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Jesse M. Keppley
Boston University

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A Comparative Analysis of California and German Renewable Energy Policy

ACTORS AND OUTCOMES

JESSE M. KEPPLEY

Boston University

M.A. Candidate, International Relations and Environmental Policy

Policymakers have long been interested in promoting renewable energy development. Yet it is only over the last two decades that interest has fully bloomed, leading to new policy instruments designed to promote increased generation in an economically efficient manner. Two environmental leaders, California and Germany, are identified as models in this field. Both have shown remarkable growth in generating capacity. Yet a closer examination of policy developments reveals marked differences in the way actors have pursued their interests to shape policy outcomes. This paper discusses both models in detail, exploring the ways political interests became involved in the policymaking process. It then evaluates relevant political institutions and their corresponding role in shaping the formulation of renewable energy policy. Taken together, this analysis demonstrates how policy models can diverge based on the institutional frameworks within which they operate. While most literature in this area focuses on the economic impacts of these policies, this paper adds to the literature by examining the role that actors and institutions play in driving the political process.¹

As climate change ascends political agendas across the world, mitigation strategies are evolving at a rapid rate. The desire to develop clean renewable energy technologies in a cost-effective and efficient manner represents a cornerstone of these strategies. Successful policies provide the opportunity for increased energy security, growth of domestic economic activity, and environmental benefits. Conversely, ill-conceived policy mechanisms can lead to high energy prices, perverse incentives, and public dissatisfaction with renewable energy technologies. Over the last two decades, several important policy approaches evolved in an attempt to capture the benefits of increased renewable energy generation while limiting the costs. These approaches include Feed-In-Tariffs (FITs), Renewable Portfolio Standards (RPS), and Cap-and-Trade systems, all of which have both strengths and weaknesses. While a vast literature developed to analyze the economic impacts of these policies, it is equally important to analyze the institutional

¹ The author can be contacted at jkeppley@bu.edu and would like to thank his academic advisor, Dr. Henrik Selin, for his guidance and critical eye.

and cultural contexts within which they are being shaped (Bailey and Rupp 2005, 388). Even within similar political systems, policy choices can develop in completely different ways. Despite these differences, a comparative analysis of existing renewable energy policies can provide a useful framework, not only for understanding how policy choices are made, but also for evaluating the institutional fit that develops between policy outcomes and the complex interconnected web of actors affected by them.

Comparative environmental politics is an important field for understanding how ideas, interests, and institutions shape state actions (Steinberg and VanDeveer 2012, 8-16). Comparing how stakeholders influence events, what role government institutions play, and the strengths and limitations of the policymaking process in a given polity provides a useful benchmark for policy analysis across borders. One way to do this is to analyze how actors within similar political systems arrive at different outcomes. In this conceptualization, actors from both inside and outside the government are promoting their preferred policy outcomes. Yet a certain level of institutional fit must exist for any policy to evolve in a given manner (Busch and Jorgens 2007, 868). Because of this, even within similar political structures policy development can look vastly different.

To illustrate these differences, this paper examines renewable energy policies in California and Germany. The reason for this comparison is twofold. First, both California and Germany are considered environmental leaders. California has often been at the forefront of environmental policies that would eventually become cornerstones of federal policy (Farrell and Hanemann 2009, 91). Similarly, Germany has been a leader in environmental policy and poses a uniquely influential position within the European Union (EU). Along these lines, both polities have been amongst the most active in developing policies to promote increased renewable energy use. Secondly, both polities operate within a larger federal system. Although the U.S. government offers some alternative incentives for renewable generation, it has been largely ambivalent toward California renewable energy policy. For Germany, the EU provides a platform for policy advancement and legitimation, while threatening to erode sovereignty at the national level. In each case, there are strengths and weaknesses to this relationship and an analysis of both models can provide policymakers with a useful benchmark for evaluating the complex interaction between competing interests and the institutions within which they operate. While it is inappropriate to assume that California and Germany are similar simply because they

operate within federal systems or are environmental leaders, understanding the ways policy evolved in these two “model polities” provides important insight into renewable energy policy more generally.

Put differently, there is a growing interest in environmental policy learning (see, for example, Busch and Jorgens 2007). While policy goals often look similar, outcomes are largely dependent on a host of competing factors, only some of which are within policymakers’ control. This raises questions that extend beyond a purely economic analysis. Mainly, given the complex relationship between actors and institutions, how have policies evolved in both regions? And what implications do these interactions have for future policy outcomes? The first section of this paper examines the above questions in relation to Californian renewable energy policy. It summarizes the development of policy over time, and outlines how key political interests were able to shape policy outcomes to accommodate diverse constituencies, while at the same time conforming to the market-based, neoliberal economic principles at the core of US economic policy. It then outlines how US federalism and a lack of federal leadership in renewable energy development constrained the options available to California policymakers. Finally, it will discuss the pros-and-cons of California’s state-based, bottom-up approach. Using a similar approach, the second section outlines how interest alliances were able to exploit policy windows to develop path dependencies that institutionalized a policy favorable to renewable energy development in Germany, reshaping future debates to include renewable energy as a cornerstone of German climate and energy policy. It then examines the relationship between Germany and the European Union, and explores Germany’s influential position within the EU. Finally, it highlights the changing German-EU relationship and the potential constraints facing the federal-level, top-down approach underway at the EU level. The concluding section will highlight similarities and differences between the two cases, and suggest some areas ripe for further research.

California Renewable Energy Policy

Since the 1970s, California has been at the forefront of the U.S. environmental movement, consistently enacting more stringent air quality standards than the rest of the country (Rabe 2009, 77). Beginning in the 1990s, California environmental leadership extended beyond air pollution standards and into the realm of climate change and renewable energy policy. California’s marked progression in renewable energy development is noteworthy considering

that, unlike other developed countries, the U.S. is not a party to the Kyoto Protocol, which mandates greenhouse gas (GHG) emissions reductions, and federal leadership regarding climate change remains limited (Rabe 2009, 67). In examining California's progress, the main focus of this case study is two laws with direct implications for renewable energy generation. First, California's Renewable Portfolio Standard (RPS), which passed in 2002, originally called for 20% of electricity generation to come from renewable sources by 2020. Utilities were later required to meet this goal by 2010. Most recently, the California Renewable Energy Resources Act (SBX1-2) amended the original RPS to mandate 33% renewable generation by 2020. Secondly, the Global Warming Solutions Act (AB32), passed in 2006, mandates that greenhouse gas emissions are at 2000 level by 2010, 1990 levels by 2020, and 80% below 1990 levels by 2050. While AB 32 is not directly related to renewable energy generation, the state needs increased renewable capacity to meet these long-term emissions targets.

Major Players: Interest Group Politics

As a coastal state with fragile ecosystems, California is particularly vulnerable to the effects of climate change. Because of this, promoting and expanding California's RPS was the top priority for environmental groups from 2008-2011 (Magavern 2011). Environmental groups were instrumental in raising public awareness and directing media attention to the economic benefits of providing a strong legislative mandate for renewable generation through the proposed RPS (UCS 2009). These groups also played a crucial role in raising nearly \$6.5 million for lobbying efforts surrounding its expansion (Maplight 2012). AB 32, however, represents a different story, and possibly a breakdown in the stakeholder process. As part of meeting the legislation's emissions targets, the California Air Resource Board (CARB) was required to procure a Scoping Plan to outline how the CARB would reach 1990 levels. The cornerstone of AB 32 was a cap-and-trade program that would issue permits for the release of greenhouse gases from regulated entities. In 2009, environmental justice (EJ) groups, under the Association of Irrigated Residents (AIR) et al., brought suit in district court, alleging that low-income communities were disproportionately affected because the law excluded whole sectors of the economy from GHG emissions controls (Briggs 2011). In essence, the environmental justice community worried that the law would force the dirtiest polluters into the cheapest, and generally lowest income areas, and that they would then simply buy the credits necessary to

become compliant. The courts found in favor of AIR, ruling that the CARB acted arbitrarily and capriciously in not considering other options, such as a flat carbon tax. Though AB 32 is still moving forward, the California legislature is now considering SB 535, which would require ten percent of any revenue generated by AB 32's cap-and-trade provisions to be used in disadvantaged communities for, among other things, mitigation of health impacts from dirty fossil fuel generation that EJ advocates contended would disproportionately affect low income areas (Lusvardi 2011).

This new law directly addressed the concerns of these groups. The story of *AIR v. CARB* highlights not only the need for state agencies to be mindful of common law principles, in this case to not act arbitrarily and capriciously, but also the strong presence of environmental groups in the legislative process. Through the courts, environmental groups were able to wield considerable influence, though in a surprising way. While the CARB had no intention of implementing a flat carbon tax, which AIR had presented as an alternative to AB 32, by not considering it the agency faced considerable delays in legislative implementation. These delays put increased pressure on both regulated entities and CARB, who are still tasked with meeting these requirements by 2020.

While environmental groups clearly had a large influence in promoting renewable energy policy in California, examining that role does not tell the whole story of why current policies were chosen over others. One telling reason for this is seen by examining the role of business and political interests in expanding the RPS through Senate Bill X1-2 (SBX1-2). When California adopted an RPS in 2002, both Democrats and Republicans were attempting to upstage one another when it came to promoting renewable energy generation and GHG mitigation (Farrell and Hanemann 2009, 97-98). But an RPS policy was not a given outcome. Many European countries, for example, were experimenting with Feed-in-Tariffs (FITs) as a way to promote new renewable capacity. One of the major reasons an RPS was attractive to policymakers, however, was that it was seen as a more market based approach; FITs on the other hand were viewed as incompatible with deregulated retail electricity markets (Rickerson, Sawin, and Grace 2007, 77). Rather than specify a price (as a FIT does) and allow the market to determine the correct quantity, a RPS determines a quantity and allows market competition to settle on a price. This makes the true economic costs of the policy more opaque, while at the same time avoids

reference to a tariff or subsidy, both of which tend to be politically dangerous words in the United States.

An RPS is also politically malleable, allowing for the exceptions and loopholes that are so often necessary to pass legislation in the US. In the case of California, because of the business and political interests involved in drafting SBX1-2, the bill walks a legal “tightrope,” containing formulae in the legislation that require limits be placed on the cost of renewables while providing waivers and exemptions for utilities unable to reach its targets (Nahai 2011). Dwayne Breger, who oversaw the implementation of Massachusetts’ RPS notes that California’s Public Utilities Commission (PUC) was tasked not only with overseeing 33% of the state’s electricity from renewable sources, but also that prices were built into the law to protect ratepayers, while quotas were implemented to ensure most of the green jobs created by the legislation would remain in the state (Breger 2012). The result is that California’s updated RPS has a graduated loading requirement that mandates how much of a utility’s portfolio must come from generation within the state. The end result requires 75% of renewable generation be produced within the state by 2017. On the face of it, SBX1-2 appears to be an ambitious push for clean energy. The above requirements reveal the political concessions necessary to appease consumer groups, business interests, a domestic constituency concerned with keeping jobs in state, and the utilities themselves.

The Role of the Federal Government

In any comparative policy analysis, understanding the institutional framework within which actors operate is crucial. In California, direct and indirect pressures from the federal government had a wide range of effects on policy outcomes. While this study argues that California chose an RPS partially because it fit neoliberal economic principles and more easily addressed the concerns of business and political interests than a FIT, this cannot be the only explanation for why policymakers chose this model. As other jurisdictions have demonstrated, there are multiple ways to implement FITs, some of them tied to market rates and therefore presumably more compatible with a deregulated electricity market like the one in California (Couture and Gagnon 2007, 962-963). Instead, the interaction between federal and state laws played a defining role in pushing policymakers down the direction they chose.

In a federal system like the United States, states cannot preempt federal law. In the early 2000s, this is exactly what California would have risked doing if it tried to implement a Feed-in-Tariff. Enacted by the federal government in 1978 as part of the National Energy Act, the Public Utilities Regulatory Policy Act (PURPA) established a crude FIT model in the wake of the energy crisis of the 1970s. PURPA requires public utilities to purchase power from small-scale renewable energy producers, so called “qualifying facilities” (QF), at a rate that is equivalent to the utilities own “avoided cost,” i.e. the price the utility would have to pay to either generate the additional power or to purchase it from another QF (Motl 2011, 743-745). During the early 1980s, PURPA was relatively successful in promoting renewable energy generation (Martinot, Wisner, and Hamrin 2010). The problem was that avoided cost rates were set when energy prices were exceedingly high.

Because utilities were required to buy generation through power purchase obligations running in some cases over thirty year periods, utilities paid significantly higher than market rates once energy prices dipped in the 1980s. This has led to repeated legal challenges, with the courts and Federal Energy Regulatory Commission (FERC) consistently ruling throughout the 1990s that QF contracts must be upheld (Ferrey 1997, 63-65). Beyond the historical legacy of PURPA’s perceived failures, California policymakers also faced limitations based on FERC interpretation of avoided cost calculations. The reason for this is when fossil fuel prices dropped substantially, the calculation of avoided costs became so low that there was no incentive for renewable energy generators to enter the market; the marginal utility needed to satisfy avoided cost meant renewables simply could not compete economically (Martinot, Wisner, and Hamrin 2010). Despite judicial reviews, FERC continuously upheld the definition of avoided cost as the cost of any available fuel type, which was typically from cheap and efficient gas fired turbines (Gipe 2010). The result of this interpretation of PURPA is that when policymakers in California were interested in promoting renewable energy generation through legislation in the early 2000s, they could not design a policy mechanism that would explicitly remunerate developers at levels higher than those set by the avoided costs clause of PURPA, essentially ruling out a FIT policy that would have provided enough compensation to generate development on a scale that would put the state in line with its targets. In effect, what worked in the 1980s to promote the growth of renewable energy generators now served to handcuff effective federal or state level policymaking (Elefant 2010).

With the rise in popularity of Feed-in-Tariffs in other jurisdictions, there is renewed interest among California policymakers. For example, in 2007 Commissioner John Geesman of the California Energy Commission (CEC) noted that “Germany’s renewable feed-in tariff has revolutionized the market for wind and solar energy...Those are things that California is directly looking at” (Rickerson and Grace 2007, 1). Interest in new policy mechanisms to promote increased renewable generation led to AB 1613 in 2008, which established a FIT for combined heat and power facilities of 20MW or less (Bloom, Forrester, and Klugman 2011, 2). Facing litigation from California utilities in 2010, the California Public Utilities Commission (CPUC) applied to FERC for a declaratory order to determine how it could calculate avoided cost. Unlike previous FERC rulings, which not only required utilities to honor avoided cost rates but also prohibited state utility commissions from considering different energy types when calculating avoided costs, the 2010 ruling reversed course. Under this FERC interpretation, “non renewables are ‘not available’ for purpose of [renewable energy procurement], and as such, need not be considered in avoided cost calculation” (Elefant 2010). While FERC presented this change as a mere clarification of its earlier position, the updated ruling appears to give states more leeway in complying with avoided cost requirements (Tremaine 2010). The history of PURPA, however, demonstrates the limitations California policymakers faced in the early 2000s, and one of the primary reasons an RPS was the preferred mechanism. In this case, the court system became the primary institution affecting policy options and both opponents and proponents of various policy mechanisms funneled their efforts through the judicial branch. The battle over renewable energy policy throughout the 1980s witnessed legal challenges from several large California utilities, including Pacific Gas and Electric, Southern California Edison, and San Diego Gas and Electric, unifying them in opposition to PURPA and setting federal-level precedent that limited options available to policymakers (Graves, Hanser, and Basheda 2006, 16-17). While a FIT would not have been out of the question, reconciling a state-level FIT with PURPA would have been challenging, and almost certainly elicited judicial review. For this reason, the RPS was a more attractive option. Thus, as in the case of *AIR v. CARB*, affected parties looked to the courts to manage policy outcomes, and policymakers faced limited options due to federal preemption.

AB 32 faces similar federal constraints. Governor Schwarzenegger openly expressed interest in linking California’s cap-and-trade program with other markets, such as the European Union Emissions Trading Scheme (EU-ETS) or New England’s Regional Greenhouse Gas

Initiative (RGGI) (Huffman and Weisgall 2008, 8). The U.S. Constitution's Commerce Clause, however, gives the federal government the power "to regulate Commerce with foreign Nations, and among the several States" (U.S. Const., Art. 1, Sec. 8). The problem California policymakers faced when crafting AB 32 relates to issues of leakage, whereby regulated utilities import cheaper and higher-polluting power from an unregulated entity. If utilities are allowed to do this en masse, the effectiveness of AB 32 is undermined. If they are restricted from buying unregulated power from outside California, then the cap-and-trade program could be found in violation of the Commerce Clause (Huffman and Weisgall 2008, 10). While RGGI demonstrates that state linkages are possible, an attempt to link to an international agreement like the EU-ETS would be an unprecedented scenario, and would almost certainly be challenged in court. The likelihood that regulators in California are prepared to confront these legal issues remains uncertain.

Similarly, the Compacts Clause and Supremacy Clause of the Constitution place severe limits on how effectively AB 32 could be linked to an international emissions trading scheme. The Compacts Clause states: "No state shall, without the consent of Congress...enter into any Agreement or Compact with another State, or with a foreign power" (U.S. Const., Art. 1, Sec. 10). Because the need for legally enforceable guarantees in any linkage of cap-and-trade programs would constitute a compact, it would be difficult to reconcile AB 32 with this clause (Huffman and Weisgall 2008, 10-11). Though the Supremacy Clause, which outlines the preemption of federal law in relation to state law, would not inherently conflict with a possible linkage, this clause could come into effect if the federal government enters the realm of greenhouse gas regulation in the future (Huffman and Weisgall 2008, 11-12). This would be especially true if the federal government instituted a cap-and-trade program that did not mesh well with AB 32, or could not be linked to external carbon markets itself.

Though California policymakers are no doubt aware of the Constitutional issues surrounding AB 32, the law as it exists now is unlikely to be struck down (Mironova and Varghese 2010). Because the state cap-and-trade program regulates "even-handedly to effectuate a legitimate public interest," that being global warming, "and...its effects on interstate commerce are only incidental" the case against AB 32 is unlikely to hold (Mironova and Varghese 2010). The issues posed by a potential linkage, however, especially with the EU-ETS, raise increasingly difficult legal challenges. Linkages with foreign parties would create a "whole host of problems,

from verification and standardization of credits at an international level to accounting and securities disclosure laws and regulations” (Huffman and Weisgall 2008, 10). Thus, despite the strong rhetoric from California, policymakers are likely handcuffed by federal authority. In this sense, U.S. federalism has severely limited the reach of California’s cap-and-trade program, and will continue to do so either until the states come up with creative ways around the Commerce Clause, Compacts Clause, and Supremacy Clause, or the federal government passes a national cap-and-trade program, to which California could be linked.

Implications of the California Case

Because renewable energy policy at the federal level is limited, California has taken a strong role in this policy field. While this has led to tensions between the state and federal level, this bottom-up approach does have benefits. On the one hand, the subsidiarity principle, which suggests that regulatory action should be taken as close to the affected source as possible, suggests that leaving policymaking to the state is optimal. This allows California policymakers to account for the state’s unique geographical features, robust economic specializations, and long history of environmentalism. In theory, a more uniform federal “top-down” policy would either not do enough to spur increased renewable generation, in which case California would attempt to augment the policy itself anyway, or would do too much, putting undue burdens on states that do not have the environmental aspirations that Californians have. From a legal and theoretical perspective, if California citizens, and by extension policymakers, want to meet their electricity needs with any amount of renewable generation, there is nothing explicitly stopping them at the federal level.

Historically, this has worked to California’s advantage. In the wake of the energy crisis of the early 2000s, California policymakers have highlighted the importance of accelerating renewable energy development and promoting customer and utility owned generation (California Energy Action Plan 2003). The RPS and AB 32 were ways to not only promote environmental leadership, but were also ways to develop a domestic green tech industry. The onus thus falls on the state to implement the correct balance of costs and benefits to maximize the effectiveness of these goals. Also, while powerful organized interests like AIR and the state utilities shaped renewable energy policy in California, similar policies at the federal levels would risk even

further concessions as addressing stakeholder concerns moved to the national scale where organized interests wield even more influence.

On the other hand, however, California does not operate in a vacuum. Federal policies, even if not directly antagonistic to California's renewable energy policies, can have an overwhelming impact on the ability of the state to meet its goals. For example, even with the RPS in place, developers rely on federal incentives to maximize returns on their investments. A federal renewable energy production tax credit (PTC) has been instrumental in driving renewable growth in the U.S. But by design, the PTC needs to be extended each year, which leads to legislative uncertainty and increased risk for investors. For example, in 2003 the U.S. added 1700 MW of wind power generation due to early reinstatement of the PTC that year, yet the following year only 390 MW was installed due to a late extension (Martinot, Wiser, and Hamrin 19).

Furthermore, while fostering industry growth within the state is an important aspect of these policies, they are at their core a linchpin of broader efforts to combat climate change, the scope of which is by definition beyond the domain of the state. This is where California's bottom-up approach is inherently weak. Without federal leadership all costs fall only to California, while any benefits are enjoyed globally. Even with strong federal leadership, the U.S. cannot solve the global climate problem. But, returning to the subsidiarity principle, it makes less sense to combat climate change at the state level when it could be dealt with more effectively at the national level.

Nevertheless, the concept of the states as laboratories of democracy is especially pertinent in the case of a large and influential state like California. California has historically played an important role in U.S. environmental and energy policy (Farrell and Hanemann 2009, 89). As more states adopt RPS policies, and they become more stringent; as more states join voluntary GHG reduction schemes like RGGI and the Western Climate Initiative; then pressure will continue to rise on federal action. There is also a growing interest in state-level FITs (Mottl 2011), and the FERC decision regarding the CPUC opens the door for RPS expansion through deployment of FITs with higher avoided cost calculations than previously possible.

The California case demonstrates the overarching role the federal government has played in shaping policy developments. Because state law cannot pre-empt federal law, policymakers were limited in the choices available to them, and in many ways hindered by federal inaction.

Both environmental groups and business interests, particularly large utilities, were quick to use the judicial branch to create policy outcomes they favored. While historically California environmental policy has flowed from the state to the national level, the strong role played by the U.S. federal government and the courts has consequently resulted in less ambitious policy outcomes when it comes to renewable energy.

German Renewable Energy Policy

Today, Germany is widely considered to be a global leader in climate change and renewable energy policy. The integration of the German Democratic Republic in the early 1990s, a large manufacturing sector, and a relative lack of renewable energy resources make this evolution in energy composition even more profound. For example, in 1990 renewable sources made up only 2% of total energy consumption, compared with 10% in 2009. Electricity makes up an even greater share, increasing from roughly 3% in 1990 to just over 16.5% in 2011 (EEK 2012). This development of renewable energy capacity in Germany is remarkable. That being said, rising costs continue to be a problem, and threaten to undermine future progress (Frondel, Ritter, and Schmidt 2008).

The increase in renewable capacity can be explained in several different ways. As a signatory to the Kyoto Protocol, and party to the burden sharing agreement between European countries, Germany has pursued renewable energy development as part of its broader climate change policy. Furthermore, as the EU takes on an increased role in climate change policy, Germany has used EU goals to refine domestic greenhouse gas mitigation strategies. Finally, strong environmental movement and desire for further energy independence also strengthened the desirability of renewable energy development.

Based on these factors, German policymakers ably identified their renewable energy goals. But neither the outcomes nor the institutional frameworks through which these goals were pursued were certain. Instead, what evolved was the result of a complex network of organized interests working toward policies that favored renewable energy development. By interacting with a federal structure at the EU level that provided policy legitimation while at the same time allowed for the protection of domestic economic interests, German policymakers were able to implement more aggressive measures than would be conceivable for a U.S. state.

The major piece of domestic legislation driving increased renewable generation in Germany is the Renewable Energy Sources Act (EEG) and its predecessor the Electricity Feed-in Law (StrEG), a feed-in-tariff that requires utilities to connect renewable sources to the grid and remunerate them at a pre-determined amount over a set period of time. There are also two important EU-level policies that have direct implications for Germany: the EU Renewables Directive (2009/28/EC) on the promotion of the use of energy from renewable sources, which among other things mandates that 20% of the EU's energy consumption come from renewable sources by 2020, and the EU Emissions Trading Scheme (ETS), which established a cap-and-trade system for greenhouse gas emissions. Under the Renewables Directive, Germany is required to procure 18% of its total energy consumption from renewable sources. The ETS is the main European compliance mechanism for meeting the EU-wide Kyoto target of an 8 percent reduction in greenhouse gas emissions by 2012 in comparison to 1990 levels. Under the EU burden sharing agreement, Germany is required to reduce its emissions to 21 percent below 1990 levels. Though part of the large gap between the German targets and wider EU emissions reductions goals can be explained by the collapse of the East German economy, this nevertheless represents a significant commitment to greenhouse gas emissions reductions.

Major Players: Policy Windows and the Renewables Lobby

As the California example demonstrates, feed-in-tariffs are by no means the only option for the promotion of renewable energy. From its inception in April 2000, the EEG has been highly controversial on the grounds that it is economically inefficient and fails to promote technological innovation (Fronzel et al. 2010, 4052-4055). Furthermore, if the FIT rate is too high, overdevelopment occurs and excess costs are inefficiently passed on to ratepayers. If it is too low, no development occurs and the policy is ineffective. This has led to repeated clashes between the Economics and Environment ministries, as remuneration rates are continuously reset as the measure comes up for amendment (Lauber and Mez 2004, 4-5). Given these considerations, why did policymakers pursue FIT policies, and how did relevant stakeholders shape the political process?

Put simply, in the early 1990s the political landscape was ripe for a new energy policy. Given Germany's corporatist political tradition, the German utilities have always had strong financial clout and wielded considerable political influence (For a discussion of this influence,

see for example Lauber and Mez 2004; Michaelowa 2004; Weidner and Mez 2008). But as others point out, trade unions and particularly the agricultural lobby have also played predominant roles in the political process (Hey 2010). Germany's federal political system, coupled with these strong corporatist traditions, gave sectoral industry interests and trade unions privileged access to the political system (Hey 2010, 223). Thus, during German reunification, a young but developing wind lobby was able to successfully ally itself with farmers and metalworkers, particularly those in East Germany (Michaelowa 2004, 3). These groups saw renewable energy, the need for additional revenue for owners of farmland, and the potential for domestic production of energy sources as a natural fit. Union groups recognized the renewables lobby as an important and growing source of domestic manufacturing, while farmers could increase profits by diverting some of their land to renewable generation, particularly wind development.

The wind lobby was also crucial in promoting a feed-in-tariff model, as opposed to a quota system like the ones being adopted in the UK, Italy, and the Netherlands (Resch et al. 2007). Interestingly, the EU Commission actually favored a quota system throughout the late 1990s and early 2000s (Lauber and Mez 2004, 20). But for obvious reasons the industry groups preferred feed-in-tariffs, since rather than specifying a quantity, they specified a price, providing a steady revenue stream and a significant reduction of risk. A predecessor to the EEG, the Electricity Feed Law of 1991 (StrEG), established the framework of a feed-in-tariff model in Germany, by which utilities bought renewable generation at 90% of the retail rate. This established a policy path dependency, by which the EEG passed in 2000 with strong political support (Janicke et al. 2001, 12).

The policy window that allowed for the passage of StrEG was available for several reasons. First, with the collapse of the Soviet Union and the subsequent fall of the Berlin wall, German utilities were consumed with the task of incorporating East Germany into their territorial monopolies (Toke and Lauber 2006, 683). When the merits of a feed-in-tariff were being debated in Germany, the Ministry of Economics sought to appease both sides by negotiating a voluntary agreement between fossil fuel utilities and renewable electricity generators. The agreement, which would have had some of the same effects as StrEG without the legally binding legislation, was rejected by the German utilities (Rickerson 2002). This miscalculation on the part of the utilities allowed the renewable lobby to push more actively for strong FIT legislation.

Second, a strong and institutionalized environmental movement was developing around this time in Germany. Deleterious effects due to acid rain, fallout over the Chernobyl nuclear disaster, volatile energy prices, and the second highest population density in Europe meant German society held a particularly acute sense of responsibility toward protecting the environment (Shull 1999, 4). Proportional representation, which granted Bundestag representation after meeting a 5% threshold, allowed for the institutionalization of this movement via the formation and election of Green Party politicians to the national legislature. Thus, given the nature of the German political system, the early 1990s proved conducive to renewables development.

However, by the mid-1990s, the utilities and business groups increased their efforts to discredit StrEG. Despite some efforts to roll back the amount of subsidies, business interests have largely been held at bay. There is considerable evidence that early on in the policymaking process, the utilities, busy both with the task of reunification and preoccupied with renewed threats of market deregulation, simply were not as prepared as the wind-agriculture-metalworker alliance that developed in the late 1980s and early 1990s (see for example Toke 2007; Michaelowa 2004). As a result, these groups were able to successfully shape the policy debate in the 1990s and establish the path dependency needed to successfully push for a fixed rate FIT. This, along with the help of the Social Democratic-Green Party coalition that came into office in 1998, culminated in the passage of the EEG in 2000.

The Role of the European Union: Policy Legitimation

As stated previously, the EU has passed two major pieces of legislation that have significant impacts on German renewable energy development: The Renewables Directive and the EU ETS. German membership in the European Union creates specific challenges in regards to meeting these obligations. Because of German federalism, whereby the Länder are primarily responsible for implementing policy, the additional level of regulatory federalism creates an added level of bureaucracy to the political process. However, the German-EU relationship provides German interests with a large amount of influence in EU decision-making. This relationship played a large role in determining the initial allocation of emission credits under the EU ETS. First enacted in 2004, policymakers were unsure whether permits should be allocated freely or auctioned, even though auctioned permits represented the economically efficient policy

outcome (Oberthur 2010, 48-50). During the negotiation process, Germany took a strong stance on how ETS permits would be allocated, with disagreements between the Economics and Environment Ministries (Lauber and Mez 2004, 5). Concerned with a potentially high price tag, Economics argued for a free allocation, with Environment pressing for auctioning. Though Germany was not the sole reason the EU decided on free allocation, the Economics Ministry's direct connection to the EU certainly played a prominent role in the outcome. Perhaps more so than any other country, Germany pushed for free allowances (Skjaereth et al. 2010, 80).

This conflict of policy interests can be viewed in two ways. On the one hand, Germany is a leader in renewable energy and climate change policies. Thus, it should be expected to push for the most stringent and effective environmental laws at the EU level, in this case auctioned credits. Yet its strong domestic laws and disproportionate amount of heavy industry meant policymakers felt it necessary to ensure industrial competitiveness. Domestically, however, strong cross-party support for the EEG and renewable energy in general, coupled with a formidable alliance of organized interests, meant that Germany was well on its way to meeting its Kyoto and renewable energy targets regardless of EU requirements. In that sense, pushing for a free allocation of credits at the EU level, where decision makers were insulated from the "politics" of Berlin is more understandable. Put differently, what has evolved at the EU level can be described as "policies without politics" while the national level is left with "politics without policies" (Schmidt 2006, 157-178). What this means is that political actors at the EU level are able to pursue policies they believe to be desirable without facing the political pressures that can undermine effective governance, while political actors at the domestic level must continuously protect vested political interests even as increasing responsibility falls under EU jurisdiction. Though this is an oversimplified paradigm, it partially applies to Germany's position. Domestically, this allowed both the Economy Minister and the Environment Minister to play to political bases. For example, Economy Minister Michael Glos argued that the European Commission should not "dictate the rules to [the German people]" while Environment Minister Sigmar Gabriel called the ETS proposals "very balanced" yet still contended that the permits be freely allocated to heavy industry (Euractiv 2008). In this case, the political considerations given to German industry, i.e. that allocations be freely allocated, prevailed over the more economically efficient auctioning option.

Of course it is only logical that Germany had a strong interest in promoting the competitiveness of its industries. This did not mean, however, that its sole intent was to weaken EU-level policies in the face of its already strong domestic policies. In fact, generally the opposite is true. In order to protect its interests, Germany sought to ensure that all member states, and thus all industrial players across the common market, were subject to a similar legislative playing field. In other words, if Germany was going to take climate change seriously, and invest in the technologies and infrastructure necessary to address it, it wanted to ensure that other countries were doing the same. Without German leadership, the European Commission “would hardly have dared to propose” the revised ETS and Renewables Directive that it put forward in 2008 (Hey 2010, 211). In conforming to Schmidt’s theory of EU-Member relations, the German government was able to shape EU policy output in a way that played to competing environmental and industrial political interests domestically by enacting a cap-and-trade system designed to address global warming while still protecting German business interests.

To highlight one example of this, Germany pushed strongly to restrict regulations on the automobile sector. As one commentator puts it, “I have rarely observed such a furious, hostile, and unified response from nearly all quarters of the German political spectrum, including most mass media, when the Commission proposal was published in late 2007” (Hey 2010, 215). In this sense, Germany became the leading “political” actor at the EU level, serving as a sounding board for domestic industrial interests. As a result, a portion of the Renewables Directive calling for a twenty percent increase in automobile energy efficiency was altered to accommodate industry concerns. The final product “was watered down considerably,” tying efficiency metrics to a sliding scale that significantly benefited German luxury car manufacturers (Hey 2010, 225). This preference again highlights the delicate balance faced by regulators charged with promoting renewable energy while at the same time ensuring industrial competitiveness.

This is not to say German-EU interaction has always flowed from the bottom up. While, by definition, directives like 2009/28/EC and the directives making up the ETS are designed to be flexible, Germany still faces pressure from the EU Commission to follow policies in line with broader EU goals. EU Energy Commissioner Gunther Oettinger has publicly said as much, noting that he “expects the German government will closely coordinate its actions with the EU and its neighboring countries. It must not go it alone,” adding that “Germany won’t be able to carry out [its] energy turnaround without its neighbors” (Pauly and Schult 2012). While the

policy outcomes of this constantly increasing energy integration remain to be seen, the ability of the German government to act unilaterally in promoting policy outcomes it deems desirable will likely be constrained in the future.

Although political interests have undoubtedly shaped renewable policies, normative issues within Germany also played a role in shaping policy outcomes. As argued above, when it comes to renewable energy policy, Germany has been a leader. Rather than be constrained by the EU, Germany has been successful in both controlling EU policy outputs, while at the same time enhancing its own position in the international community. This enhancement would not be possible without the larger climate policy framework enacted by the EU. As Sebastian Oberthur and Marc Pallemarts (2010, 46) note in their analysis of the EU ETS, in Europe “progressive climate policies received additional support because they could serve to re-legitimize European integration more broadly and provided a suitable arena to strengthen the EU’s role on the world scene and demonstrate its commitment to multilateralism.” This was especially relevant in Germany, which held the European Council Presidency during 2007 and oversaw the passage of the Renewables Directive. Thus, rather than being pulled along by EU targets, Germany used the EU as a legitimation mechanism to reinforce its existing policies, and to promote similar adoptions regionally to ensure a level playing field.

Some democratic theorists speak of “symbolic policy,” a term which has been applied to German climate policy (Hey 2010, 217). This is a way of cheating the public by enacting superficial policies that appear to take action on a policy issue, while instead pursuing an alternative agenda. While even a basic analysis of the StrEG and EEG will show that Germany has pursued more than “symbolic” goals, the argument is not without merit. Germany actively shaped the ETS and Renewables Directive to ensure that its policy goals could be met on domestic terms. Thus, policymakers at the EU, with direct ties to a skeptical Economics Ministry, could pursue less ambitious policy objectives at the EU level while at the same time taking a “leading” role in the international climate change regime. The result is that the Renewables Directive allowed for important exemptions regarding automobile fuel efficiency, while ETS permits remained freely allocated. Thus unlike the California case, where renewable leadership was constrained by the federal government, German policymakers could utilize the weak federal structures of the European Union to accommodate their preferred policy outcomes.

Implications of the German Case

The German experience highlights the convergence of both endogenous political factors (i.e. a strong environmental movement, a corporatist political culture, proportional representation) and exogenous factors (i.e. the collapse of the Soviet Union, volatile energy prices). These factors allowed an alliance of influential proponents to shape the policy process, while competing interests focused on reunification and protecting market share in the face of European Community pressures. When Germany's initial FIT model failed to promote additional renewable capacity in the late 1990s, the resulting debate surrounding the implementation of the EEG focused on altering StrEG and there was little consideration of policy alternatives. Thus a path dependency laid down by the renewable energy lobby in the early 1990s institutionalized this model in Germany, serving to focus the debate around FIT remuneration levels, and not around the merits of a FIT policy mechanism more generally.

Furthermore, the role of the EU in directly shaping German renewable energy policy is limited. Instead, the relationship has largely been reversed, with the EU leaning on German leadership in its pursuit of modern energy and climate policies. During the 2000s, this relationship worked relatively well. The German government could pursue aggressive renewable energy targets at the EU level, while at the same time using its influence within the EU to ensure favorable policies to protect its competitiveness across the common market. In essence, Germany was able to lead from behind, legitimizing its domestic policies at the EU level without threatening its economic interests at a supranational level partially beyond its control.

Yet going forward, this is likely to pose the biggest threat to German renewable energy policy. This paper argues that, historically, policy preferences have spread mostly one way: from the Länder to the federal government to the EU. But this is not an institutional requirement. As more powers flow from the state to the EU level (either through new areas of competency, or through expansion of qualified majority voting), German influence on the policymaking process could potentially be reduced.

A more likely scenario is that Germany could fail to meet EU policy requirements outlined in existing or future directives. For example, though the German government expects to exceed the 18% threshold required of it by the Renewables Directive (NAP 2009), reaching these targets will be challenging. This is especially true following the 2011 decision to phase out nuclear power, which will require an "unprecedented" shift in the scale of renewable generation

in Germany (Jungjohann and Rickerson 2011). If current trends are any indication Germany will be able to meet its targets, but it remains to be seen exactly what the result will be if a member country fails to meet the energy requirements outlined in the Renewables Directive.

Because implementation of German policy occurs at the Länder level, Germany is in a particularly difficult situation should this occur. Implementation of EU environmental policy has traditionally been problematic for Germany, as the federal government relies on the Länder for successful compliance (Kelemen 2004, 86-87). Just how the Commission goes about dealing with a situation such as Germany failing to meet the Renewables Directive will go a long way in determining how successful the EU and Germany as a member state are in reaching their renewable energy goals. For example, would infringement proceedings be initiated against a member country if they do not meet their targets? Would it depend on the reason for not meeting them? And if directed to the European Court of Justice, would fines be issued in a manner significant enough to ensure compliance?

The possibility of failure affects not only how the EU will react, but could also undermine the legitimacy of German renewable energy policies. Particularly in light of the ongoing economic crisis in Europe, the EEG is an easily recognizable scapegoat for high energy prices (Deutch Bank 2012). So far, Germans have been willing to tolerate slightly higher energy prices if it means further promotion of a domestic renewable energy industry and the perception that Germans are doing their part to address global warming. Failure to meet renewable energy targets, however, would no doubt bring into question the validity of the EEG. Furthermore, a perceived policy failure would dampen the ambitiousness, and tolerance for higher prices, of future German renewable energy policies.

Conclusion

Renewable energy policy is sure to continue evolving over the coming decades. Moving beyond policy differences to examine the way actors pursue policy goals within unique institutional structures provides a useful framework for comparative analysis. Both Germany and California have enacted aggressive policies in pursuit of their renewable energy goals. While it might seem, given the similar federal systems within which they operate, that these policies should have evolved in a similar manner, this is far from the case. A comparative approach demonstrates how in California policymakers were forced to incorporate interest group concerns

to eventually arrive at acceptable policy outcomes. As *AIR v. CARB* demonstrates, this was not always a smooth process. The federal government also played a crucial role in limiting the options available to California, while at the same time allowing the state to experiment with aggressive policies. As climate change climbs up the political agenda, California's unique leadership position within the U.S. federal system places it in a desirable position moving forward. California has a long history of driving change at the federal level (Rabe, 2009). Thus, if the history of U.S. environmental policymaking is any indication, the increased interest in renewable energy policies at the state level should eventually force more consolidated change at the federal level. Again if prior history is any indication, it would appear reasonable to expect future federal policies to build off of the model established by California.

The German case reveals how organized interests were able to exploit policy windows to implement FIT policies favorable to renewable energy interests. As an influential member of the EU, Germany has been able to influence the course of the international climate change agenda while protecting domestic industrial competitiveness. On the other hand, the top-down model used in Germany is likely to face increased challenges moving forward. Because environmental and energy policy is increasingly percolating to the EU level, the future of the EEG and other policies face the same problems that underscore all EU decisions: bureaucratization, implementation challenges, and a tendency toward lowest-common-denominator policies. Though both Californian and German citizens are paying an economic price for these policies, there seems to be a general acceptance of their legitimacy. The strength of California's bottom-up approach is that it positions the state to lead a developing nationwide interest in climate change and renewable energy policy. Germany's position is more tenuous. FITs, especially for solar, are proving to be costly, and Germany's influence in directing EU policymaking may not always be a constant going forward.

Both Germany and California are often presented as models of successful and effective renewable energy policy implementation. While both systems have spurred remarkable amounts of renewable energy generation, it is crucial to understand the frameworks within which important actors shape these policies, not only throughout their history, but also into the future. This is an area ripe for future research. The way actors shape policy outcomes, and the political frameworks within which they operate all make up a larger and underlying political culture crucial to those interested in the implications of policy experimentation and learning. While

existing research tends to focus on economic analysis of policy models, a deeper understanding of these political cultures could serve to redefine the debate surrounding what characterizes a successful model.

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