had received brides worth $10 million in order to place Icelandic companies in an advantageous position in Namibia's fishing industry (Kleinfeld 2019). Both the minister of justice, Sacky

FIGURE 4.2: Namibia's GE and RQ scores between 2000 and 2018



Shanghala and the Bernhard Esau have since resigned from their positions in cabinet and former Fishcor CEO Mar Baldvinsson was arrested as well as businessmen involved in the scheme. Namibian rule of law seemed to hold steady against the case and refused to use political favouritism in order to release the accused without charge (Werner and Pinehas 2019). The scandal does suggest reveal possible issues with the election of leadership within areas of natural resources, where there is money to be made at the expense of the environment and future sustainable development.

4.4 Conclusion

The cases indicate a clear difference in the institutional and governance approach towards environmental issues. The corruption and lack of openness that characterises Equatorial Guinea's government will most likely block the environmental protection needed for its ecosystems in near future. In the case of Equatorial Guinea, its economic priorities seem to dictate the direction for natural resource policy and environmental governance. The country's lack of transparency and accountability makes it difficult to truly assess whether its EPI score is accurate and truly a reflection of its current political situation. Further investigation into the country's environmental policy *promises* is necessary in order to critically reveal whether what's been promised to international organisations such as the UN, is in fact in implementation. Climate change poses as one of Namibian's most immediate threats to water

governance and environmental sustainability. From what has been discussed above, it seems that the Namibian government is able to respond the environmental needs of the country, however its uncertain whether their *commercial* approach to resource management will effectively take into account long-term sustainable resource-use practices (Hossain and Helao 2008). The ownership and management of resources remains unbalanced in Namibia so if the governance system does come under strain or worse, collapse, the threat of instability, conflict and oppression could become reality (Jreisat 2004). Perhaps what could help reveal more about a country's environmental performance is the economic framework which guides the management of its natural resource governance and development. Governance remains crucial but the empirical results here suggest that governance may not be the only factor driving environmental policy entirely. In the case of Namibia, what is apparent is that its democratic system does encourage accountability, transparency and rule of law, which evidently help avoid the construction of projects such as the *Epupa*. As (Hossain and Helao 2008) suggest, Namibia should promote a water governance policy that includes the *trust* of the public and not just the trust of private business interests. Although the empirical results suggest a weak relationship with democracy, upon closer examination, democracy allows a more open dialogue between citizens and government on issues of environmental degradation. Unfortunately, Equatorial-Guineans are unable to voice their concerns in the same manner and with the restricted involvement of NGOs, it does not seem as if they are incentived to move away from risky environmental practices as yet.

5 Conclusion

Theoretically, scholars mostly concluded that a positive relationship does exist between democratic governance and better environmental policy coherence or implementation (Payne 1995). Empirically, scholars have been challenged by attempting to develop robust statistical models and, as much as is possible, indicator measurements that can accurately represent environmental issues and policy performance on the matter. To contribute this literature, this report focused on the environmental policy performance (EPI 2018 score) as the environmental measure of choice, which tries to give a broader look on *ecosystem vitality* and *environmental health*, rather than identifying a single environmental indicator. The empirical analysis focuses on measuring whether any of the six measures *good governance* have a positive effect on environmental performance across 101 developing countries. The analysis also includes a dichotomous *democracy* variable that is measured using the LIED scale, which effectively measures the level of electoral governance in country. The continuous governance measures and dichotomous democracy/non-democracy variables test whether the level of governance quality and regime effects the outcome of the EPI score for developing countries when controlling for a number of factors.

The reported empirical results show that that on its own *democracy* is a weak predictor of environmental performance in developing countries. However, the *government effectiveness* and *regulatory quality* measures did yield positive and significant results in their respective models. The continuous 'democracy' indicators such as *voice and accountability* as well as the dichotomous democracy measure failed to show a positive and significant relationship with environmental performance in developing countries. In partial regression plot in Chapter 3, it shows most of the countries in the sample clustering around the center of the plot, where the countries EPI score is 'higher', the points lie relatively close together, whereas when the EPI score is 'lower' the countries are fairly spread out. This suggests that while controlling for *trade openness*, *GDP per capita*, *resource rents* and *population density*, regime type does not necessarily dictate the outcome of environmental policy performance. The governance measures: *government effectiveness* and *regulatory quality* link closely to the idea that environmental resources are seen as *public goods* and thus require effective service delivery and policy coherence if they are to be accessed by citizen's of a country. To explain this further, a nested case analysis was performed on two countries: Equatorial Guinea and Namibia.

The case studies were selected based on their statistical results for the *government effectiveness* model. The case of Equatorial Guinea reveals that if public service delivery is poor and environmental policy is not actively pursued, issues such as deforestation and poor water quality take longer to solve or even address. The environmental *regimes* that exist in Equatorial Guinea are there to serve the needs of businesses and the elite political representatives. Due to the lack of transparency it was difficult to discern whether some of the environmental protection policies/laws have been actively pursued since the country's independence from Spain. On the other hand, Namibia's approach to environmental policy has involved including ecosystem protection in their constitution as well as being actively involved in working with international organisations and NGOs. Namibia has been able to respond to the need for a consistent supply of water, however it remains challenging to align economic growth and human development with its promise to protect its unique but vulnerable ecosystem. However, Namibia also has issues of corruption and vested state interests in certain industries which are risky for future environmental sustainability. The institutional capacity of many developing countries remains problematic whether they are democratic or not. This suggests that examining countries in more detail in this type of analysis may reveal more about the contextual circumstances of each case and better explain the relationship between democracy and environmental performance.

This report gives consideration for Midlarsky and Ehrhardt-Martinez, Crenshaw, and Jenkins's findings that democracies have little evidence of improving environmental quality, particularly for democracies with *weak* institutional capacity. However, both studies were limited in their sample due to data availability issues. The limit to the results of this report is that change in EPI year-on-year could not be compared in a time-series manner since the methodology has repeatedly in the hopes of improving the accuracy of the indicator. What would be useful in future research is to measure change in governance along with change in environmental policy performance to see whether, over time, democracy improve environmental governance.

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