Political Promotion of Renewable Energy in the United States and Germany

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The Political Promotion of Renewable Energy in the United States and Germany: Motives and Consequences

At a time when popular uprisings against oppressive regimes in North Africa let oil prices soar and stir a debate in developed nations about the ethics of resource trade with brutal dictators, and while melting reactor cores in Japan make the world hold its breath and rethink the possible risks and dangers of nuclear power, the question of where we will get our energy from in the future seems more pressing than ever before. Renewable energy sources provide a potentially attractive solution to this question. However, even until today, only a tiny fraction of the world's energy supply is actually coming from these sources (IEA 2010). Is it possible to increase this small share by political means? What are the factors that could motivate governments to pursue policies promoting renewable energy sources? To what extent are those policies pursued in practice, and what results have they yielded so far?

It is the purpose of this essay to investigate these questions. This will be done in four steps. First, a general rationale for the promotion of renewable energy sources will be developed as a conceptual basis. Second, policies promoting renewable energy sources across two national contexts will be outlined. Third, the outcomes of these policies will be compared and evaluated. Fourth, the findings of the case study analysis will be explained by differences in the composition of the general rationale in each national context. The United States and Germany have been chosen as case studies for this essay. Both countries are highly developed and belong to the most important economic and political actors in the world. Nevertheless, their records concerning renewable energy promotion policies diverge strongly, which can provide useful insights. This essay will argue that while a general rationale for the promotion of policies promoting renewable energy sources can be identified, different degrees of emphasis are placed on distinctive dimensions of this rationale in diverse national contexts, which leads to differing policy outcomes and disparities in the development of renewable energy technology.

Why Governments Promote Renewable Energy

Any policy aimed at promoting a certain way of producing energy constitutes a political interference in the energy market and will inevitably cost the government pursuing it time, effort and money. Consequently, the first question that has to be asked is why any government should be willing to do this. Dieter Helm (2007) answers this question using the concept of what he calls the *New Energy Paradigm*. He argues that energy policy has witnessed a paradigm shift away from liberalization and privatization towards a higher degree of political regulation. Instead of market forces and prices, the modes of energy production and the quantities of particular energy sources came into the focus of political attention. Helm identifies two main factors that explain this paradigm shift. First, there are rising concerns over the security of energy supplies and, second, there is increased awareness about the environmental impact of certain energy sources.

Renewables seem to offer an appealing solution to both of these problems. Renewable energy sources are theoretically able to provide vast amounts of energy irrespective of fossil fuel reserves and will not be depleted as

long as the sun keeps shining on our planet. In most regions of the world, at least one renewable energy source is abundantly available. At the same time, the environmental impact of technologies using renewable energy sources is, in most cases, extremely small compared to other methods of energy production (Boyle 2004). Furthermore, large-scale energy production from renewable sources is already, today, technologically possible. Contrary to claims frequently brought forward by opponents of renewable energy, evidence clearly shows that there are no significant technological barriers in the way, as long as the political, societal and economic circumstances are favourable (Boyle 2007; Milborrow 2007; Neuhoff 2007).

For these reasons, Helm's (2007) idea of the *New Energy Paradigm* provides a useful conceptual basis for the development of a general rationale behind policies promoting renewable energy sources. The two driving factors he outlines – supply security and environmental protection – can be seen as the two main dimensions of this rationale. However, a closer look at the relevant literature shows that some further differentiation is necessary. This is because two different aspects to each dimension are discussed by different scholars, which introduces overall four dimensions with differing implications for the promotion of renewable energy. The first two dimensions are related to supply security, whereas, the other two are connected to environmental protection.

The first dimension is the desire to diversify energy supply in order to avoid an excessive dependence on one particular energy source and to cushion the effects of possible short-term volatilities in the market (Council on Foreign Relations 2006; Pollack 2008). The second dimension is the need to prepare for an eventual depletion of fossil fuel resources (Deffreys 2006; Heinberg 2005). Both of these first two dimensions have the potential to boost the production of energy from renewable sources. However, the potential impact of the second dimension, although possibly slower, is likely to be more significant, due to the fact that it lets renewable energy sources appear as a necessary alternative on the long-term, rather than just as a desirable short-term supplement. The third dimension is the perceived threat of anthropogenic global warming and the resulting pressure to reduce greenhouse gas emissions (Giddens 2009). This dimension potentially supersedes the second one, since it requires a shift away from fossil fuels even before their eventual depletion. The fourth dimension is a possible aversion against nuclear energy as an alternative to renewables because of environmental concerns (Elliott 2007a). This dimension has a mutually reinforcing relationship with the third one: obviously the absence of the fourth dimension would weaken the impact of the third, since nuclear energy could provide a low-carbon alternative to renewables. On the other hand, the attractiveness of fossil fuels as an alternative to nuclear power would increase significantly in comparison to renewables if global warming concerns were absent. Finally, a fifth dimension, which does not originate in Helm's (2007) framework, can be added to the rationale: the use of renewables energy sources and the development of related technologies can be seen as a valuable future market, the early promotion of which might give the respective industry a head start and lead to significant economic gains in the future (BMU 2010; Wei et al. 2010).

However, it has to be kept in mind that the exact composition of this five-dimensional general rationale is likely to depend heavily on the context of the individual case. Not every dimension will be present to the same extent in every political environment, which, in turn, may affect policy outcomes. The cases of political support for electricity production from renewable sources in Germany and the US are excellent examples to illustrate this.

The Promotion of Renewable Energy Sources: Tools and Policies

Germany

There is wide agreement in the relevant literature that in the German case the Renewable Energy Feed-In Tariffs (REFIT) system constitutes the most important policy tool to promote electricity production from renewable sources. The system was first introduced with the Feed-In-Tariff Act in 1990. Since then, the relevant regulations have been revised and adjusted several times, but the basic principle has remained unchanged: the REFIT system sets a fixed price for energy coming from renewable sources. This fixed price differs for each source depending on the costs of production. Utilities are required to buy all electricity produced from renewable sources at the fixed price. Additional costs are partly offset by government compensation payments and partly paid for by the consumers through higher electricity prices (Büsgen and Dürrschmidt 2009; Jacobsson and Lauber 2006; Laird and Stefes 2009).

However, in spite of the REFIT system's undisputed significance, attention has to be paid to the fact that it is not the only policy tool promoting electricity production from renewable sources in Germany. Already in the late 1970s, long before the REFIT system was established, the German government began to invest money in renewable energy research and development programs and still does so today (Jacobsson and Lauber 2006, pp. 262-263, BMU 2011). Energy from renewable sources is also exempt from the electricity tax (Cansino et al. 2010, p. 6004). Furthermore, the government directly subsidises investments in renewable energy sources, as for example through the so-called 100 000 roofs program for solar cells (Jacobsson and Lauber 2006, p. 267). The described policy tools are applied on a federal scale and have developed with a remarkable continuity and consistency over the past 25 years. Government support for electricity production from renewable energy sources has increased steadily since the mid-1980s and has not witnessed major disruptions in spite of changing political constellations (Jacobsson and Lauber 2006; Laird and Stefes 2009).

The United States

Similar to the German case, the promotion of renewable energy sources in the United States began in the late 1970s in the aftermath of the first oil crisis. In 1978, the *Public Utilities Regulatory Policy Act* (PURPA) established a rudimentary version of a REFIT system. However, the fixed price was based on the predicted avoided cost of fossil fuels, which made new PURPA contracts unattractive when fears of ever-rising oil prices started to disappear in the 1980s. Government investment in research and development peaked in 1981 and began a significant decline afterwards. Tax incentives were established but largely rescinded again in the early 1990s (Martinot et al. 2005). The remaining tax incentives and investments in research and development became subject to a constant political battle in Congress over their renewal (Lair and Stefes 2009, p. 2622).

On the federal level, this situation has not changed significantly until today. The Energy Policy Act of 2005 was mainly focussed on the domestic exploration of oil and gas, and the passage of the Energy Independence and Security Act in 2007 was preceded by a drawn-out parliamentary struggle that led to the dismissal of the only passages that would have brought about significant change to the federal promotion of renewable Energy sources (Bang 2010). So far, the American Recovery and Reinvestment Act of 2009 has been the only successful legislative action in the field under the Obama administration. A small but not insignificant share of the gigantic amount of money spent to contravene the recession was directed at the promotion of renewable energy sources through direct investments, subsidies and tax exemptions. First successes can be observed (Bolinger et al. 2010), but it is debated as to whether this was more than just a one-time investment.

Regardless of the development of federal policy in the field, many states began to introduce a variety measures to promote electricity production from renewable sources in the late 1990s. These measures, once again, included various forms of investments, subsidies and tax exemptions, but in many cases also the introduction of quota systems (Martinot et al. 2005). Unlike REFIT, quota systems do not determine a price, but require utilities to obtain a certain percentage of their electricity from renewable sources. They are generally seen as the most significant policy tool promoting renewable energies in the US context, although contradicting studies exist regarding their effectiveness (Carley 2009; Yin and Powers 2010). REFIT systems are still rare in the United States. However, since 2008 four states have introduced systems of this kind (REN21 2010, pp. 37, 61). It remains to be seen whether this trend will continue and what results it will yield.

In summary, the US approach to policies promoting electricity production from renewable energy sources can be described as rather inconsistent and fragmented in both time and space. Political support for renewable energy has been subject to great variations over the last thirty years, and today this support mainly depends on the policies of each individual state, while the federal government is playing a rather passive role.

Policies and Outcomes Compared

The analysis carried out in the previous section reveals considerable differences between policies aimed at promoting electricity production from renewable energy sources in Germany and the US. Policy development in Germany was characterised by consistency, continuity, consensus and comprehensive action, with the federal

government being the central actor. In contrast, fragmentation, fluctuation, controversy and foot-dragging were the characteristics of the same development in the US. As a consequence, Germany was able to use a variety of political tools to promote electricity production from renewable sources across the whole of the country. The most important one of these tools, the REFIT system, disappeared from the US context very early in the process and only witnessed a partial revival in recent years, although there seems to be wide agreement that it is more effective than the quota systems prevalent in those parts of the US that actually promote electricity production from renewable energy sources (Büsgen and Dürrschmidt 2009; Elliott 2007b; Hvelplund 2005; Laird and Stefes 2009; Mitchell 2008).

Policy outcomes in both national contexts mirror the revealed differences. Germany beats the US on nearly all accounts. The percentage of overall electricity production in 2009 coming form renewable sources excluding hydropower is significantly higher in Germany (13,2%) than in the US (3,9%), and so are the growth rates for wind, photovoltaic and biomass capacity. The total photovoltaic capacity in Germany is four times larger than in the US. As far as wind power and biomass are concerned, Germany's capacity reaches almost half the capacity of the US (IEA 2010, pp. 54, 212, 422).

However, even the advance of the US in terms of total biomass and wind power capacity is totally relativized if some further comparisons are made: The surface area of the US is almost 27 times larger than Germany's (UN, 2011a). The GDP of the US has nearly four times the size of the German GDP (UN 2011b). The total amount of electricity produced in the US is almost seven times as high as the amount of electricity produced in Germany (IEA, 2011a; IEA 2011b). Lastly, US CO2 emissions also outnumber German emissions by more than the factor seven (UN 2011c).If these figures are taken into account, it becomes clear that Germany clearly outpaced the US in terms of the promotion of electricity generation from renewable resources.

Reasons for Difference

So why has the US not been able to pursue policies promoting electricity generation from renewable sources with the same stringency and continuity as Germany, which might have prevented the shortfall observed today, in terms of policy outcomes? The answer to this question lies in the rationales behind the policies in each country. These rationales differ significantly between both cases due to the fact that the five dimensions outlined in the beginning of this essay are developed to very different degrees in each political context.

In the case of Germany, the issue of energy security has not occupied a very prominent place on the political agenda (Duffield 2009). However, regarding the potential dangers of human induced climate change, consensus across the whole political spectrum was reached very early, and a high priority has been given too the issue (Jaggard 2007, pp. 21-38). Furthermore, the catastrophe of Chernobyl in 1986 had an enduring effect on public opinion and policy-makers, greatly reducing the attractiveness of nuclear power (Jacobsson and Lauber 2006; Stefes 2010). Lastly, the renewable energy industry is recognised today as a potential driver for the German economy (BMU 2010).

In contrast, "energy security ranks as a top agenda issue in US politics" (Bang 2010, p. 1645). However, the developments in US policy over the last decades indicate that the issue is mainly seen in a short-term supply security context. In times when oil prices were low and there was no conflict endangering supplies at hand, support for renewable energies dwindled (Laird and Stefes 2009). A serious, coherent attempt to prepare for the eventual depletion of fossil fuel reserves through the promotion of renewable energy is not evident in the US context. At the same time, consensus on the existence and implications of anthropogenic global warming in the US has never reached German levels, with a significant number of high-level political actors continuously claiming that there is no need for any action at all. The refusal of former President George W. Bush to ratify the Kyoto Protocol is the most notorious example in this context and any visit to the website of the Republican minority in the Senate Committee on Environment and Public Works illustrates the scope of the controversy (US Senate 2011). Nuclear power has been controversial in the US since the Three Mile Island incident of 1979 (Laird and Stefes 2009, p. 2621), but aversion against the technology does not reach German levels, as plans for a comprehensive revival of nuclear power generation brought forward under the second Bush administration illustrate (Bang 2010, p. 1651). Finally, there is no evidence for political intentions to promote the US renewables industry because of the hope for potential future benefits to the economy.

The causes of these differences between the policy rationales in each national context can be traced back to four different factors. First, there are the institutional peculiarities of the political system in the US. The complicated interplay of power between the president and both chambers of congress is defined as a major obstacle in the way towards efficient policy-making in the field. The president's veto power and the qualified majority needed to overcome a filibuster in the Senate create the need for a broad consensus and give comparatively small groups of actors significant leverage to obstruct legislative processes (Bang 2010; Skodvin 2010). Furthermore, a strong federalist tradition tends to create further resistance to regulation attempts by the central government and promotes the fragmentation and diversification of policies (McKay 2001, pp. 59-77). Institutional obstacles of this kind can also be found in the German system, but to a far smaller extent (Sontheimer and Bleek 1999). As a consequence, the initiation of large-scale, long-term policy projects faces more obstacles in the US than in the German political system.

Second, there is generally a stronger environmentalist movement in Germany compared to the US. As Kelemen and Vogel (2010) illustrate, environmentalism has lost support in US society since the 1970s, whereas on the other hand, it has gained significant power in Europe. According to them, the US and Europe have swapped places as key environmental actors in the world for this reason. Germany's position in this regard is particularly prominent, even within Europe. An obvious indicator for this is the political significance of the Green Party. The Greens have not only continuously pushed environmental issues onto the political agenda, but have also directly shaped policy as part of the federal government. From 1998 until 2005, the Federal Ministry of the Environment was run by a member of the Green Party, which gave environmentalist ideas access to the highest circles of government (Laird and Stefes 2009, pp. 2627-2628).

Third, there is a strong influence of the fossil fuel industry in US politics and society. Lobbying campaigns against any government action to fight global warming have been aggressive, extensive, and well organised in the US (Gelbspan 1997, 2004; UCS 2007). In the German context, anti-renewables lobbying was present as well, but the utilities failed to launch an effective campaign in the early stages of renewable energy promotion (Stefes 2009, p. 155). Subsequently, a strong pro-renewables coalition established itself in Germany, which successfully counterweighed the efforts of those opposed to electricity production from renewable energy sources (Jacobsson and Lauber 2006, Laird and Stefes 2009, Szarka 2010).

Fourth, there are differences in political and societal culture. Traditionally, government intervention and regulation is seen with a larger degree of scepticism in the US than in Germany. Neoliberal ideas and trust in the market are far more deeply engrained in society and the political system (McKay 2001, Prasad 2006; Sontheimer and Bleek 1999). Accordingly, policies that contravene market forces are much harder to implement in the US context. Sovacool (2009) even goes as far as claiming that the neoliberal consumer culture of US society is inherently hostile to issues of sustainability.

Due to these four factors, the rationales for policies promoting renewable energy sources differ strongly in the US-American and the German case. These differences, in turn, have led to differences in policy tools and outcomes. Going back to Helm's (2007) concept of the *New Energy Paradigm*, it can be said that Germany has embraced the paradigm shift to a far larger extent than the US. Driven by a strong emphasis on the fight against global warming, in combination with an aversion against nuclear power, Germany has moved a lot further away from market liberalism in the energy sector and a lot closer towards the political management of energy sources than has the US, where environmental objectives have been weaker and short-term energy security concerns present the main driving factor.

Conclusion

This essay has investigated the question of why governments pursue policies that promote renewable energy sources. Based on Dieter Helm's concept of the *New Energy Paradigm,* a five-dimensional general rationale has been developed, one in which governments promote renewable energy sources in order to:

1. Reduce their dependence on fossil fuel imports and increase energy security through the diversification of energy sources
2. Prepare for the eventual depletion of fossil fuels

3. Fight anthropogenic climate change
4. Avoid the environmental risks of the use of nuclear power
5. Boost the economy by providing start-up aid for the renewable energy industry,

Whereas the second dimension is likely to have a stronger impact than the first, the third dimension is likely to supersede the second, and the third dimension is likely to have a mutually reinforcing relationship with the fourth.

Furthermore, this essay has analysed the interrelation of this rationale with policy tools and outcomes in the national contexts of the United States and Germany. It has been shown that policies promoting electricity production from renewable energy sources in Germany have been more continuous, homogenous and comprehensive than in the US. This has had significant effects on policy outcomes, so that, in terms of the importance of renewable energy for national electricity production, Germany has left the US far behind. Differences in the composition of the rationale within each national context provide an explanation for this divergence. In the German case, the last three dimensions of the general rationale are far more prominent than in the US, where most emphasis lies on the first dimension. These differences in the rationale, in turn, are explained by the particularities of the political system in the US, the comparative strength of the green movement in Germany, the efficiency of anti-environmentalist lobbying in the US, and differences in political and societal culture.

In summary, this essay has shown that a general rationale for policies promoting renewable energy sources can be identified, but that the exact composition of this rationale is subject to considerable variations across different national contexts, which, again, has far-reaching implications for policy outcomes. As far as the two examples brought forward in this essay are concerned, the German rationale has made the country adopt the idea of the *New Energy Paradigm* to a far greater extent than what has been done in the US. As a consequence, Germany seems to be on a better road towards an energy future based on renewable sources. However, one must not forget that even Germany will need to go down this road a long way further in order to make its future a sustainable one.

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