



Graduate School of Development Studies

**Understanding the Compliance Gap:
The United Kingdom's Environmental Hypocrisy**

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Source: UK Energy In Brief July 2008. BERR.

www.berr.gov.uk/energy/statistics/publications/in-brief/page17222.html (2008).

Table 2: Contribution of Renewable Energy Sources to Germany's Energy Supply

Source: "Economic Analysis and Evaluation of the Effects of the Renewable Energy Act." Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety. February 2008.

List of Acronyms

BAT	Best Available Technology
BERR	Department for Business Enterprise & Regulatory Reform
BPM	Best Practicable Means Principle
BPEO	Best Practicable Environmental Option
CME	Coordinated Market Economy
EEG	Renewable Energy Act (Germany)
GWh	GigaWatt Hours
LME	Liberal Market Economy
MWh	MegaWatt Hours
NFFO	Non-Fossil Fuels Obligation
RO	Renewables Obligation (UK)
StreG	Stromeinspeisungsgesetz (Electricity Feed Act 1991)
TWh	TerraWatt Hours
VoC	Varieties of Capitalism

Abstract

The UK is proclaiming to be a leader in combating climate change; through ambitious and groundbreaking policies, public pronouncements, and interactions among its European counterparts, the UK is positioning itself as the forerunner in the fight to reduce carbon emissions and promote renewable technology. However, upon closer examination, there seems to be a discrepancy between what the UK government is saying in its regulatory policy, and the actions that energy companies are taking in response to this policy. In other words, there is an apparent gap in compliance between government policy and industry reaction. Actual records of carbon emissions and renewable energy growth show a much more grim picture of UK progress. As a comparative case, Germany has shown a much narrower gap in compliance, and I aim to expose these differences by examining the effectiveness of the two key environmental regulatory mechanisms in each country: the Renewables Obligation in the UK and the EEG in Germany.

Having shown that the cases of the UK and Germany are different, there are many explanatory factors for this, including culture, political parties, history, national preferences, and many more. I have chosen governance as the factor of focus in this paper; governance is the collection of rules, norms, and institutions that oversee the creation, implementation, and enforcement of environmental regulatory policy. And, because governance is the focus, I will draw on the body of literature Varieties of Capitalism and its principle Co-Convergence Theory, which dichotomises two main types of economies: Liberal Market Economies (LMEs) and Coordinated Market Economies (CMEs). Using this theoretical underpinning, I will attempt to show that these categorisations, under which the UK and Germany fall, are helpful explanations for the creation of the RO and the EEG in each country, respectively. Once these parallels are drawn, the argument becomes clearer as to why the UK is exhibiting a wider gap in compliance between its stated policy goals and corresponding energy industry reaction.

Relevance to Development Studies

Sustainable development is atop of the agenda for development studies; environmental management is key to preserving natural resources for the entire population, present and future. Environmental policy that constrains energy companies' behaviour can combat the most damaging impacts against sustainable development: climate change. As scholars look to exemplar nations for best practices, it is important to thoroughly audit developed countries' policies. This research paper examines the main environmental policies of the UK and Germany, exposing false claims made by the UK, contributing to development studies' understanding of the best methods for promoting positive change in environmental management.

Keywords

[Best Practicable Means Principle] (BPM Principle): Introduced in the UK environmental policy mainstream via the 1874 Alkali Act, which set the first example of formal emission standards. The ‘best practicable means’ were the actions taken to adhere to the specified “actual amounts of certain substances per cubic metre of emitted gas.” Subsequent legislation to meet these guidelines was deemed compliant to the BPM principle.¹

[Best Practicable Environmental Option] (BPEO): Building on the BPM principle, BPEO introduced additional considerations including the need to consider a more holistic, multi-level approach to environmental practices. BPEO was defined in 1988 as establishing “the option that provides the most benefit or least damage to the environment as a whole, at acceptable cost, in the long run as well as in the short term.”²

[Best Available Technology] (BAT): A guiding principle that encourages the setting of emission limit values “by tightening standards in the light of emerging technological possibilities.” In Germany, BAT has evolved from the concepts of ‘rules of technology,’ ‘best available scientific and technological knowledge,’ and the ‘best available scientific knowledge.’ Critics have argued that BAT relies too heavily on “technical fixes.”³

CITATION NOTE: Footnotes that appear at the end of a paragraph should be treated as the source of all information in that paragraph: all quotations, statistics and conclusive statements within that paragraph. The exception to this rule is where I have placed multiple footnotes within paragraphs; in this case, please refer to the specific reference placed at the end of that specific sentence.

¹ Wurzel, R. Environmental Policy-Making in Britain, Germany and the European Union. Manchester University Press. (2002) Manchester.

² *ibid.*

³ *ibid.*

Chapter 1

Introduction

1.1 Setting The Stage: The *Problematique*

The role of central government in shaping a nation's energy policy and regulating the behaviour of those under its authority is now more important than ever. Scientific evidence, bolstered by popular consensus, supports the fact that we are now in a critical time where inaction can be devastating to the global environment. There are many contributions in support of this argument, including the UK's Sir Nicholas Stern, whose economics-focused 2006 Stern Review announced that "the costs of stabilising the climate are significant but manageable; delay would be dangerous and much more costly."⁴ This call to arms is now being heeded; national governments are now among the main actors in the world climate change stage; the responsibility of government to manage its citizens' environmental behaviour is more urgent and omnipresent than ever. Capitalizing on this gravity, the United Kingdom and Germany are two standout European nations taking a very public stance with their respective energy legislation driving innovation and efficiency, and will be further delved into in this paper.

However, individual records of success thus far have varied. The case of the United Kingdom is problematic as it is currently on the brink of becoming a major contradiction in terms with potentially devastating repercussions. Claiming to be an environmental leader in Europe by passing stringent policies and standards while concomitantly promoting the development of innovative clean and renewable energy technology—all in an attempt to transform the UK public's and Industry's consciousness into one of a 'green' identity—evidence shows that government policy is not significantly affecting energy industry compliance to its keystone policy, the Renewables Obligation (RO). Here lies the main *problematique*: the pretence arising from a national government's proclaimed environmental improvements and the resulting disappointing empirical reality. The Corner House, a British think tank, challenges the hypocritical aims of the UK government's "ambitious climate goals for public consumption without seeking the practical means necessary to achieve them."⁵ While passing environmentally-stringent renewables and CO₂ targets, the UK is simultaneously "[promoting] airport expansion, [backing] World Bank efforts to ramp up fossil fuel use worldwide, and [committing] to large-scale carbon trading – a messy US invention that only slows the transition away from fossil fuels."⁶ This duplicity is preventing the UK from reaching self-imposed and EU-imposed carbon emissions reductions targets, tarnishing the attempted green image it has thus far engendered. Since 1997, there have been over 200 pieces of legislation specifically addressing 'energy,' 'renewable,' and

⁴ "Summary of Conclusions." The Stern Review: Economics of Climate Change. HM Treasury. www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/stern_review_Report.cfm

⁵ Lohmann, L. "Who Are the Climate Leaders?" *Red Pepper*. August 2007. www.thecornerhouse.org.uk/summary.shtml?x=556338

⁶ *ibid.*

‘electricity’ concerns.⁷ Most embarrassingly, since the Labour party came into power in 1997, the UK as a whole has missed 60 percent of its stated legislative targets for carbon reductions.⁸ Renewable energy is much less widely implemented in the UK than Germany (5 percent of all UK electricity generation came from renewable sources), and sceptics have called into question the veracity of the UK government’s CO₂ reduction claims.⁹

1.2 Juxtaposing Renewable Promotion Policy: A Comparison of the German EEG and the British RO

Emerging evidence is becoming ever more abundant pointing to a misleading environmental record under the UK government; the previous section has begun to uncover these spurious claims. In order to understand the UK record under an analytical and academic light, it is necessary to introduce a comparative case. I have chosen Germany as a parallel case study; German government leaders are performing many of the same actions as their British counterparts. I aim to show deviations in results between the two via legislative action, further explicated in the following section.

When comparing energy policy between the UK and Germany, it is necessary to start with an explication of the two key drivers of renewable energy deployment in their domestic markets, the Renewables Obligation (RO) in the UK and the Renewable Energy Sources Act, or EEG, in Germany. The Renewables Obligation (RO) has been the UK’s main framework for stimulating new renewable energy sources since its creation in 2002, while the EEG was implemented in 2000. Both have the same goal of increasing the amount of electricity from renewable sources among its prime energy distribution companies, yet each seeks an alternate means to reach the justifiable end. One is a quota system that requires a certain percentage of annual total energy produced to be provided by renewable sources, evidenced by Renewable Obligation Certificates (ROCs), while another is a pricing system that guarantees renewable generators an inflated, yet annually decreasing fixed cost for electricity production, known as the ‘feed-in tariff’. What I will focus on in the UK is the specific impact of the RO policy on energy industry actions, and how a market-based renewables mechanism has both prevented substantial carbon reductions and perpetuated fossil fuel energy use.¹⁰

What is unique about the RO and EEG policies is that they are instrumental mechanisms, i.e., policies that actually implement systems with mandatory behavioural responses, as opposed to the litany of rhetorical policy papers that have sat in legislative purgatory or lack any enforcing potency once passed. Therefore, these two policies are quite apropos for a research discussion.

⁷ “The UK Statute Law Database.” UK Ministry of Justice. www.statutelaw.gov.uk

⁸ “Labour Failing to Hit Green Targets, ThinkTank Claims.” Guardian Online. 8 May 2008. www.guardian.co.uk/environment/2008/may/08/climatechange.carbonemissions

⁹ UK Energy In Brief July 2008. BERR. www.berr.gov.uk/energy/statistics/publications/in-brief/page17222.html (2008).

¹⁰ “Energy Sector Indicators 2008.” Department for Business Enterprise and Regulatory Reform (BERR). (2008). www.berr.gov.uk/files/file47147.pdf

1.3 Germany: The Comparative Case

The case of Germany is less problematic and in fact a much greater success story. Germany currently stands above many European nations in delivering policy-driven, renewable generated electricity and carbon-reduction solutions, through an effectual synergy between government-imposed regulation and corresponding energy companies' actions. Much of this success is due to Germany's main energy policy, the Renewable Energy Sources Act (EEG, which began in 2000), the successor to original 1991 Electricity Feed Act (Stromeinspeisungsgesetz, StrEG). Over the course of its existence in both incarnations, the EEG has attributed to the significant reduction in carbon emissions through its use of a feed-in tariff system that obligates electricity providers to purchase renewable energy at a fixed price, thus creating market stability and promoting further technological innovation. The rationale behind feed-in tariffs in general is to "compensate RE developers for the environmental benefits of generation." The retail price of renewable energy-sourced electricity is typically higher than non-renewable sources, and feed-in tariffs helps to close the gap between the two, thus promoting a shift towards cleaner energy. The original legislation required public energy companies to buy renewable-source energy for a price of 90 percent of the average retail consumer price from the previous year's market prices, and has since been changed to a fixed-tariff rate over a 20-year period.¹¹

StrEG and EEG have provided the financial grounds upon which to build compliance among German energy companies; as a result, renewable energy is on the rise. StrEG was the impetus for the massive rise in Germany wind energy that occurred during the 1990s (and with the EEG in the 2000s), with rising employment, massive installation (currently, Germany has approximately 1/4 of the world's installed wind energy supply, and the largest solar production industry in Europe.¹²) In 2007, over 14 percent of electricity supply came from renewable sources (a majority of this is wind, followed by biomass and then hydropower energy), and when combined with heating and fuel sectors, renewables accounted for 8.5 percent of total production—surpassing 2010 targets.¹³ Regarding the environmental impact (via CO₂ reduction and renewable energy expansion), economic impact (job creation, financial growth), and international impact (other countries incorporating variations of the EEG into their national policies), evidence abounds that the Germany has exhibited both greater compliance to and success with the EEG than its English RO counterpart. This research paper will further elucidate the factors surrounding the extent to which Germany is less problematic than the UK when examining its record of success in legislating environmental change.¹⁴

¹¹ "EEG—The Renewable Energy Sources Act: The Success Story of Sustainable Policies for Germany." Federal Ministry for the Environment, Nature Conservation and Nuclear Safety. July 2007.

¹² "Germany – The World's Leader in Renewables." Invest In Germany. (2008). <http://www.invest-in-germany.com/homepage/industries/renewable-energies/>

¹³ "Renewable Energies Grow Strongly Again in 2007." Federal Ministry for the Environment. (14 March 2008). http://www.bmu.de/english/current_press_releases/pm/41027.php

¹⁴ Lipp, J. "Lessons For Effective Renewable Electricity Policy from Denmark, Germany, and the United Kingdom." *Energy Policy*. 35 (2007).

1.4 Compliance Explained: The *Stated* → *Actual* relationship

The goal of environmental policy is to create compliance among a targeted group—in this research discussion, energy industry companies in the UK and Germany—to specific guidelines, behaviours, and practices that are deemed both desirable and necessary to curb environmental damage, primarily carbon emissions and renewable energy. Compliance is therefore necessary to achieve the stated goals of a government’s policy. I will hereafter examine the concept of ‘compliance’ to the RO in the UK and the EEG in Germany by energy industry leaders, and specifically, the demonstrable gap in compliance between *stated* government-mandated regulation, and *actual* business practices. A bifurcated and causal relationship, the *stated* factor includes official government legislation, goals, and proclamations detailing the route towards environmental success, including guidelines by which others must follow. The *actual* factor is the empirical response, or how energy companies incorporate government regulation into increased renewable energy use and decreased CO₂ emissions. This research paper will primarily examine the extent to which this gap in compliance exists in the UK, and as a comparison case I will examine the extent to which the gap in compliance exists in Germany.

1.4.1 *Vocal Environmentalism: Examples of Stated UK Environmentalism*

In order to carefully examine this gap in environmental compliance, it is necessary to first start with how the UK and German governments vocally state their achievements and future objectives in environmental success. Detailing this *stated* environmentalism gives an actual record to which each government can later be held accountable. It is also a litmus test for the relationship between government and industry, and the ability of government to enforce compliance by the energy industry to environmental regulation. The following section lists examples of UK and German government stated environmentalism.

The United Kingdom’s declaration of environmental prominence can be seen most recently in the 2007 Climate Change Bill, drafted and championed by former Prime Minister Tony Blair. Declaring the UK to be “a leader in the climate change debate” in February 2007,¹⁵ Blair’s bill has called for at least 60 percent reduction by 2050 and at least 26 percent by 2020 in carbon emissions with a ‘carbon budget’ set at five-year intervals, enforcing binding limits on emissions in order to adhere to the ‘budget’ periods, and overseen by an independent Committee on Climate Change. David Milliband, the former Blair administration environment secretary called the bill a “world first” for a country “leading by example.” Friends of the Earth and former London Mayor Ken Livingstone recognized the UK achievement in being “the first country in the world to introduce a legal framework for reducing carbon emissions.”¹⁶

In June 2008, Prime Minister Gordon Brown announced a “green revolution” policy to exceed the EU’s target of 15 percent of the UK’s energy supply coming from renewable

¹⁵ “UK is ‘a leader’ in climate change debate – PM” <http://www.number-10.gov.uk/output/Page10919.asp>

¹⁶ “Climate change bill is revolutionary, says Blair.” Guardian Online. (13 March 2007). www.guardian.co.uk/environment/2007/mar/13/greenpolitics.climatechange

energy sources by 2020. Describing it as “the most dramatic change in energy policy since the advent of nuclear power,” Brown has called for massive investment in offshore (and onshore) wind energy and is seeking GBP 100 billion in private investment to assist in the process. Specifically targeting industry mentality and behaviour, Brown’s policy seeks to create incentives to decrease energy demand.¹⁷

1.4.2 Vocal Environmentalism: Examples of Stated German Environmentalism

Likewise, Germany’s *stated* environmentalism is just as bold; Bundestag ministers are positioning their domestic energy sector with “the goal of making Germany the most energy-efficient country in the world” by passing recent legislation in 2007 that calls for a 40 percent reduction in carbon dioxide emissions by 2020. With 3 billion euros in new technology investment, these ambitious targets will be attempted in concert with energy industry leaders to modernise power stations and reduce carbon emissions by 11 percent (30 million tonnes) by 2020 as well as promoting Germany’s land travel system (e.g., trains) as a viable alternative to domestic air travel.¹⁸

1.5 Measuring the Compliance Gap

With large domestic sectors for energy production and distribution, the governments of the UK and Germany are both giving the appearance of effectively regulating an industrial base in order to stave off future environmental damage. Unprecedented legislation has been passed in a massive effort to ‘clean up’ energy production through efficiency in technology associated with reduced carbon emissions and damage to the local surroundings, as well as an increased emphasis on renewable and “clean” technology. However, closer examination of the two national governments’ impact on industry energy efficiency leads to a stark contrast in results. As will be explored in this research discussion, the UK has been less effective than Germany at translating tough environmental-related legislation into a corresponding action by its main environmental polluters, energy producers, hence the gap arises between *stated* and *actual* compliance.

And, through exposure to the current reactions of both policies, I will argue that the UK has a lower level of overall compliance than Germany, and therefore a wider gap in compliance among energy industry activities to regulatory legislation. This level of compliance can be tangibly observed by comparing the written regulations imposed by the legislation itself to the corresponding actions of energy industry businesses (or lack thereof) once the regulations were put in force.

¹⁷ “Brown unveils £100bn renewable energy plan.” Guardian Online (26 June 2008). www.guardian.co.uk/politics/2008/jun/26/greenpolitics.energy

¹⁸ “Germany Wants To Become World Leader In Energy Efficiency.” Energy Daily Online. (26 April 2007). www.energy-daily.com/reports/Germany_Wants_To_Become_World_Leader_In_Energy_Efficiency_999.html

1.6 Linking Environmental Regulation to Governance to VoC

A logical conclusion from the above sections would be that the United Kingdom's environmental record and Germany's environmental record are not the same. With divergent types of regulatory policies and measures of success (accompanied by varying degrees of success between the two countries), it is feasible to assert that there are a number of differing explanatory characteristics between these two countries for the disparate record of success in environmental management: for example, culture, history, political parties, wealth, business and consumer preferences, power of climate watchdogs, industry, and governance. Governance, meaning the institutions that take shape to design, implement, and regulate the performance of (environmental) policy, is the focus of debate in this paper. Governance, via institutions and policies that restrict some behaviour while promoting others, is a key force in environmental compliance. How governance shapes the UK's and Germany's degree of environmental compliance is the critical lens through which I will examine the examples of government policies, incentives, and restrictions on the energy industries of the UK and Germany. Simply put, governance matters. The role of central government and its regulatory institutions (e.g., Ofgem in the UK and the Federal Environment Ministry in Germany) is taking centre stage as the most visible form of control over the energy industry's adherence to specific targets and goals. Climate change is a global concern, played out on the international stage by leaders of individual nations. Therefore, environmental governance has climbed to the top of the national agendas of the UK and Germany.

And, because I will attempt to show that governance matters in environmental compliance, I will draw on the Varieties of Capitalism literature as a theoretical basis for comparison between the UK and Germany. The United Kingdom and Germany both function under the systems of global capitalism and the current Neoliberal order that unites most economies today. However, due to the different contexts under which the governments and economies of the UK and Germany developed, there resulted a contrasting 'flavour' of capitalism between the UK and Germany. The policy differences between the RO and EEG espouse the characteristic disparities in the types of governance from which they were created; a market-oriented, less regulated, business-centred, shorter-term emphasis and laissez faire attitude (reminiscent of UK governance) is seen in the RO policy, while a stronger government-influenced, cooperative, longer-term orientation towards industry growth (reminiscent of Germany's governance) is more evident in the EEG. Examining Germany's system of renewable energy incentives from a governance point of view, one can see the increased influence of government forces and less reliance on market mechanisms to set energy prices.

This contrast is translated in the actions of the firm, the central unit of analysis in the VoC literature, via a number of decisions that affect business performance: the degree of autonomy of the marketplace to set and regulate prices; provision of social protection, skills training, and employment benefits that affects job security; management styles, and short-term or long-term decision-making, depending on the conditions of profit reporting, among others. Therefore, businesses must weigh these numerous factors when debating the extent to which they will comply with national legislation on environmental regulation. The

Varieties of Capitalism literature is based upon the Co-Convergence Theory, which states that European nations have tended to centre around two poles, or clusters, of similar patterns of economic activity. These poles of economic activity are geographically focused on two nations: the Liberal Market Economy (LME) model, based around the United Kingdom, and the Coordinated Market Economy (CME) model, based around Germany.

1.7 Limitations

This research paper will not debate either the merits of individual pieces of energy legislation, nor the merits of specific types of energy efficiency practices. I will not delve into debates over which technology is more efficient than another, nor will assign normative values to energy industry business practices. I will not discuss industries outside of the energy production/distribution industry. By focusing only energy providers, I can concentrate on one business sector type in order to maintain a viable standard for comparison. I aim only to capture the reality of energy industry activity in both the UK and Germany and to ascribe levels of compliance to such activities.

1.8 Justification

The United Kingdom has prided itself on being an environmental leader among European nations, passing the Climate Change Bill in 2007 under Prime Minister Tony Blair, a groundbreaking legislation that purports some of the most rigorous standards and long-term targets, the first national legislation of its kind in Europe. And yet, there is evidence that the British energy industry has seen a steady rise in emissions in recent years, for example with plans to build new coal-burning power plants, and a failure to meet carbon reductions targets in current power plants. As the world looks to exemplar nations to model their handling of the environmental crisis we now face, scrutiny must be paid to the UK for its apparent hypocrisy and lack of compliance in environmental policy.

Chapter 2: The UK and German Case Studies

2.1 Policy Style over time: EQO (UK) vs. UEL (Germany)

The main energy legislation of both the UK and Germany offers a keen insight into the government operational psyche, which can be used to help explain the main research *problematique*. However, before examining the details of both the RO and EEG policy frameworks and their corresponding levels of success, it is helpful to review the UK and Germany's environmental regulatory style and the influences affecting policy decisions leading up to and including the current RO/EEG era. Germany's environmental regulatory style has been closely juxtaposed to the UK's, and the accompanying differences are visibly reflected in each country's environmental governance scheme. This section reviews the factors that have had a cumulative affect on the formation of governance policy patterns in both the UK and Germany, and the subsequent effects on compliance by the energy industry.

The UK has rested its environmental policy legislation on a few core ideals: in general, traditional British policy style has been described as “flexible, informal, consensual, incremental, and devoid of long-term objectives.”¹⁹ Germany's policy has stressed consensus and consultation—along employer/union lines—and public policy is depicted as “highly legalistic” due to a “‘concretisation’ of constitutional and general legal principles within a ‘state of law.’” Considering the larger priority that Germany attributes to the role of the state in policymaking, Germany's general policy style as compared to the UK's can be labelled as more active, anticipatory, and problem solving.²⁰

The UK and Germany's environmental philosophies have been described as “mutually exclusive,” each veering in diverging directions on the evolutionary path towards the formation of the RO and the EEG. The UK has adhered to environmental quality objectives (EQOs), which targets pollution collected in the receiving environments (air, water, soil), as opposed to Germany's adherence to Universal Emissions Limits (UEs), which focuses on pollution levels emitted from its original sources (e.g., energy production plants). The UK has traditionally relied on scientific proof as a precursor to remedial action for anti-pollution strategies; otherwise it has adhered to ‘optimising pollution’ in a cost-effective manner, adequately dispersing pollutants so as to not irreversibly harm the surrounding environment. The UK also has ascribed to the best practicable means (BPM) principle and the best practicable environmental option (BPEO). Germany has traditionally adhered to the best available technology (BAT) principle in connection with the Precautionary Principle, which legitimises action against pollution without scientific evidence if it means that there is a substantial risk that irreversible damage would occur by complete inaction.²¹

¹⁹ Wurzel, R. Environmental Policy-Making in Britain, Germany and the European Union. Manchester University Press. (2002) Manchester.

²⁰ *ibid.*

²¹ *ibid.*

2.1.1 Factors of Influence on EQO/UEL Mentality

Geography and history are two additional factors influencing governance trends in both the UK and Germany. Britain, an island nation with an abundance of high winds, fast rivers, and only one attached neighbouring country has had a considerably smaller immediate detrimental impact on the environment than in Germany, which has nine bordering states, imports a higher amount of pollution, and has had to deal with the significant environmental degradation legacy left by the former Soviet Union in East Germany after reunification.²²

Ecological modernization, the concept that combines economic growth with environmental regulations or clean technology development, has been viewed differently by the governments of the UK and Germany: simply, as one at the expense of the other in the UK, versus both being conducive to each other in Germany. In other words, the UK has historically seen as an inverse relationship the level of environmental standards with the level of economic growth, while Germany has realised their ability to jointly share a direct and advantageous relationship.²³

EQOs examine the repository environment for pollutants, and prescribe environmental targets “as threshold levels beyond which a pollutant should not be detectable.” This assumes that pollutants can enter the environment up to a certain point and can sustain the “natural carrying capacity of the environment;” adequate dispersal of pollutants does not harm either the environment or human health. When considering this “pollution optimising” strategy among the concerns of those more easily affected by atmospheric pollutants—elderly or ill citizens—and ecosystems sensitive to environmental shifts, it is more evident that science is left out of this UK standard approach. EQOs are designed for more cost-effective policy measures, as it permits a supply of pollutants entering the environment in order to save money on costly pollution abatement measures.²⁴

UELs encourage the adoption of clean technology, which goes in tandem with Germany’s adherence to the BAT principle. UELs are easier to measure than EQOs, since they are monitored at the source of pollution, and are better able to tighten standards based on emerging technologies.

The UK has preferred EQOs since they allow for more lenient emissions standards, and considering that the UK has a lower ecological vulnerability than Germany, it would profit less than Germany from stringent UELs due to a less-developed clean technology industry.²⁵ Environmental polluters, notably energy industry companies, are thus shielded behind the veil of EQOs in perpetuating their polluting activities.

Keeping EQO and UEL in mind, we can now provide a detailed review of the main environmental policy frameworks used in each country. When analysing the gap in

²² Wurzel, R. Environmental Policy-Making in Britain, Germany and the European Union. Manchester University Press. (2002) Manchester.

²³ *ibid.*

²⁴ *ibid.*

²⁵ *ibid.*

compliance, the main research objective, it is helpful to first know the specific obligations, targets, and deadlines to which the energy industry must comply. Also, it is useful to be cognizant of past origins of and recent modifications to both policies. Finally, how success is defined and measured by both policies will help in the subsequent analyses of environmental performance in the UK and Germany.

2.2 RO and the Energy Industry in the UK

2.2.1 Energy Industry Overview

The energy industry in the United Kingdom is comprised of a few major power companies who provide the majority of electricity provision across the country. The latest Ofgem RO annual report lists seven energy suppliers as contributing the most to the RO total: RWE Power (18%), EDF (18%), Powergen (17%), SSE (15%), British Gas/Centrica (12%), British Energy Direct Limited (9%), and Scottish Power Energy Retail Limited (5%).²⁶ At 180 MtCO₂ (million tonnes Carbon Dioxide), power stations are the single largest contributing sector to climate change in the UK. Trends show that this sector has been steadily increasing over the past decade and is poised to overtake the industrial sector as the largest polluting sector in the UK. (The industrial sector receives a majority of reallocated CO₂ due to its consumption of energy from power stations, therefore putting the industrial sector slightly ahead of power stations in overall CO₂ emissions). Out of the total 180 MtCO₂ from power stations, 79 MtCO₂ is channelled to and emitted by the industrial sector, 52 MtCO₂ is directed towards and emitted by the domestic electricity consumption, and 45 MtCO₂ is emitted by service sector energy consumption. Following power stations and industrial sector in total CO₂ emissions are: transport (approx. 140 MtCO₂), domestic (approx. 135 MtCO₂), services (agricultural and other) (approx. 80 MtCO₂), and net land use (approx. -5 MtCO₂). Renewable energy provides a small amount of the UK's energy supply (5 percent in 2007), and the UK continues to rely on fossil fuels for the vast majority of its energy consumption.²⁷

2.2.2 RO Policies/Modifications

The purpose of the RO is to increase the percentage of the UK's energy mix that comes from renewable sources. In essence, the RO places an obligation on licensed electricity suppliers to source a specific and increasing percentage of their electricity sales from renewable sources. The primary legislation is set out in Section 32 of the Electricity Act 1989— "Electricity from non-fossil fuel sources," the origin of the NFFO era—and the secondary legislation is the Renewables Obligation Order 2006 as amended by the Renewables Obligation Amendment Order 2007. The Renewables Obligation (RO) in its current form first came into effect with the Renewables Obligation order 2002, replacing the Non-Fossil Fuel Obligation (NFFO) that extended from 1990 until 1998, as energy

²⁶ "Annual Report 2006-2007." Ofgem. (4 March 2008).

www.ofgem.gov.uk/Sustainability/Environment/RenewableObl/Documents1/Annual%20report%202006-07.pdf

²⁷ "Energy Sector Indicators 2008." Department for Business Enterprise and Regulatory Reform (BERR). (2008). www.berr.gov.uk/files/file47147.pdf

companies were directed to meet the target of 10 percent of electricity supply to come from renewable sources by 2010. The RO has been amended a number of times since its introduction, and has been subsequently reviewed in 2004, 2005, 2006, and 2007 to assess its performance and increase the targets set forth by the RO. In 2006-07 the obligatory renewable amount was 6.7 percent in England, Wales and Scotland and 2.6 percent in Northern Ireland. The RO's longer-term goal is to reach 20 percent of its energy from renewable sources by 2020, and achieve a 60 percent reduction in carbon emissions by 2050. Ofgem, the UK gas and electricity markets regulator, oversees the implementation of the scheme.²⁸

The obligation period runs from the beginning of April to the end of March each year. At the end of this period suppliers have to demonstrate their compliance to meet the government-specified RO percentage levels, demonstrated via one of three ways: first, by presenting Renewable Obligation Certificates (ROCs), second, by making a buyout payment due to an inability to present an ROC, and third, by a combination of the two. Compliance among energy providers is monitored by the UK government institution Ofgem via a certificate system that awards renewable energy output. Ofgem mandates that energy suppliers provide proof of the appropriate number of ROCs acquired. The RO system is based on specific annual percentage targets, increasing from 3% of total energy distribution in its initial year, 2002-2003, and most recently rising to 15.4% by 2015-2016.²⁹ Based on a market mechanism to create a competitive and low-priced environment, energy suppliers are required to meet their specific obligations targets by acquiring renewable obligations certificates (ROCs), which are issued to renewable generators for each megawatt hours (MWh) of eligible electricity generated. These ROCs can then be sold to major electricity suppliers so that the energy companies can meet their obligation, allowing the renewable generators to obtain a premium for their renewable-sourced electricity, thus incentivising further creation of renewable generators. Another method of obtaining ROCs is through a buyout payment system, where energy suppliers can purchase ROCs at a market price (currently at £34.30/megawatt hour in 2007/08, and rising each year based on a retail price index). Energy suppliers are able to purchase ROCs either directly from a renewable energy generator, or from another energy supplier and therefore have become a tradable commodity in the energy sector.³⁰ Buyout payments are held in the buyout fund, which is recycled to those suppliers who presented ROCs on a pro-rata basis.³¹

The chief modification to the RO system most recently has been the banding proposal. 'Banding' of the RO was introduced with the 2007 amendment, which "provides groups of technologies needing similar levels of support with the encouragement to bring forward generation solutions." Attributing specific values to the various renewable energy types—

²⁸ "Energy Sector Indicators 2008." Department for Business Enterprise and Regulatory Reform (BERR). (2008). www.berr.gov.uk/files/file47147.pdf

²⁹ "Renewables Obligation." BERR. www.berr.gov.uk/energy/sources/renewables/policy/renewables-obligation/page15630.html (2008).

³⁰ Mitchell, C. et al., "Effectiveness Through Risk Reduction: A Comparison of the Renewable Obligation in England and Wales and the Feed-In System in Germany." *Energy Policy* 34 (2006)

³¹ "Annual Report 2006-2007." Ofgem. (4 March 2008). www.ofgem.gov.uk/Sustainability/Environment/RenewablObl/Documents1/Annual%20report%202006-07.pdf

e.g., more than 1 ROC per MWh (multiple ROCs) to more ‘attractive’ renewable technologies such as offshore wave and tidal energy, and less than 1 ROC per MWh (fractional ROCs) to less ‘attractive’ types such as sewage and landfill gas—is a way to further stimulate growth of more desirable renewable sources in order to meet set national and international carbon reduction targets. Currently, the UK is in the midst of a 3-month public consultation process before the UK government can officially ratify the RO banding system.³²

2.2.3 ‘Renewables’ Roots: A Tale of ‘Opportunism’

The RO predecessor, NFFO, however, had its origins based in “opportunism” for a way to federally subsidize new nuclear power generation. By requesting support for ‘non-fossil fuel’ as a way to disguise the word ‘nuclear’ to the European Commission, this opened the door to renewables-specific policy. In other words, with the passing of the Electricity Act of 1990 that raised a fossil fuel levy to pay for the NFFO (which now included renewable energy technologies by default), “an opportunity arose to support renewable energy as a result of another policy demand.”³³ Neither justification nor support for renewable energy technology was widely agreed upon at first; many opposed the concept of support for renewable energy technology-specific mechanisms, rather than a sector-wide carbon reduction policy that is left to the market (a carbon tax or carbon trading scheme). In particular, support for carbon-reducing policy via a carbon market mechanism “is powerful, especially from business and the Treasury.”³⁴

Nevertheless, NFFO and its emphasis on renewable energy technology pervaded throughout the 1990s with mixed success (and 4 subsequent reincarnations). NFFO policy was translated into reality via a contract scheme, and due to the competitive and rushed nature of contract bidding, inefficient development occurred such as the ‘wind rush’ to high-wind sites, as well as a concomitant bitterness against on-shore wind production. The two major problems with NFFO were a low total cost cap and a lack of penalty for companies not taking up their given contracts (due to economic reasons). However, once Tony Blair assumed power in 1997 the NFFO was transformed into the Renewables Obligation, which reversed the rules of NFFO by assigning obligation onto energy suppliers to purchase and supply specific amounts of generated electricity, instead of a contract for generation from specific projects.³⁵

2.2.4 How RO Success is Measured

Compliance to the RO system is mandatory according to law; it is a requirement of a supplier’s licence that they must comply with the RO or face appropriate penalties. The RO legislation sets out the percentage level of the obligation for each year up to 2015/16. RO success is measured via compliance to obligation levels, and the amount of renewable energy

³² “Reform of the Renewables Obligation: Statutory Consultation on the Renewables Obligation Order 2009.” (June 2008). Department for Business Enterprise and Regulatory Reform (BERR).

³³ Mitchell, C., et. al. “Renewable Energy Policy in the UK 1990-2003.” *Energy Policy*. 32 (2004).

³⁴ *ibid.*

³⁵ *ibid.*

created via ROCs, as opposed to payments made to the buyout fund. In the UK, a majority of energy companies' obligation is met via ROCs, although there is a substantial increase in the buy-out funds paid in recent years. According to the latest available information, RO period 2006-2007, out of a total obligation of 19,390,016 MWh, 66 percent was met by the presentation of ROCs, down from 76 percent and 70 percent from the prior 2005-2006 and 2004-2005 periods, respectively. Over GBP 216,000,000 was paid in the buyout fund during the 2006-2007 RO period, a substantial increase from the three previous documented periods—more than GBP 100,000,000 increase in the buyout fund.³⁶ One explanatory reason cited by Ofgem for the marked increase during the most recent period is the change in maximum percentage allowed for the incorporation of co-firing (fossil fuel/biomass burning combination) into the total number of ROCs presented. In other words, UK energy suppliers had relied heavily on co-firing to meet their ROC demands, and after the RO was amended to put a 10 percent ceiling on the total percentage from which co-firing could be attributed to ROC fulfilment, there has been a marked decrease in the UK's overall ROC completion, hence a rise in the buyout fund.

It is important to note that the RO is deliberately designed to ensure that not all suppliers can meet their obligation by presenting ROCs. This then forces some suppliers to meet their obligation by making buyout payments, which are then recycled to suppliers who presented ROCs. The recycling element creates an incentive for suppliers to purchase ROCs rather than pay the buyout price. The buyout price for 2008/09 is £35.76/MWh. A nominal value for a ROC can be calculated by adding together the buyout price and the recycle money.

2.3 EEG and the Energy Industry in Germany

2.3.1 Energy Industry Overview

Germany has the largest electricity market in Europe in terms of installed generating capacity, as well as the largest wind energy market in Europe. Four key players dominate the electricity generation market, after recent market consolidation combined or eliminated additional electricity providers. These four include: RWE/VEW, E.ON, Energie Baden-Wuerttemberg (EnBW), and Sweden-based Vattenfall.³⁷

2.3.2 EEG Policies/Modifications

The EEG (also known as the Renewable Energy Sources Act, or Erneuerbare-Energien-Gesetz, hence EEG) is a policy designed to stimulate the growth of renewable energy supply (RES) as a more widespread source of electricity in the German electricity market. The EEG legislation obligates German local electricity grid operators to give priority access to electricity from renewable energy operators, paying renewable generators a fixed fee for 'feeding in' the grid with renewable-sourced electricity. Section 3 of the EEG legislation says

³⁶ "Annual Report 2006-2007." Ofgem. (4 March 2008).

www.ofgem.gov.uk/Sustainability/Environment/RenewableObl/Documents1/Annual%20report%202006-07.pdf

³⁷ "Germany Electricity." Country Analysis Briefs. Energy Information Association (EIA) December 2006. www.eia.doe.gov/emeu/cabs/Germany/Electricity.html

of renewable generators that “grid operators shall be obliged to connect to their grids’ electricity generation installations,” “purchase electricity available from these installations as a priority, and to compensate the suppliers of this electricity.”³⁸ In addition to the purchase obligation placed on local grid operators and guaranteed minimum fixed prices, the EEG established a national cost settlement system to more equally balance regional disparities.³⁹ As opposed to the RO system of mandating specific quota amounts of certificates, the EEG established a feed-in tariff system that directly compensates renewable energy generators with a 20-year, fixed payment contract for each amount of electricity produced per kWh that is then transferred into the public electricity grid. Depending on the type of technology used (e.g., wind, hydro, photovoltaic, biomass), there are different remuneration levels granted. Additionally, in order to stimulate efficiency, innovation and mass incorporation of renewable technologies, the EEG has instituted a degression scale, where annual percentage decreases in fees paid to grid operators and renewable generators are instituted. This degression is designed to spur technological innovations and cost reductions so the feed-in tariff rate matches the truest and most efficient cost of electricity production possible.⁴⁰

The EEG was initiated in 2000, born out of its predecessor, the Electricity Feed Act of 1991 (also known as StreG). That act required public grid operators to purchase renewable generated electricity at 90 percent of the average price consumers paid for electricity in the previous year. In its inaugural 10-year period, StreG primarily boosted the wind energy market from only 48 MW of installed wind capacity in 1990 (pre-StreG) to 4500 MW in 2000. Additionally, StreG was responsible for the boom in the German wind energy job market, with approximately 40,000 new wind energy sector jobs created in the first ten years of its implementation.⁴¹

The spur for policy change occurred during the late 1990s; at that time, the energy market was monopolistic and heavily controlled by the government, creating fixed, high prices that led to slow and stable growth. With the liberalization of the energy market in 1998, electricity market prices declined, as did the remuneration given to renewable generator providers based on the 90 percent payment scheme. Handing the proverbial baton from one policy era to the next, the case was set to institute a fixed tariff, irrespective of declining electricity costs. Renewable technology promoters would still receive declining annual rates “in order to take account of technological progress and incentivise early investment.”⁴² Both the 90 percent price scheme and the fixed tariffs were designed to reduce investment risk. Once implemented in 2000, the EEG was later amended in 2004 with modified degression rates for fixed tariffs, in order to more accurately reflect varying levels of renewable technology prevalence. For example, wind energy, which is the largest

³⁸ “Act On Granting Priority to Renewable Energy Sources (Renewable Energy Sources Act)” Federal Ministry for the Environment, Nature Conservation and Nuclear Safety. March 2000.

³⁹ Wustenhagen, R. and M. Bilharz. “Green Energy Market Development in Germany: Effective Public Policy and Emerging Customer Demand.” *Energy Policy* 34 (2006).

⁴⁰ “EEG—The Renewable Energy Sources Act: The Success Story of Sustainable Policies for Germany.” Federal Ministry for the Environment, Nature Conservation and Nuclear Safety. July 2007.

⁴¹ Butler, L., et. al. “Comparison of feed-in tariff, quota and auction mechanisms to support wind power development.” *Renewable Energy* 33 (2008).

⁴² *ibid.*

contributor of renewable energy sources to electricity generation, had its degression value increased from 1.5 to 2 percent, in recognition of the widespread use and decreased costs of wind generation. Hydroelectric power, which had no degression rate in 2000, instituted a 1 percent annual rate in 2004.⁴³

In addition, the amendment introduced legally binding load balancing regulations in order to equally distribute renewable energy around the country. For example, EnBW, one of the four main grid operators, was required to utilise 14 percent of Germany's wind supply in its electricity distribution, while only 2 percent is physically located within EnBW's territorial jurisdiction. Finally, the 2004 EEG amendment introduced new stringent goals to achieve at least 12.5 percent share of renewable energy from the total electricity supply by 2010 and 20 percent by 2020 (Note: the 2010 goal was achieved in 2007, when over 14 percent of Germany's electricity share came from renewable sources, prompting the German government to raise the 2020 goal to 30 percent).⁴⁴ In addition to the EEG amendment, Germany has implemented supporting policies including investment subsidies, income and environmental tax regulations, and exemptions and subsidised loans to further promote renewable energy sources.⁴⁵

2.3.3 How EEG Success is Measured

EEG success is measured through its empirical environmental effects in Germany and its related spillover effects in the global environment: increased renewable energy sources in its national electricity mix, reduced CO2 emissions on par with national and international targets, and a positive impact on the national economy, measured both in job creation and cost-benefit monetary analysis. Success as measured by grid operator compliance is also taken into consideration; Section 15(2) of the EEG obligates grid operators and power companies to publish a report with statistics on amounts of renewable energy fed into their grid operations, and total remunerations paid for renewable energy. A final measure of EEG success is the level of emulative legislative incorporation by other countries into their own national legislative plans.⁴⁶

Legislative success is reached through the delineation of general objectives and targets. The original StrEG had no explicit focus, instead aiming at general renewable energy generation, focusing initially on wind and hydropower. Once implemented in 2000, the EEG set out to “facilitate a sustainable development of energy supply” while “managing global warming and protecting the environment” with the goal of “substantially increas[ing]” renewable supply of electricity so as to “at least double” the total amount by the year 2010. In 2004, the EEG Amendment built upon the 2000 mission statement, yet adding four clear points: “reducing

⁴³ Butler, L., et. al. “Comparison of feed-in tariff, quota and auction mechanisms to support wind power development.” *Renewable Energy* 33 (2008).

⁴⁴ “EEG—The Renewable Energy Sources Act: The Success Story of Sustainable Policies for Germany.” Federal Ministry for the Environment, Nature Conservation and Nuclear Safety. July 2007.

⁴⁵ Chalvatzis, K. and E. Hooper. “Electricity Security vs Climate Change: Experiences from German and Greek Electricity Markets” www.uaces.org/EE_Chalvatzis.pdf

⁴⁶ “Act On Granting Priority to Renewable Energy Sources (Renewable Energy Sources Act)” Federal Ministry for the Environment, Nature Conservation and Nuclear Safety. March 2000.

the cost of energy supply to the national economy by internalising external cost,” “contributing to avoiding geopolitical conflicts about fossil energy resources,” “promoting development of renewable energy technologies” and increasing the share of renewable energy sources to at least 12.5 percent of electricity supply by 2010 and 20 percent by 2020.” EEG success is now met vis-à-vis the ability to achieve these targets.⁴⁷

2.4 Chapter Conclusion

It is quite evident from the chapter details that both the UK and Germany have been able to implement national regulatory frameworks for instituting environmental compliance. The attempts to constrain energy companies’ behaviour parallels in many ways; the RO and the EEG both oblige energy companies to turn to renewable energy as an increasingly viable source of electricity. Before analysing the results of said legislation and exposing the gap in compliance to the RO, I will now turn to the theoretical chapter, which will define the binary relationship explained in Varieties of Capitalism, to be further utilised in analysis later in this research discussion.

⁴⁷ Wustenhagen, R. and M. Bilharz. “Green Energy Market Development in Germany: Effective Public Policy and Emerging Customer Demand.” *Energy Policy* 34 (2006).

Chapter 3 – Conceptual/Theoretical Analysis

3.1 Varieties of Capitalism Explained

In the previous chapter, the key features of the UK and Germany's regulatory mechanisms, the RO and the EEG, were explained, as well as the historical factors that led to their creation. The main stipulations of each policy were detailed, and the measures of success for each were delineated in order to most effectively understand to what standards the energy industry is being held. In this chapter, we introduce the conceptual framework found in the Varieties of Capitalism literature to support our argument that governance matters in environmental regulation. The concepts and theories within VoC, introduced in this chapter, will attempt to explain the economic governance dichotomies exhibited by the UK and Germany, leading to the RO/EEG policy era. Accordingly, the main critiques to VoC are introduced, followed by a direct response to these critiques. I subsequently offer my hypothesis for the value of using VoC in this analysis. Finally, I provide the methods and methodology used in this research discussion.

The Varieties of Capitalism literature is a modern version of comparative capitalism that examines institutional variation by moving beyond the three traditional approaches that comprised the predominant school of thinking for most of the post-World War II twentieth century, which were: 1) The 'modernization approach', created during the post-war period, saw the main barrier to economic success as the need to modernize industry and placed the state and public officials as the main actors for forging a strong economy; 2) 'neo-corporatism' (1970s), which was the ability of the state to negotiate wages, working conditions, and social or economic policy between a centralized group of employers and trade unions, and 3) 'social systems' of production (1980s/1990s), which focuses on firm behaviour and examines production regimes that depend on localized institutions (regional, sectoral, or national level). The Varieties of Capitalism approach recognizes that each of the traditional approaches to comparative capitalism paid too little attention to the role of 'strategic interactions' played by economic actors. The 'actor' has now moved to the analytical forefront in this new approach, and the literature considers 'actors' to be individuals, firms, producers, or governments.⁴⁸

The co-convergence thesis is the crux of the Varieties of Capitalism literature, which focuses on the harmonization of economic structures around two models, or poles: the coordinated market economy (CME), exemplified with the German model, and the liberal market economy (LME), exemplified with the UK model. What the co-convergence thesis predicts is that there are "systematic differences in corporate strategies across nations, [paralleling] the overarching institutional structures of the political economy." In other words, the way that LMEs and CMEs have built their institutional framework (i.e., levels of government strength in an economy, structured relationships between the state, industry, and labour)

⁴⁸ Hall, P. and D. Soskice. Varieties of Capitalism: The Institutional Foundations of Comparative Advantage. Oxford University Press. (2001). Oxford.

facilitates a distinct methodology for dealing with the economy. LMEs share similar traits (reliance on market mechanisms), as do CMEs (reliance on non-market mechanisms).⁴⁹

Key features of the German model include: a stronger and more ‘hands-on’ link between government and industry, longer-term planning for employees with a stress on incremental innovation, including industry-specific training for its employees, social benefits to support secure employment and lifetime employment schemes, opportunities to influence firm decisions, and group-based firm collaboration. Investment finance in CME schemes is less reliant on bottom-line, public balance sheets, and more involved in future benefits based on longer-term planning.⁵⁰

LME has facilitated a “lowest common denominator” mentality in industry in order to maximize profits within the UK convergence model: lowest labour costs, transplanting operations to seek cheap labour, lowest possible regulatory environments, all of which promote an autonomous, independent industry to pursue its own interests. There is less of a stress on longer-term, incremental innovation, with minimal cooperation across sectors, and a larger focus on public balance sheets to report to investors.⁵¹

Key features of the UK LME model include: autonomy among industry managers from government control, employer training on general, transferable skills, innovation based on drastic, rapid changes in workforce and product lines, minimal long-term care for employees, focus, no information-sharing between companies in an industry, and investors’ reliance on current balance sheets, publicly available information, for a reliance on short-term profits.⁵²

3.2 New Additions From the VoC Co-Convergence Thesis

What is new about co-convergence? The globalization debate has been around for the past few decades, arguing that CMEs are being pulled in the direction of LME modes of corporate governance because of the interconnectivity of the global business community, irrespective of a country’s national policies. However, the novelty is not just in the classic “Atlantic Divide” between US and German poles, or the divide between the UK and the European Continent, but the noticeable convergences within the individual CME model. The northern Scandinavian states (e.g. Sweden) are retaining a higher stronghold of CME traits, while the German model is moving more towards a “least common denominator” CME. One main depiction of this is seen in the wage and welfare bargaining schemes used; classic CME models promote national-level wage bargaining, facilitated by a national labour union and a national employer’s union. What is actually happening within ‘globalizing’ CMEs is that bargaining is moving down from the national to the sectoral level, breaking the shared stronghold that the almighty union had at the top level, and tilting the balance of power in favour of Capital (Industry leaders/employers). In addition, globalization has created new types of alliances in CME countries; in Sweden, the national wage bargaining

⁴⁹ Hall, P. and D. Soskice. Varieties of Capitalism: The Institutional Foundations of Comparative Advantage. Oxford University Press. (2001). Oxford.

⁵⁰ *ibid.*

⁵¹ *ibid.*

⁵² *ibid.*

power of labour has created a divide between more highly-skilled labour and transferable, cheaper labour due to the threat of offshoring in a globalizing world, thus breaking up the traditional power that labour enjoyed. Also, since the 1990s, Germany has been moving towards meso-corporatism (LME-style corporate governance) in its struggle to balance social democracy and wage bargaining (Hall and Soskice 2001). This meso-level phenomenon will be referred to again later within this chapter, in section 3.5.1.⁵³

3.3 Bringing VoC into the Research Argument

The reason for focusing on the CME/LME divide is that by studying how the institutional structure has created a bipartite trend in the way economic policy, social policy, and international approaches to national interests are handled, we can examine current ways that CMEs and LMEs behave, notably with regard to the environment and environmental policy. I have seen through initial observation and research that because LMEs have developed according to market institutions, and because CMEs have developed according to non-market, cooperative institutions, there are disparities in compliance to environmental legislation. Generally speaking, British industries are more concerned with short-term profits, and autonomous action, therefore less willing to comply with British environmental legislation that restricts rapid innovation and growth. I aim to show how the Varieties of Capitalism literature and the co-convergence theory can now be applied to environmental policy, by examining the energy industry within the UK and Germany.

If the co-convergence thesis applies to the environment, the question becomes: why is the UK's energy industry able to be less compliant to policy regulations that Germany's energy industry? I aim to show the effects of regulation on industry in both countries, and how the "lowest common denominator" approach to business is becoming more predominant in an increasingly competitive environment (to a greater extent in the UK) affecting the way energy businesses conform to policy standards.

3.4 Beyond Varieties of Capitalism: The Critique

The Varieties of Capitalism literature has been critiqued on a number of areas, particularly in a body of work edited by Hancke, Rhodes, and Thatcher. Their entry point into the VoC critique is that the recent economic shifts and shocks within the EU (i.e., the emergence of the EMU, the Single Market Programme, and Eastern European enlargement) have had a noticeable affect on the institutional subsystems of VoC: capital, labour, and product markets. The four key areas of vulnerability within the original VoC literature include: "the role of political and distributive struggles in generating change and adjustment" (referred to as "conflicts and coalitions"), "the nature and function of complementarities in shaping and constraining institutional change", "extending the VoC approach to a broader range of political economies than traditionally receives attention" (Southern, Central and Eastern Europe) (referred to as "the nature of mixed [and emerging] economies), and "restoring the

⁵³ Hall, P. and D. Soskice. Varieties of Capitalism: The Institutional Foundations of Comparative Advantage. Oxford University Press. (2001). Oxford.

role of the state in VoC analysis...as an important factor in the construction of ‘institutional ecologies.’”⁵⁴

Since the Hall & Soskice literature emerged in 2001, there has been a barrage of attacks and concerns raised about the VoC approach. Most notably, these critiques include: it is too statically focused on path-dependence and resistant to dynamic elements of economic change; it is functionalist; it ignores endogenous sources of national system transformation; it neglects underlying power structures while having a mechanistic conception of institutional complementarities, thus having a propensity to ‘institutional determinism’; it relies too heavily on the idea of the firm as an ‘institution-taker’, instead of an autonomous actor capable of variation among firms within national models; sticks too closely to (and lacks the necessary tools to move away from) a bifurcated world model of LME/CME; its theory is not built deductively for ‘ideal types’ used for the construction of hypothesis; it has a bias towards manufacturing and does not take into account service sectors in CMEs; it views states as independent and sealed off from one another, rather than focusing on forces of convergence and globalization; it is apolitical; it pays little attention to the role of class and gender inequality; and it neglects the role of the state.⁵⁵

When examining environmental legislation in the UK and Germany, the role of the state is a crucial determinant in the level of success of specific policies (measured via compliance to specific regulations on business behaviour and practices). The Hall & Soskice analysis of VoC has taken a micro-level view of the political economy, placing emphasis on the firm and minimizing the importance of the role of the state. Hancke argues that the role of the state is still important “in coordinating and shaping the political economies of many countries or to develop alternative typologies in which the state is a major determining variable.”⁵⁶ Additionally, Hancke argues that the state can be accommodated within the VoC framework because he views the state as one element of coordination among many that is present within and in combination with other variables under VoC.⁵⁷

One valid critique against VoC is that it evades discussion of gender and class inequality on this subject. While I agree that neglecting this issue opens the door for further investigation and debate, this is not within the scope of this research paper and I welcome the opportunity to delve further into the literature with a view on class and gender inequality at a later date.

3.4.1 VoC Critique Continued: Conflict and Coalitions, Path Dependency

A major consideration for CME/LME distinctions is the actions firms take in response to change, specifically among external factors. Conflict and coalitions are two phenomena examined under this rubric. For example, under periods of globalization, VoC contends that nations will be strengthened according to their comparative advantage, rather than

⁵⁴ Hancke, B., et. al. “Introduction: Beyond Varieties of Capitalism.” In Hancke, B. et. al (eds.) *Beyond Varieties of Capitalism: Conflict, Contradictions, and Complementarities in the European Economy*. Oxford University Press: London (2007).

⁵⁵ *ibid.*

⁵⁶ *ibid.*

⁵⁷ *ibid.*

diminished by it. Production networks extend globally, rewarding individual producers based on specialties designated by nation. Yet, producers are now creating diversified cross-border producer-supplier linkages, which “[changes the] institutional incentive structures, both inside and outside the firm, in their own economies.”⁵⁸ Tracing back to Hall and Soskice’s main paradigm for complementarity, “nations with a particular type of coordination in one sphere of the economy should tend to develop complementary practices in other spheres as well. Critics of VoC suggest that it cannot explain this type of cross border conflict and change, either because it silences the coordination and equilibrium that class power brings to political economy, or because it mistakenly interprets as endogenous the strategic preferences of the firm. Under globalization, Hall and Soskice argue that LME firms will respond with more deregulation, while cross-class coalitions in CMEs will seek strategic interaction and coordination. Today, there are examples of CME coalitions that are disrupting such internal alliances, such as financial players aligning with external investors, or changing tastes in shareholder values disrupting the shareholder-management-employee coalition. Hancke recommends that VoC should be clearer in its depiction of firms’ ability to exercise ‘exit,’ ‘voice,’ or ‘loyalty’ when dealing with existing systems of coordination and complementarities.”⁵⁹

The critique of VoC is that it is therefore path-dependent, and explains change based on prior historical events. This link to Historical Institutionalism underlies Hall and Soskice’s arguments: they see explanations of change as a linear path traceable along key events in history, with a single monumental event explaining the subsequent resulting changes. Hancke argues along a tripartite line of analysis, stating that [first] business networks are translated into modes of coordination, followed by [second] the major players within labour and capital engaging in a cross-class coalition (while coercing peripheral players to fall in line), resulting in [third] an established set of mutually agreed upon rules designed to strengthen both the internal reproduction of the network and the mode of coordination with its specific national characteristics.⁶⁰

3.4.2 VoC Critique Continued: Cross-Class Coalitions

From this materialist viewpoint, examining VoC must include an evaluation of cross-class coalitions, due to the fact that it is this element that economies are based on: wages, labour demands, industry, all tying into the (in)ability of classes to converge and collectively organise to effectively constrain business. VoC states that in CMEs, cross-class coalitions occur at the point where labour and capital strategies meet, united by the preference for inclusive and institutionalised frameworks. LMEs differ in that highly skilled labourers and employers will converge on a more loosely regulated institutional framework.⁶¹

⁵⁸ Hancke, B., et. al. “Introduction: Beyond Varieties of Capitalism.” In Hancke, B. et. al (eds.) *Beyond Varieties of Capitalism: Conflict, Contradictions, and Complementarities in the European Economy*. Oxford University Press: London (2007).

⁵⁹ *ibid.*

⁶⁰ *ibid.*

⁶¹ *ibid.*

Introducing cross-class coalitions moves the analysis away from the central unit of analysis—the firm—to incorporate not only a more dynamic view of the institutional frameworks discussed in VoC, but also to highlight the power relations of cross-class coalitions, which comprise both capital and labour. Here again we see the materialist line of view when we shed light on the conflict of self-interested factions within the ‘unified’ coalition, offering a more contentious and volatile view of VoC than seen before.⁶²

Additionally, cross-class coalitions invites discussion of the firm as an ‘institutional taker’ rather than an autonomous actor with creative or disruptive abilities. If coordination is conducted not by the entirety of the business class, but rather dominant factions within the business class, such as larger firms in CMEs and leading labour markets in LMEs, then CME-type institutional frameworks should be re-examined for their ability to coalesce all players, big and small. Large institutions within CMEs benefit well, but smaller firms may fare worse in CME environments when considering the ability of firms to collectively bargain or have an audible voice in achieving additional concessions along cross-class lines.⁶³

If cross-class coalitions reflect a wide variety of interests and disparate backgrounds, not everyone within the coalition can be appeased, and sometimes parties involved may in fact be hurt by a cross-class coalitional settlement. Examples include: large firms and small firms, export firms and domestic market firms, or ‘exposed’ firms and ‘sheltered’ firms. Some players with a coalition might be able to dominate others, such as the ability of large firms’ workers and trade unions to keep low-skilled labour under low pay and even unemployed when it serves the firms’ interest. These sparring interests and propensity for instability within CME-type coalitions is a severe attack against the framework for coordination upon which CMEs are built. Yet, coalitions still exist in CMEs, a point which Hancke attributes to two underlying factors in his critique of VoC. The first is that in dealing with intra-class politics, the winners are able to “lay down the rules for others” through institutional arrangements and codifications that enable such power dimensions. In post-war Europe, the business and large production sectors have had the upper hand in dictating the terms of collective cross-class settlements, while in more recent times, potential coalitions look to large firms for a reference on job classification and wage scales. The second factor is regarding workers’ “institutionalized subservience”, as referred by Hancke, for workers’ wages outside of the core sectors of large industrial firms. Even though these workers do not have a voice at the negotiating table, their wages are in fact protected via predictability and standardization through coordination set by large firms.⁶⁴

Hancke posits two dichotomous aspects of cross-class coalitions in his analysis of the concept: one being an “institutionalized compromise” that “persists because of the potential and actuality of strategic, functional complementarity”, and the other being a consciously designed “institutional arrangement” resulting from strategic interactions among socio-economic actors, with complementarities that may ebb and flow, affecting distributive settlements. The difference between the two reaches “the heart of the debates on the

⁶² Hancke, B., et. al. “Introduction: Beyond Varieties of Capitalism.” In Hancke, B. et. al (eds.) *Beyond Varieties of Capitalism: Conflict, Contradictions, and Complementarities in the European Economy*. Oxford University Press: London (2007).

⁶³ *ibid.*

⁶⁴ *ibid.*

neoinstitutionalist approach to political economy,” tackling the degree to which each accounts for change: the first arrangement internalises constraints of institutional frameworks, while the second arrangement permits alternatives. Again, explaining change is at the crux of distinction here; institutions as a conglomeration of actors mean that these actors perpetuate the institutional framework and change is exogenous and sudden. The second, consciously designed “institutional arrangement” sees change through a variety of ways, such as shifts within cross-class coalitions, coordination in intra-class politics, or in the way that business networks are reproduced. Critics attribute this latter phenomenon as the result of a shift in the mode of coordination, and assign a greater role to agency within the cross- and inter-class settlements.⁶⁵

The tension between VoC and its critics is thus a debate between Historical Institutionalists, emphasizing the role of ideas and critical junctures in a path-dependent world, and the critique that says that VoC is static, and the firm is detached from the state. The firm as an ‘institutional taker’ has a bias for Industry: the rules and norms that are agreed upon through the structured alignment between Industry employers, employees, and capital holders. This can be translated into reality by examining the UK and Germany more closely. In the UK, industry has waned over the past decades, while German industry has remained intact, partially tied to the VoC explanation that businesses in LME economies will move abroad for cheaper labour, while CME businesses will be more apt to keep domestic operations due to coordinated intra and inter-firm alliances. Cross-class coalitions are the materialist link that has preserved trade union membership in CMEs (to a greater extent than in LMEs) and enhance wage coordination.⁶⁶

3.5 Responding to the VoC Critique

Hancke’s critique of VoC—that the mode of coordination between, Capital (Industry), Labour, and the state is the result of a conscious arrangement among actor interactions—is a valid one, yet still warrants a reply in defence of VoC. In order to fully respond to the critique, it is helpful to connect Hall and Soskice’s original VoC argument with Hancke’s criticism of firm coordination along the lines of business interests and networks. To recapitulate, the five spheres among which firms in both LMEs and CMEs coordinate are: industrial relations (wages, working conditions), vocational training and education (skills), corporate governance (securing finance in return for investor assurance of return on investments), inter-firm relations (producer-supplier technology networks), and employees (ensuring competencies and cooperation).⁶⁷ Hancke states that the point at which firms coordinate is not the most equally beneficial form of coordination between capital and labour, but instead a self-motivated, “politically constructed institutional matrix, built in large part on elite networks” that control both the economy and the state “at politically opportune moments,” and control both the external and internal reproduction mechanisms necessary

⁶⁵ Hancke, B., et. al. “Introduction: Beyond Varieties of Capitalism.” In Hancke, B. et. al (eds.) *Beyond Varieties of Capitalism: Conflict, Contradictions, and Complementarities in the European Economy*. Oxford University Press: London (2007).

⁶⁶ *ibid.*

⁶⁷ Hall, P. and D. Soskice. *Varieties of Capitalism: The Institutional Foundations of Comparative Advantage*. Oxford University Press. (2001). Oxford.

for coordination.⁶⁸ Therefore, spheres of coordination are not equally agreed upon, but are the product of and institutional arrangement based on elite interests. The following section addresses this in more depth, offering a defence of coordination along sectoral lines and cracking Hancke's elite interest argument.

3.6 Pattern Setting Coordination: A Response to the Critique

In order to respond to the charges against VoC mentioned in the previous sections, Traxler and Kittel have conducted a study of 18 OECD countries' empirical methods of coordination, based on examples of capital-labour wage bargaining systems. Traxler and Kittel present three factors of analysis: collective regulation of the labour market, horizontal coordination of bargaining, and vertical coordination of bargaining. Their findings show that the degree of collective regulation of the labour market is indeed irrelevant to the success of wage bargaining, refuting neoliberal arguments for "marketize[d] bargaining" and against collective labour action. The key to achieving a synergistic relationship between bargaining and performance is the combination of both the horizontal and vertical spheres of coordination, thus reinforcing support for the Co-Convergence argument within the VoC body of literature.⁶⁹

Successfully combining both horizontal and vertical spheres occurs when an economy-wide coordination is implemented under a decentralized bargaining framework, without infringing upon the effectiveness of vertical coordination. Pattern setting, meaning bargaining along specifically targeted sectoral or local lines, thus becomes the desirable means of coordination. In Traxler and Kittel's study of 18 OECD countries, pattern setting performed well, regardless of the performance of vertical coordination (although vertical coordination is not to be disregarded). With fewer coordination problems and high degree of decentralization, sectoral or local bargaining is reductionist and simple in terms of its goals and procedures by focusing on average wages instead of wage differentials. Also, multilateral negotiations between various business and labour groups are not needed, preventing further discord. Coordination is implicitly imposed by upon by the key sector's wage rate, and compliance is ensured through either consent or equitable power distribution so no one party is able to demand higher wages.⁷⁰

The success of pattern setting bargaining at the local or sectoral level is juxtaposed with the problematic and less successful peak-level coordination, which generally encompasses a more complicated bargaining agenda vis-à-vis interclass and intraclass compromises and multilateral negotiations. Peak coordination involves central-level bargaining and mass support with a negotiated compromise. Therefore, power in the traditional, concentrated sense is then replaced with veto power exercised by a wide range of affiliates within the intra-associational coordination. Compliance cannot be enforced without setting incentives

⁶⁸ Hancke, B., et. al. "Introduction: Beyond Varieties of Capitalism." In Hancke, B. et. al (eds.) *Beyond Varieties of Capitalism: Conflict, Contradictions, and Complementarities in the European Economy*. Oxford University Press: London (2007).

⁶⁹ Traxler, F. and B. Kittel. "The Bargaining System and Performance: A Comparison of 18 OECD Countries." *Comparative Political Studies*. 2000 (33).

⁷⁰ *ibid.*

for labour to comply; peak-level coordination lacks the bargaining governability of pattern setting.⁷¹

The peak-level and pattern setting methods of coordination are akin to a macro-, meso- and micro-level scale of bargaining. Macro-level bargaining involves national conglomerates of Capital, Labour, and the State to effectively reach a bargaining solution while taking into account the diverse interests of a large, heterogeneous pool of involved parties. This is most closely linked to Traxler and Kittel's peak-level coordination, and is the 'traditional' form of CME bargaining, yet typically only seen in countries like Norway today. Peak level bargaining has exhibited success, albeit with accompanying high levels of governability. Meso-level bargaining, which focuses on the industrial or sectoral level, is more commonly seen in CME countries like Germany, with many other CME countries converging towards this meso-level, German style. This in itself reinforces VoC. Micro-level bargaining occurs at the plant or firm level, and an absence of any bargaining style (i.e., "no bargaining") relinquishes all control to the market.

The pervasion of sectoral, or pattern setting coordination in Europe today among traditional CME countries as the most feasible, practical and successful form of coordination is a strong defence of the VoC argument. Convergence is occurring along the same coordinated/liberal market lines of Hall and Soskice, albeit, except the fact that coordination in CMEs is more frequently occurring at the meso level. Hancke's depiction of coordination as being rife with powerful elite as well as cross-class coalitional interests is called into question when observing Traxler and Kittel's depiction of pattern setting being a compliant and successful coordination method.

3.7 In Defence of VoC: The Hypothesis

Despite the critiques against the Varieties of Capitalism literature, it is still a useful tool with which to analyse the level of compliance among energy industry companies to environmental policy. The critiques to VoC are helpful in shedding light on potential flaws and deficiencies within the theory, and in fact strengthen VoC's usefulness once these flaws are brought to light and defended. A main critique of VoC is that explaining patterns of economic governance into a dichotomous CME/LME fashion is too heuristic and out of touch with reality. Hall & Soskice, the authors of the 2001 VoC collection, are well aware of this claim and fully support the heuristic foundation upon which to build a substantial argument. It is an intentional technique to stay within feasible boundaries of comparison between to types of economic systems. Critical claims that VoC is "too simplistic" are redundant and arbitrarily empty once this justification is included: it is simplistic to prove a point.

The VoC critique proffered by Hancke et. al. is important to bear in mind when explaining environmental governance patterns in both the UK and Germany; conflict and cross-class coalitions highlight the materialist claims to governance, which I will attempt to show in the following chapter. UK energy companies' true motives—bottom-line profits through evasion of RO requirements—are the realisation of Hancke's materialist argument. While

⁷¹ Traxler, F. and B. Kittel. "The Bargaining System and Performance: A Comparison of 18 OECD Countries." *Comparative Political Studies*. 2000 (33).

the response to the Hancke critique mentioned in the previous section justifies the VoC coordination, it is hard to completely disregard the idea that elite interests exist within the energy industry. As I show the association with coordination as summarised by Hall and Soskice, the Hancke critique is not without partial merit when understanding the actions of energy companies and the subsequent gap in compliance exists within the UK.

Using the heuristic critiques against VoC, the following chapter builds on this binary foundation, connecting the theoretical concepts depicted in VoC and its Co-convergence Theory with the current reactions and regulations to the RO and EEG. Illustrating the actions of energy industries in each country will further elucidate the gap in compliance in the UK, posited along its more compliant German neighbours. Delving deeper, the VoC link helps explain the meaning beneath the action, the justification for industry independence or coherence, and the tendencies to follow particular patterns of governance.

3.8 Methods

In order to meet my research objective and thoroughly answer my research questions, I have engaged in qualitative research, drawn on a large sampling of secondary sources: relevant and current industry journal articles pertaining to environmental policy in the UK and Germany; extensive UK and German government publications and gray material detailing environmental statistics, policy progress reports, and policy amendment or revision updates; newspaper articles relating the current state of environmental policy implementation in both countries; books outlining the historical context under which the long-term establishment of policy and governance styles in both countries; books supporting and critiquing the theoretical framework offered in this research discussion. Also, I consulted via email correspondence with Nicola Barber of the Renewables Obligation Team within BERR, the UK Department for Business Enterprise & Regulatory Reform, who offered insight into the UK government's perception of RO measures of success.

3.9 Methodology: A Three-step Process

Having listed the specific methods used in this research process, I will now detail the chosen methodology, connecting the theoretical concepts of VoC described in this chapter with the methods detailed in the previous section (3.7). I have chosen the Varieties of Capitalism body of literature because it is an effective and prominent tool to analyse patterns of governance within economic spheres. VoC and its Co-Convergence thesis have been able to effectively explain patterns in behaviour with the central unit of analysis in economics, the firm. In helping to solve my main research question regarding energy industry non-compliance in the UK, the LME/CME divide will be able to tell me why UK energy firms act according to specific characteristics outlined in LMEs, and why German energy firms act according to specific characteristics outlined in CMEs. VoC also helps to explain the divergence in regulatory legislation in each country. VoC has not been effective in explaining which specific types of renewable energy will be favoured in each country, or the patterns of establishing rules and norms for promoting specific renewable energy types.

In order to do highlight the gap in compliance between *stated* government regulation and *actual* corresponding business practices, I will set forth evidences of contradiction in the UK.

I have outlined a three-stage process for uncovering the gap in compliance. First, I will describe major environmental legislation implemented or planned for implementation in the UK over the last decade (primarily the Renewables Obligation, and its previous incarnations) and highlight the UK government's stated intentions to curb industrial environmental damage via this legislation. In other words, I will paint the picture of the UK's environmental legislation 'engine' as one that is tough on industry, and pro-environmental regulation.

The next step is to address in what way compliance to legislation can occur. How is the environmental legislation deemed effective and successful according to the demands set forth in the legislation, and to what standards of adjustment, modification, and change is the legislation holding the energy industry? Simply, how is success measured in the government's environmental regulation policy? This includes identifying specific targets (e.g., carbon reduction, percentages of renewable energy sources) that are assigned to energy industry members, specific demands for changes in business practices, and mandatory deadlines for implementation. Compliance cannot be measured unless it is evident that specific responsibilities were demanded of the energy industry.

The third step is to measure the actions of energy industry in response to government legislation; were the legislations' objectives and targets met? I will attempt to uncover the reality of the energy industry, by arguing that what the UK government's regulatory legislation stipulates does not equate with what is actually happening in practice. In fact, there is a degree of direct contradiction among energy industry practices to environmental regulatory legislation. This evidence will answer the question: How successful was the government in its ability to alter energy industry practices?

Once a thorough analysis of the UK's gap in compliance is complete, I will use as a comparative case Germany's experience with environmental legislation—primarily the Renewable Energy Act (EEG)—and the subsequent energy industry response. I will argue that Germany has a smaller gap in compliance, as evidenced by examples of relatively higher levels of success regarding environmental regulatory policy.

3.9.1 Methodology Continued: Understanding the Compliance Gap within a Theoretical Framework

After detailing this tripartite analysis of the gap in compliance between regulation and practice in both the UK and Germany, I will relate the energy industry practices to the theoretical framework of Varieties of Capitalism. In my argument, the UK has a wider gap in compliance than Germany. With a smaller gap in compliance, Germany's energy industry is in closer alliance with regulations set forth by the government. Correspondingly, a wider gap in compliance means that the UK's energy industry is more independent and autonomous from regulations set forth by the government. Can environmental compliance (or lack thereof) be traced along the broad lines of LME versus CME? I will seek to juxtapose these two variables: economic activities that render a gap in compliance, and the classic definitions of LME and CME. This will help me to determine if environmental aspects of business activity can be a new attribute to the Co-Convergence/Varieties of Capitalism argument.

As a summation of my research, I aim to expose the original perceived conundrum: why are countries such as the UK claiming to be leaders in abating climate change when empirical evidence proves otherwise? The research and analytical argument purported in this research paper will attempt to show that the RO is a parallel offshoot of the LME governance rubric, and therefore displays the same types of economic patterns offered in an LME—namely, industry competition and economic decisions based on short-term, profit-seeking, balance sheet motives, instead of decisions based on longer-term stability—the guiding mantra of a CME. And because of this disposition, UK governance has been able to give the semblance of environmental responsibility with the RO framework—annual obligation targets—yet still offers an economic ‘back door’ to perpetuate LME business practices through the market-style RO buyout system.

Chapter 4: Analysis - Bridging Theory with Reality

4.1 Introduction and the Argument Revisited

In the preceding chapter, I outlined the conceptual framework offered by Varieties of Capitalism, the main critiques against it, followed by a response to the critique and a defence of VoC. Additionally, I provided a thorough methodology detailing the ways to analytically link the concepts with the methods used. In this chapter, I test the tools given by VoC to merge the RO/EEG policies with the LME/CME framework. I will first explain the current regulation and reaction by the UK and German energy industry to RO and EEG policy, uncovering the true levels of success under each regulatory regime. For the UK case, I will detail the RO's damaging roots planted in its preceding legislation, the NFFO, as well as the UK's pension for fossil fuel use in a renewable promoting environment and the evidences of false reporting by the UK government towards its stated environmental targets. Next, turning to the EEG and the German case, I will highlight the energy industry reaction to the EEG, and the various measures of success, including a state vs. market study promoting the EEG over 'green marketing'. Finally, I pose the RO and the EEG against one another in comparative analysis to determine the economic effectiveness of each in terms of two factors: risk and competition.

In all aspects of comparative analysis presented, it is hard to avoid a dichotomous disposition of the RO and EEG as following the patterns of LME and CME, respectively, under the Varieties of Capitalism body of literature. Governance is the major factor in the creation, implementation, and oversight of each policy. Once governance is fully understood under this rubric, one can better explicate the relationship between governance and environmental regulation under the lens of VoC to show the disparity between stated and actual compliance in the UK and Germany. Tracing back the line of analysis, I have first introduced the main policies for each country and how each is viewed successful, followed by an illustration of the VoC literature, under which I will now explain environmental governance and industry behaviour. This section is an analysis of the current regulation and reaction to each national policy, as explained by the LME/CME framework.

Why has Germany's policy environment spurred greater success in renewable energy growth than the UK's? The UK, a country with a liberal, decentralised government that has focused on customer choice, and one that, in general, "[has taken] a more laissez-faire attitude towards environmental issues" would face greater difficulties with the introduction of a nation-spanning feed-in system like the EEG.⁷² The RO quota system better fits the UK's policy culture, accommodating dominant interests and economic efficiency. The following section tests these declarations in the UK by analysing the current state of implementation and success of the RO in the UK. Also, an historical framework is provided for the RO's predecessor, NFFO, and its evolution into today's policy. Following this, an analysis of the German case will uncover the successes with the EEG and the benefits a feed-in system has contributed to Germany. Both country analyses will tie in the hallmark features of the VoC literature in order to unite the theoretical and case study chapters from this research

⁷² Wustenhagen, R. and M. Bilharz. "Green Energy Market Development in Germany: Effective Public Policy and Emerging Customer Demand." *Energy Policy* 34 (2006).

discussion. Finally, a side-by-side analysis of the RO and the EEG will focus on risk and competition, two elements of successful environmental policy that involves economic growth and investor security for renewable technology, for which both the RO and EEG champion. I aim to show that because of the predetermined governance preferences underlying the RO and EEG, the EEG has been far more successful in mitigating risk and promoting healthier competition than the RO. These advantages are further explanations for the larger gap in compliance in the UK, and a more widespread adaptation, generation, and distribution of renewable energy in Germany.

4.2 RO Current Reaction and Regulation

4.2.1 – A Positive Picture of RO Effectiveness

As depicted in the introductory chapter, the UK's evidential record of success with the RO policy in particular and energy industry compliance in general is mixed and controversial, depending on whose opinion is enquired. UK government statistics indicate that since the RO was introduced, renewable electricity generation has more than doubled, and the current reforms of the RO (including the aforementioned banding scheme) expect this to result in a further tripling of renewable electricity generation by 2015. Since 1990, overall renewables use has multiplied five times. Regarding greenhouse gases, the key indicators in the UK Energy in Brief July 2008 report show that the overall bundle of carbon emissions, including both production and consumption of CO₂ and "other gases" dropped to 639.4 million tonnes of Carbon in 2007, just under the Kyoto basket target 2008-2012 of 700 million tonnes of CO₂. This 2007 level is a 1.7 reduction from the previous year, and an 8.2 percent reduction of greenhouse gases since 1990.⁷³ The chart on the following page depicts the positive UK renewables growth since 1990.⁷⁴

⁷³ UK Energy In Brief July 2008. BERR. www.berr.gov.uk/energy/statistics/publications/in-brief/page17222.html (2008).

⁷⁴ *ibid.*

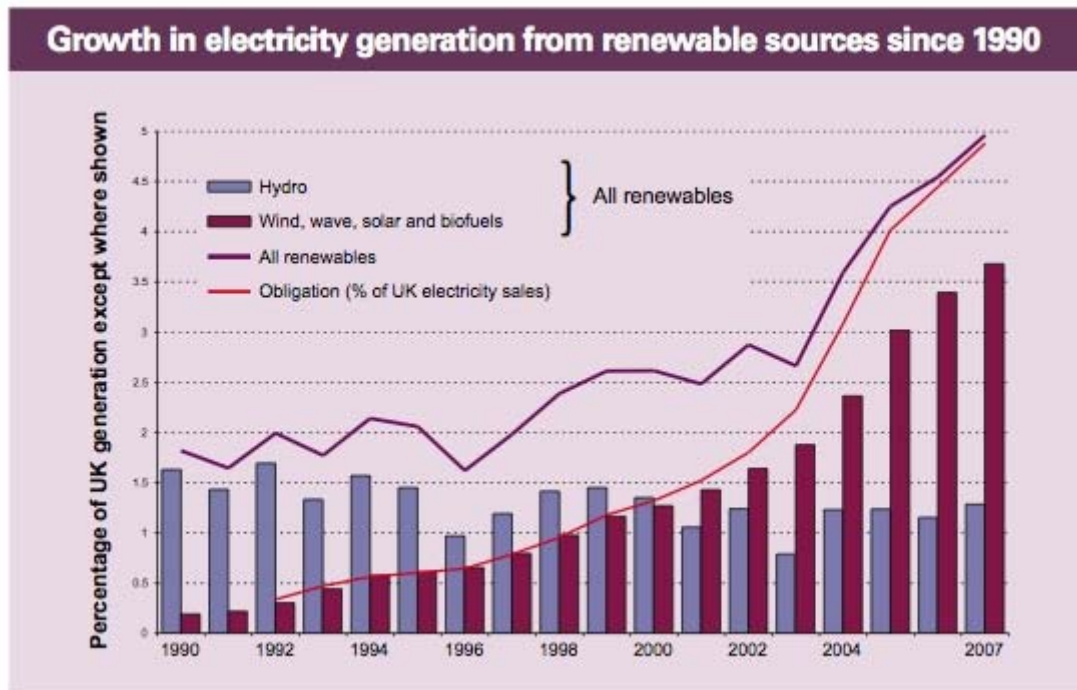


Table 1

4.2.2 – RO Problems Emerge: Low Competition, High Prices, Forced Market

Here the problem arises with the RO system, attributed primarily to its pattern of governance. Considering the UK's main system of governance—the market—the logic behind renewable energy regulation through the RO becomes clear: allow the market (and the main market players) to have the final say in how renewable energy grows within the UK. In theory, creating a market mechanism would stimulate competition among energy providers and drive prices of ROCs down to its most efficient level (i.e., a perfectly competitive environment). However, with an oligarchy-like structure in the UK for electricity suppliers (six major energy suppliers account for almost 100% of the market share), these major players are able to actively negotiate and set prices, rather than receive prices set by the government or the market. Corporate autonomy—a staple characteristic in the UK market economy system—changes the RO system from one of incentivising competition in a green energy environment to artificial maintenance of high prices and big-player market dominance. Because the RO system is based on the price of RO certificates and not the price of electricity, there is an incentive to electricity suppliers who decide the terms of long term contracts with renewable generators to sustain a stable, high (fixed) price that will guarantee large revenue from their customers.⁷⁵

Paradoxically, price competition is greatest (and prices remain lowest) with low (i.e., less ambitious) targets set for RO; the UK's relatively ambitious targets and goals set out in its Renewables Programme make competition much lower (few players with large market share)

⁷⁵ Toke, D. "Renewable Financial Support Systems and Cost-effectiveness." *Journal of Cleaner Production*. 15 (2007).

and therefore ensure market dominance with inflated prices. These key players influence the price of ROCs through their own investment decisions, thereby eradicating notions of perfect competition.

Characteristically market-oriented, and “far more of a market mechanism than the NFFO”⁷⁶, the RO does not place a distinction on or preference for short term and long-term investment in renewable energy, or low-cost and high-cost technology. This lack of focus on longer-term strategy (and corresponding emphasis on current profits and balance sheets) may inhibit research and development programmes for new types of technology, while over-promoting lower cost, well-established renewable technologies such as onshore wind and co-firing. Additionally, if the amount of renewable energy production increases at too rapid a pace (therefore flooding the market with more-than-expected ROCs), major market players’ investments will be damaged due to the drop in prices for ROCs and the subsequent negative impact on profits. Therefore, major energy suppliers are financially motivated to moderate the rate of growth of renewable energy generators, rendering the RO system ineffective. The Renewable Power Association estimated that by 2010, there will be approximately 7% total renewable energy supplied in the UK, hinting at the forced stability of the ROCs market.⁷⁷

For a policy designed as a governmental mechanism to monitor energy suppliers, it has been turned into a business-led, oligarchy system of governance where energy suppliers use ROCs to maintain inefficient prices and disincentivise the production of longer-term renewable energy technologies. Compliance to this policy is steered by an imperfect market, leading to inefficient results.

4.2.3 – The Renewable Minority

However, upon closer examination, there is still a very small proportion of growth in clean energy. The reality in the UK is that energy companies are still using fossil fuels to source the vast majority of their electricity production. In 2007, renewables accounted for just 5 percent of all energy use. To further illustrate, by 2006 the amount of installed wind energy capacity in the UK was ten times less than the amount in Germany.⁷⁸ In addition, 81.8 percent of the 5 percent total renewable energy production in 2007 came from “Biomass,” which includes such methods as co-firing, landfill gas, and sewage gas. Each of these biomass methods is being actively restricted by UK policy (i.e., there is now a 10 percent ceiling on electricity suppliers’ usage of co-firing to attribute towards its RO targets, and landfill/sewage gas are on the ‘less than 1 ROC’ side of the new RO banding scale). This means that while there are attempts to reduce reliance on these methods to fulfil renewable requirements via public policy, there still exists a large gap between the Biomass renewable energy types and the more ‘attractive’ renewable types, such as wind, hydro, and tidal.

⁷⁶ Mitchell, C., et. al. “Renewable Energy Policy in the UK 1990-2003.” *Energy Policy*. 32 (2004).

⁷⁷ Toke, D. “Renewable Financial Support Systems and Cost-effectiveness.” *Journal of Cleaner Production*. 15 (2007).

⁷⁸ Butler, L., et. al. “Comparison of feed-in tariff, quota and auction mechanisms to support wind power development.” *Renewable Energy* 33 (2008).

While UK officials proclaim the success of the RO in generating renewable energy production, the UK's own statistics point to a thriving and still growing fossil fuel industry for electricity production. Coal and gas consumption for energy use is still the most widely used and widely harvested energy source in the UK; in 2007 natural gas provided 43 percent of the UK's electricity, while coal provided 34 percent. Coal mining has declined tremendously in recent decades, but coal imports have shown a steady rise, showing the significance of this energy source. Nuclear energy was the third-largest electricity provider, with 15 percent out of the UK's total electricity sources. In the last few years, the UK switched from becoming a net exporter of oil, gas, and coal to a net importer of the three.⁷⁹

4.2.4 The United Kingdom of "Illusions?" – The UK PR Machine Exposed

The UK government's public relations engine has prided itself on publicly presenting the legislative energy achievements via ambitious targets and goals; yet recent criticism by third-party observers has noted that official figures are being distorted and misrepresented to alter reality. While a government-sponsored DEFRA report published in January 2008 lists carbon emissions reducing by over six percent between 1990 and 2006 (excluding ETS influences), recent independent reports actually show an 18 percent *increase* in carbon emissions during the same period.⁸⁰ In fact, an economic research study led by David Helm at Oxford University called energy reduction achievements in the UK as an "illusion." The fault lies on the calculation methods; by calculating only the "carbon consumption," or the final end-point of carbon-emissions, rather than dealing a clearer picture of reality that includes calculating carbon emissions *production*, it becomes more evident that the UK is damaging the global environment. Excluding certain sectors of the UK economy such as aviation, shipping, overseas trade and tourism gives an unclear picture of reality. The DEFRA report focused solely on domestic factors, rather than a cumulative calculation of the UK's international global footprint through multinational companies, international travel, and goods produced in China and shipped to the UK.⁸¹

This is damaging in many ways; the UK's reputation as on track to meet Kyoto protocol requirements of 12.5% reduction in carbon credits from 1990 levels by 2012 is in jeopardy of being tarnished or demolished if there is not a substantial reincorporation of all UK-related energy producers. Currently, the UK fares among the worst of the major EU powers in terms of its percentage of energy that comes from renewable sources (5 percent). Also, the Brown government's longer-term goal of 60 percent reductions by 2050 is pushed farther out of reach by this news. To paint a broader picture, since Tony Blair entered office in 1997, 60 percent of all green-related stated promises during the Blair administration's 10-year existence have not been met, are most likely not to be met, or are unable to be measured due to vagueness in wording. The UK think tank Policy Exchange observed that targets are met without key policy initiatives behind it to support progress, targets are altered and bypassed, such as the fluctuation between renewables and nuclear energy as the focus to meet current

⁷⁹ UK Energy In Brief July 2008. BERR. www.berr.gov.uk/energy/statistics/publications/in-brief/page17222.html (2008).

⁸⁰ "UK's CO2 emissions higher than official figures, government admits." Guardian Online (3 July 2008). <http://www.guardian.co.uk/environment/2008/jul/03/climatechange.carbonemissions>

⁸¹ Helm, D., et. al. "Too Good To Be True? The UK's Climate Change Record." New College, Oxford. 10th December 2007

targets. Also, “creative accounting” is being used to disguise target failures as target achievements; the aforementioned DEFRA report on misstated UK carbon emissions is a prime example of this.⁸² The question then becomes: have the effects of environmental targets, set by international cooperatives such as the EU or the Kyoto Protocol, or by national governments themselves such as the UK’s many self-imposed targets, been inadvertently promoting corrupt reporting strategies and rule-bending accounting methods, rather than positively influencing environmental practices? Moving forward, real measures of carbon emissions in combination with closer scrutiny of UK business practices are the most effective way to hold the government and the UK energy industry accountable.

4.2.5 Prevalence of fossil fuels

Fossil fuel demands in the UK is closely related to fuel prices, despite environmental concerns; in other words, electricity consumption of fossil fuels still follows price patterns of supply and demand even with a stress on renewables. For example, since 2000, the use of coal to supply energy had steadily increased annually until 2006, when the demand for coal declined slightly due to the price of gas becoming a more viable financial alternative in 2007—as highlighted by the slight decrease in coal imports and the slight increase in gas imports in 2007.⁸³ The increased reliance on natural gas for electricity consumption presents a dilemma for the UK; while gas has a significantly lower CO₂ emissions level than coal, it is still an imported fossil fuel in limited supply, thus reinforcing the lack of energy security in the UK. On the other hand, the UK could feasibly be able to meet both RO demands of renewable generation as well as Kyoto targets with an expanded reliance on gas for electricity generation.⁸⁴

4.2.6 RO Compliance Measured – A Stated Success

With regard to the RO policy itself, compliance to the scheme by electricity suppliers is mandatory, as stipulated in each supplier’s Electricity Supply License and Ofgem’s authority to inflict penalties in breach of its license. In the 2006-2007 RO period, all electricity suppliers met their obligations under the RO scheme, and were deemed ‘compliant’ by Ofgem according to the RO rules and regulations. The reality of the RO in the UK over the past four RO periods (2003-2004 through 2006-2007) is that there are more ROCs being distributed each year to suppliers, indicating greater usage of renewable energy, yet there is also a more-than-proportionate accompanying rise in the annual increase in the buyout fund, meaning that with greater electricity provision across the UK, electricity suppliers are unable to keep up with the demands of the RO through renewable energy production and must purchase their obligation.⁸⁵

⁸² Singh, T. and T. Sweetman. “Green Dreams: a Decade of Missed Targets.” *Policy Exchange* (May 2008).

⁸³ UK Energy In Brief July 2008. BERR. www.berr.gov.uk/energy/statistics/publications/in-brief/page17222.html (2008).

⁸⁴ Odenberger, M. and F. Johnsson. “Achieving 60% CO₂ Reductions Within the UK Energy System: Implications For the Electricity Generation Sector.” *Energy Policy* (35) 2007

⁸⁵ “Annual Report 2006-2007.” Ofgem. (4 March 2008).

www.ofgem.gov.uk/Sustainability/Environment/RenewablObl/Documents1/Annual%20report%202006-07.pdf

4.3 EEG Current Reaction and Regulation

4.3.1 A Successful Regulation: EEG Success, Measured

Upon review, EEG measures of success are less focused on the stipulation of compliance to specific rules, and more on the empirical effects on renewable energy growth in the country. In other words, EEG compliance is enforced and practiced on a widespread, national level; what the German government has labelled as factors of success are not so much participatory measures as they are the empirical results of the EEG, enumerated in this section. The prevalence of a feed-in tariff and a functional electricity grid system enables all players involved—grid operators, renewable energy generators, customers—to ensure continued growth of the main quantifiable countervailing weapons against climate change: renewable energy.

The EEG has been overwhelmingly successful since its implementation in 2000 and 2004 revision across all of its objective areas. In 2007, Germany offset 114 million tonnes of CO₂, 57 million of which can be directly attributed to the EEG, a 13 million tonne increase from the previous year. That year also saw 87.5 TWh of renewable-sourced electricity generation and 90.2 TWh of renewable-sourced heat supply. Germany's 2010 target, agreed upon under a European framework, was surpassed in 2007; renewable energy now occupies a 14.2 percent share of total electricity consumption, and 8.5 percent of total energy consumption (including heat and fuels), both of which are higher figures as compared to the UK. This has spurred the German government to extend the goal to 30 percent by 2020. Wind and biomass energy have exhibited the largest growth under the EEG: in 2000, there were 7,550 and 2,279 GWh reported for wind and biomass, respectively. In 2007, those figures rose to 39,500 and 19,500, respectively. Electricity production is the largest contributor to carbon emissions in Germany, and between 1990 and 2004, emissions from fossil fuel energy fell from around 985 million tonnes per year to around 827 million tonnes, a drop of approximately 16%.⁸⁶

The chart on the following page depicts the significant renewable energy growth in Germany.⁸⁷

⁸⁶ Environmental Report 2006: Environment - Innovation – Employment. The Federal Environment Ministry. www.bmu.de/english/service_downloads/doc/39108.php (January 2007).

⁸⁷ “Economic Analysis and Evaluation of the Effects of the Renewable Energy Act.” Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety. February 2008.

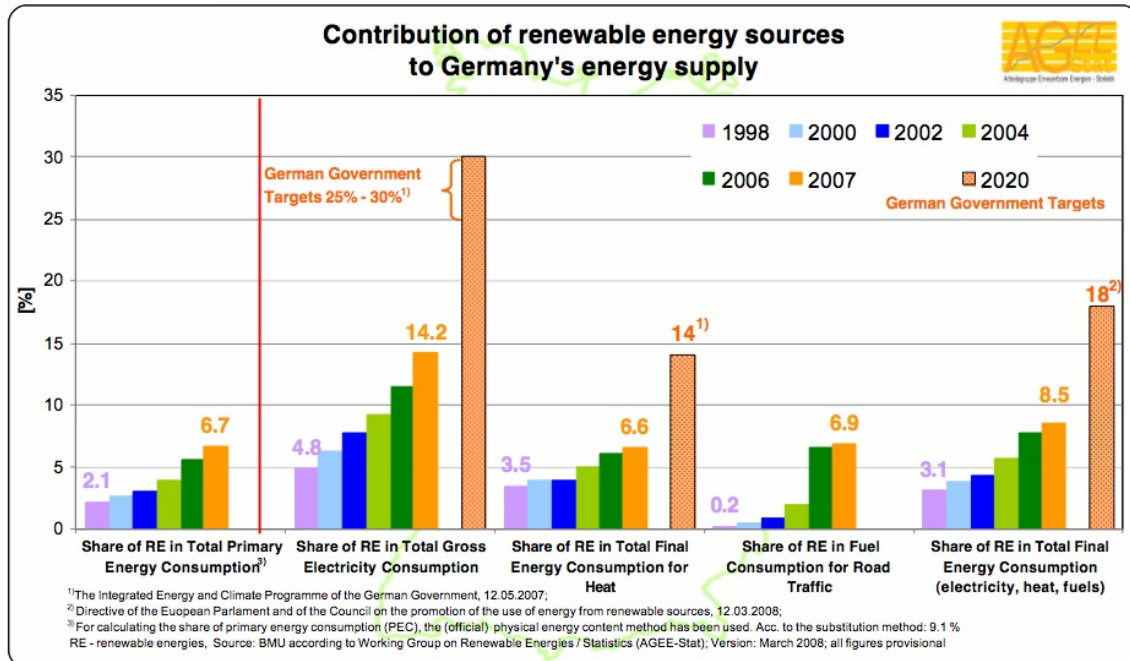


Table 2

Economic impacts were also felt; the EEG is proving to bolster the Germany economy. The total turnover, or gross revenue from construction and operation of plants for the use of renewable energy in 2007 totalled 24.6 billion Euros. In terms of reducing costs of the EEG-related energy supply, recent data shows that the benefits of EEG-promoted electricity generation, including the reduction in the wholesale price, avoidance of external costs for electricity generation, and avoided energy imports totalled 9.4 billion euros, while the costs of EEG-related energy supply, which included EEG differential costs, additional energy regulation costs, and transaction costs only totalled 3.3 billion euros. EEG-related job creation continues to proliferate; 250,000 Germans are employed in the renewable energy sector, with more than 140,000 coming from EEG-based sectors, and with the largest increases stemming from the biomass, wind, and solar energy sectors, a dramatic increase of more than 55 percent since 2004, most visibly seen in the biomass, wind and solar energy sectors.⁸⁸

Success as measured by compliance to EEG regulations has also been achieved under the EEG; each of the four main electricity grid operators (RWE/VEW, E.ON, Energie Baden-Wuerttemberg [EnBW], and Vattenfall) has a detailed and transparent account summary of the renewable energy procurement from the previous reporting period on its main company website. The information includes amounts of renewable energy in-feed acquired and distributed and levels of remuneration for generated energy.

Success vis-à-vis industry satisfaction was also measured. In a survey of 105 German renewable energy supply companies, including manufacturers, planners, developers, service

⁸⁸ "Development of Renewable Energy Sources In Germany In 2007." Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety. March 2008.
www.bmu.de/files/pdfs/allgemein/application/pdf/ee_zahlen_2007_en_pdf.pdf

operators and system operators, two-thirds (67 percent) of those surveyed were either ‘satisfied’ or ‘very satisfied’ with the EEG, stressing the positive impact on renewable energy sector development vis-à-vis “reliable framework conditions,” “investment and planning security”, and stabilised demand. The surveyed firms also stressed increased investment returns, high growth rates, a “growing internationalization of markets,” and a workforce that has more than doubled since the EEG’s 2000 inception.⁸⁹

International implementation of feed-in systems has proliferated as the magnitude of EEG success was fully recognised. Fixed feed-in tariff systems are used in 18 other EU countries, and as a sign of European solidarity, the Renewables 2004 conference Germany and Spain initiated the International Feed-In Cooperation, which seeks to spread information and experience to other countries in an effort to accelerate the prevalence of EEG-like systems. Of the 49 countries worldwide that had set specific goals for acquiring renewable energy sources, 32 used feed legislation to achieve those targets. Two noteworthy examples, India and China, have introduced elements of feed-in systems; China now aims to attribute 16 percent of its primary energy consumption to renewable energy by 2020.⁹⁰

4.3.2 State vs. Market promotion in Germany: A Test of EEG Strength

In a classic pitting of state against market, EEG policy-led promotion of renewable energy has been simultaneously implemented alongside green power marketing, a side effect of the market liberalisation of Germany’s electricity sector. This concept revolves around allowing electricity customers to make purchasing decisions that will lead to a change in electricity mix. The objective of green power marketing is threefold in character: for suppliers, the objective is product differentiation within a liberalised market to achieve higher profit margins through larger a larger customer base, revenue and market share. For green power customers, their objective is to ensure that their purchasing power supports sustainable energy, climate protection and renewable energy growth. For policymakers, including governments, NGOs, and other organizations, they aim to impact consumers’ “willingness to pay” as a means of increasing the share of renewables use. The contrast between green power marketing and EEG policy is also economic; each of these green marketing actors is targeting customer demand, while EEG policy targets supply.⁹¹

The clear winner in this race is the EEG; effective regulatory public policy has played the major role in Germany’s success, while customer demand has shown a very limited impact. In terms of new capacity, the EEG/StreEG directly led to 13,000 MW of new wind supply; between 1999 and 2003, green power marketing only directly established 127 MW of new wind supply. However, there are signs that it may be too early to assess the full potential of green power marketing, and unquantifiable benefits such as consumer and supplier

⁸⁹ “Economic Analysis and Evaluation of the Effects of the Renewable Energy Act.” Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety. February 2008.

⁹⁰ “EEG—The Renewable Energy Sources Act: The Success Story of Sustainable Policies for Germany.” Federal Ministry for the Environment, Nature Conservation and Nuclear Safety. July 2007.

⁹¹ Wustenhagen, R. and M. Bilharz. “Green Energy Market Development in Germany: Effective Public Policy and Emerging Customer Demand.” *Energy Policy* 34 (2006).

education or future customer preferences prevent green marketing tangibly starting to catch up to policy-driven energy growth.⁹²

The question then is: why does the state beat market in Germany? The answer to that question is governance, hence the reliance on the VoC as a supportive theoretical tool to expose Germany's tendency to coordinate industry behaviour through policy action. This sheds more light and validity on Hancke's VoC critique of the role of the state; while the firm is the centre of analysis in VoC, perhaps more attention should be placed on the role of the state in crafting policy that constrains industry action.

4.4 Comparative Analysis, EEG vs. RO: Risk and Competition

4.4.1 Risk Reduction: EEG vs. RO

Having analysed the UK's and Germany's varying levels of success individually, I will pose the two side-by-side to analyse two economic factors of success: risk and competition. I will argue that the EEG is better able in both cases to facilitate a more prosperous renewable energy sector.

When comparing levels of success between renewable energy promotion policies that utilise economic measures, as both the EEG and the RO incorporate (feed-in tariffs and market-based certificates), it is vital to consider the extent to which each policy reduces risk. Economically speaking, "risk has a price," and lowering the levels of risk can both reduce the cost of capital and increase the efficiency of a support mechanism. Lower risk both improves access to capital markets (for investment) and reduces the cost of capital). Risk reduction in the German feed-in system—"lower risk/higher security"—sacrifices some level of short-term efficiency for "long-term stability, incentives and resources for innovation leading to efficiency improvements in the long term." Justifiably, "in policy development, mitigating risk is certainly an alternative to raising the level of compensation."⁹³

Risk can be divided into a triad of elements: price risk, volume risk, and balancing risk. The EEG sets a guaranteed feed-in tariff price point that lies above the market price, spurring renewable generation while hedging against volatility, thereby eliminating price risk. Volume risk is also mitigated under the EEG, because grid operators are obliged to purchase all levels of renewable energy at fixed prices under 20-year contracts, removing exogenous output demands from local renewable generators. And, by avoiding the need to purport a specific load profile, which may penalise unreliable generation, balancing risk is eliminated.⁹⁴

Contrarily, there is a greater amount of risk associated with the RO. While large, integrated energy corporations are better able to overcome each of the three risk factors, many smaller, independent companies are less adept at overcoming risk to achieve sustainability. The RO

⁹² Wustenhagen, R. and M. Bilharz. "Green Energy Market Development in Germany: Effective Public Policy and Emerging Customer Demand." *Energy Policy* 34 (2006).

⁹³ Mitchell, C., et. al. "Renewable Energy Policy in the UK 1990-2003." *Energy Policy*. 32 (2004).

⁹⁴ *ibid.*

essentially divides an electricity generator's income into two parts: a market price for the electricity itself (the 'power' market), and a price for its "greenness" (ROC market). Price risk is established by using market mechanisms (supply and demand) to determine the ROC price, thus creating volatility. Self-imposed renewables targets, (such as the 10.4 percent renewables use by 2010) incentivises energy companies to "under-meet the target," "since the ROC value—and the level of recycled funds—falls if the obligation is met". This is inherently counterproductive for renewable energy growth. Once the obligation is met, and a higher target level is not implemented, renewable generators lose the security that their generation will be purchased, thus instilling volume risk. By not providing support to smaller, independent energy companies, the RO creates a balancing risk through exposure in the normal power market, rather than solely through the ROC market.⁹⁵

4.4.2 Competition: EEG vs. RO

Economic competition exists in both the RO in the UK and Germany under the EEG; what mark their differences are the origins and objectives of the competitive environment. Upon initial speculation, one would argue that the RO, set within an LME environment, would offer the lowest costs due to its resident companies competing within a liberalised, deregulated market. Comparatively, the EEG, set within a CME environment, would be too restricted by the fixed tariff to spur price competition among its industrial base. However, the actual record is quite striking and in fact opposite; with regard to wind energy, the EEG and the feed-in system have established cheaper prices, greater competition, and larger deployment for wind generation than the RO.⁹⁶

Obtaining financial support is a major factor in wind energy projects; the EEG offers certainty in project revenue streams—the feed-in tariff's set price per MWh produced—enabling developers to collaborate with a local community at an early stage. In the UK, however, early engagement is riskier as finance and grid connection is not guaranteed. Long-run costs could be met by the ROC price plus the recycled ROC premium to cover the cost of one marginal wind turbine. But without a guaranteed payment, the RO offers little financial support since revenue is affected by: [1] the unpredictable prices of power, [2] the buy-out price, [3] the value of the Levy Exemption Certificate—a corollary to the Climate Change Levy which is itself a supporting mechanism to the RO, placing a tax on energy use in Industry—and [4] the ROC premium. Each of these four factors is subject to change according to levels of supply and demand. However, while there is less competition in German's finance provision—a significant percentage is obtained through equity—UK wind projects under the RO are "financed on the balance sheet of utilities."⁹⁷

While the RO does provide a competitive environment through market determination of the ROC price level—albeit strongly influenced by a few dominant market players—competition under the EEG occurs most at the land lease or purchase stage of development, enabling communities to be fully incorporated and supportive of a project at its inception. The

⁹⁵ Mitchell, C., et. al. "Renewable Energy Policy in the UK 1990-2003." *Energy Policy*. 32 (2004).

⁹⁶ Butler, L., et. al. "Comparison of feed-in tariff, quota and auction mechanisms to support wind power development." *Renewable Energy* 33 (2008).

⁹⁷ *ibid.*

German wind turbine market is in fact more competitive than the UK's; with nine German companies to the UK's five, German companies account for greater size and maturity to foster competition, as well as maintaining a large presence in both the domestic and international markets. The feed-in tariffs have "facilitated the development of the turbine industry by creating security and encouraging market participants to adopt a long-term perspective," while the RO's emphasis on price reductions for wind energy and its related "volatile demand...might have hampered the growth of domestic turbine producers." Additionally, the undifferentiated RO quota system prevents development of "less mature technologies." By focusing on onshore wind and landfill gas, the RO has limited "market development and movement along the learning curve for other technologies"⁹⁸

A significant portion of the value of wind projects is created during production and construction; competition in Germany is "stronger...among turbine producers and constructors under the feed-in tariff than under either of the UK [NFFO or RO] schemes." In addition, the cost to society between the two policies is lower in the EEG than in the RO, taking into account the average costs over the lifetime of a project. The guaranteed price under the EEG "reduces regulatory and market risk," and a quota-based system like the RO "is not inherently cheaper than a feed-in tariff." These measurable lower costs have contributed to higher deployment levels both in absolutely installed capacity and in relation to stated "predefined political target[s]."⁹⁹

4.5 Chapter Conclusion

As highlighted in the previous section, the greater and more effective competition witnessed in the German wind industry under the EEG as compared to the RO in the UK reinforces our main argument: there is a wider gap in compliance among energy industry companies in the UK than in Germany. If examined under the LME/CME lines of analysis, we can disregard the intuitive and heuristic notion that LMEs are more efficiently competitive and will seek the lowest cost via the market as seen through the inefficient results of LME-like actions in the UK under the RO. The EEG is better able to achieve carbon reduction targets through stability, long-term planning, and effective competition that foster cooperation among all related parties: communities, manufacturers, developers, and operators at an early stage.

⁹⁸ Butler, L., et. al. "Comparison of feed-in tariff, quota and auction mechanisms to support wind power development." *Renewable Energy* 33 (2008).

⁹⁹ *ibid.*

Chapter 5: Conclusion

Utilising the wind sector competition example from the last section of the previous chapter as a microcosm for this research discussion, the argument's full trajectory can now be traced in full: a perceived gap in environmental compliance, manifested via the discrepancy between environmental statements by government leaders and related environmental actions by the energy industry, seen to a greater extent in the UK than in Germany, can be explained by a host of factors. Since I have chosen governance as the factor of import and attention, I have dichotomised the two main governance policies in each country, the RO and the EEG, and brought in the theoretical framework of Varieties of Capitalism. VoC has been the explanatory crux for a number of economic behaviours: wage bargaining, skills development, labour flexibility, social protection, long-term development, among others, and I have attempted to link VoC to two countries' attempt at environmental regulation. Using the Varieties of Capitalism body of literature, the LME/CME parallel aptly fits the behavioural responses under the two policies in the UK and Germany, and is a useful and powerful tool to expose one country's hypocritical environmental record. The comparative case between the two has strikingly parallel comparisons to Hall and Soskice's polar world. I have exposed the main critiques within the VoC debate and responded to them, maintaining the potency and validity of including the VoC literature in the environmental debate.

A thorough analytical structure has helped to understand the impact that the RO and EEG has had at home: first, by thoroughly detailing the constraints imposed by both policies; second, by shedding light on the ways in which the RO and EEG can be deemed successful; and third, by assessing the corresponding industry reactions via empirical findings to give an objective measure of success, and expose the extent to which the gap in compliance exists.

This brings us back to this research discussion original's conundrum: why is the UK government proclaiming to be a leader in policy-driven environmental achievements via CO₂ reductions and renewable energy promotion, all in an attempt to constrain and alter the behaviour of UK energy companies, when the evidential reality proves otherwise? The empirical results disagree with and sometimes contradict the stated proclamations made by the Prime Minister, DEFRA, BERR and other UK institutional bodies. The UK's carbon reduction levels are paltry compared to other European nations, and renewable energy generation is below expectations. Delving deeper, the main renewable energy-promoting policy, the RO, seems to have tapped into this apparent hypocrisy, permitting degradative energy industry practices while maintaining a successful record on paper. Its market-mindedness has facilitated oligarchical control over ROC prices, and shortsightedness in business decisions has prevented the necessary investment stability necessary for longer-term renewables growth. Bringing the comparative case of Germany into discussion, the UK government's attempt at being a climate change leader falls flat. Exhibiting greater success with the EEG, Germany's environmental actions—both among energy firms and the government legislature that regulates them—have succeeded in achieving substantial and sustainable change. Through market stability, longer-term planning, and investment incentives, the EEG has been a far greater success in achieving its objectives.

In an era when environmental management is crucial for the sustainability of our planet, it is crucial that proper scrutiny and attention is paid to those governments purporting positive

results. Having uncovered this gap in environmental compliance, I recommend that the UK government should recognise its hypocrisy and reform its environmental regulation legislation to ensure that energy companies are held more closely accountable for their impact on the environment.

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