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From feed-in tariffs to greater competition

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Introduction

As an industrialized nation, Germany has attracted considerable attention for its efforts to expand renewable energy and abandon fossil fuels, while saying farewell to nuclear energy. This massive challenge, known as the *Energiewende*, is closely linked to the *Renewables Energy Sources Act* (*Erneuerbare-Energien-Gesetz*; EEG) and its rules for a specific renewables support design, the feed-in tariff instrument. Administered by the government, it is characterized by technology steering, where different technologies are granted different fixed prices or premiums when fed into the grid. As one of the first European countries to introduce feed-in tariffs in the 1990s, Germany soon became a feed-in champion, showing good results in deployment of renewables. Other countries followed suit, and feed-in tariffs became the most popular support scheme for renewable energy in Europe (Boasson 2021a, this book).

Nevertheless, two and a half decades later, Germany introduced major changes to its approach to promoting renewable electricity, largely breaking with its feed-in tradition. It continued with technology steering, but now based on competitive tendering. Since 2017 only small projects still receive traditional feed-in support: larger producers typically have to compete for support in auctions. This move towards greater competition was largely in line with the approach favoured by the European Commission (the Commission). That in itself is interesting, as Germany is known as an important veto player at the supranational level when it comes to harmonization of renewable energy policies (Vogelpohl et al. 2017). Ever since the late 1990s, the Commission has advocated a shift towards more ‘market-oriented’ mechanisms and has tried to get Germany to change its feed-in scheme (EU COM 2014: 7). However, Germany has continuously resisted pressures to introduce greater competition.

Having served as a feed-in role model for other countries, and having gained extensive attention for its successful support of renewable energy, why, then, did Germany change its renewables approach towards greater competition? Is this a radical break with the feed-in tradition, or is it rather a path-dependent development of a long tradition of technology steering? Have the changes to the German feed-in been introduced primarily due to pressures in the European environment

or conditions in the political or organizational field, or due to the relationship between them?

In seeking to explain the development of Germany's support policies for renewable electricity, it is of special interest to explore the influence of the EU, given the Commission's advocacy in trying to get Germany to introduce greater competition (Commission 2014: 7). According to the multi-field framework, the effect of the European environment on national renewables support is greater when the Commission exerts coercive pressure and peer pressure among the member states is particularly strong (Boasson 2021a, 2021b, this book). Several scholars have assumed that the EU is behind the changes in the German support scheme, with its shift from feed-in tariffs and increasingly favouring auctions after 2014 (Beer-mann and Tews 2016; Tews 2015). In this chapter, we assess how the EU level and national factors have interacted, asking: *What has been the role of the supra-national level in this process, and how prominent has it been?*

In studying the historical development of the German support scheme for renewable electricity, we look for explanations also in the organizational and political fields (see Boasson 2021b, this book). The multi-field framework assumes that the national organizational field will be particularly influential at times when this field is segmented, with a few big, closely coordinated commercial and private organizations, dominated by one way of thinking. On the one hand, the corporatist characteristics of the German political system and its coordinated market economy tradition would lead us to expect that the organizational field has been important for the policy development (Hall and Soskice 2001). On the other hand, studies of German renewables policies (see e.g. Kungl and Geels 2016) have shown that the organizational field has been characterized by deep conflicts between the traditional electricity industry and renewables actors. Has this undermined the importance of the organizational field?

Lastly, the multi-field framework holds that the effect of the domestic political field on policy development will be stronger when the legislative assembly has formal decision-making power and renewables policy is highly politicized. In Germany, renewable energy has been politically salient for decades. Does this mean that the German political field has been the major driver of the developments and changes in the renewables scheme over time?

We begin by describing the key characteristics of the German support mix – the rules for granting support in the EEG.

Technology-specific renewables support

By 2016, Germany had a technology-specific renewables support mix, which provides different variants of support depending on the size of projects. There are three key types of support (RES Legal 2019). First, large-scale projects must participate in tendering procedures to receive support; the tenders set the level of this support. This is the rule for onshore and offshore wind projects from 750 kW and upwards, solar projects from 750 kW and upwards (as of 1 January 2017), biomass plants from 150 kW and upwards as well as existing biomass plants. Second, operators of renewable energy plants exceeding installed capacity of 100 kW

which are not obliged to take part in the tendering procedures are supported by a market premium for electricity they sell directly. The amount of this market premium is calculated every month. Third, power plants up to 100 kW are eligible for a feed-in tariff, which the grid operator pays to the plant operators. The tariff amount is set by law and is usually paid over a 20-year period. Plant operators may opt for the market premium instead. This offers higher remuneration and simplifies the reporting procedures for system operators. In exceptional cases, plants with capacity higher than 100 kW can be supported through the feed-in tariff.

In 2014, Germany started to award most large renewable plant projects a market premium – an add-on to the electricity price on the spot market EPEX. This was calculated on the basis of a technology-specific reference tariff (RES Legal 2019).¹ Also in 2014 the government introduced a tendering process for freestanding photovoltaics installations as a pilot project; the first auctions were held in 2015. The aim was to test the viability of auctioning to determine future support levels (Bundesregierung 2013: 54). In 2016, the government transposed the auctioning system for various renewable technologies (photovoltaics, onshore wind, offshore wind, biomass) into law, which was enforced in January 2017. The auction design is tailored for each of the different technologies; hence, it continues to be technology-specific, as was also the feed-in scheme. However, through a pilot project running from 2018 to 2020, Germany also has some auctions that are common for wind and solar (Ministry for Economic Affairs 2017).

The German government has adopted technology-specific growth corridors, specifying annual capacity targets for various technologies (Apunn 2016). In line with the growth corridor, the government auctions off a specified amount of capacity volume each year. Which renewables installations will be granted support are determined via competitive processes (Apunn 2016). The lowest bids are accepted until the volume of capacity auctioned is reached. A maximum price is set in advance. Under certain conditions, installations located in other EU member states may participate in the German auctions (5% of annual bidding capacity).

There are special rules for citizen energy projects (CEER 2018: 9). When competing in auctions, they enjoy benefits such as automatically receiving the highest feed-in tariff accepted in the tender, even if their own bid was lower. Further, with onshore wind, the procedures for citizen cooperatives are simpler and more transparent (Apunn 2016). However, this does not apply for wind farms with fewer than six turbines.

German support arrangements for renewables are the result of gradual changes since the 1990s. We now turn to how Germany has changed its approach, from being a feed-in champion to adopting greater competition.

Historical phases: leading while incrementally altering the support mix

Prior to 1999: the emergence of the German feed-in

The *Energiewende*, for which Germany became famous after 2010, has its roots in the historical conflict over nuclear energy policy. The adoption of the feed-in

tariffs in 1990, a central feature of the *Energiewende*, can be understood only in light of the growing resistance to nuclear energy. The first commercial nuclear reactor in Germany went on the grid in 1961, marking the beginning of the nuclear industrial business in West Germany (Kirchhof and Trischler 2018). Germany was heavily reliant on fossil fuel for electricity generation, so the oil crises of the 1970s hit Germany hard. Alternative energy sources became increasingly interesting. This provided an impetus for the national government to continue to search for new nuclear sites (Agora 2015) but met resistance from societal protest movements. Particularly famous are the Wyhl protests, where a small local community in southwestern Germany was able to halt nuclear plans through direct action and civil disobedience in the 1970s. The success of this community inspired nuclear opposition throughout the country (Morris and Jungjohann 2016). In 1980, several anti-nuclear activists wrote a publication about replacing fossil and nuclear by renewable energy and energy efficiency, introducing the term *Energiewende* (Krause et al. 1980). This concept has later been associated primarily with the transition since 2011.

The 1986 Chernobyl accident occurred just after a range of new nuclear reactors had been set in operation, increasing the nuclear share of German electricity production to over 20% (Statistisches Bundesamt 2019). Chernobyl was to change society's perceptions of nuclear risks: after the accident, 86% of Germans supported a nuclear phase-out (Hake et al. 2015: 536). It also triggered the establishment of the Federal Ministry for the Environment in 1986 (Lexikon der Nachhaltigkeit 2015), which was given responsibility for nuclear safety. Previously, environmental responsibility had been spread across several ministries, with the Federal Ministry for Economic Affairs in charge of energy matters.

Despite societal resistance, the conservative coalition government in power from 1982 to 1998, made up of the Christian Democratic Union (CDU), its Bavarian sister party the Christian Socialist Union (CSU) and the liberal Free Democratic Party (FDP), favoured nuclear power (Hake et al. 2015). After the Chernobyl accident, the Social Democrats (SPD) focused on phasing out nuclear power, although the party was divided on the issue. The Greens (*Bündnis 90/Die Grünen*), established in 1980 from the anti-nuclear movement, demanded the immediate suspension of all nuclear power plants in Germany.

Climate change was put on the agenda in 1987, when an Enquete Commission was created to address the issue. A broad consultative process that included leading MPs, prominent scientists and large industrial associations created a broad consensus for political action (Hatch 2007).

In 1988 the Federal Ministry for the Environment was given responsibility for the climate issue. Two years later the conservative government adopted Germany's first Climate Change Action Plan. The government supported nuclear energy and saw climate change as an opportunity to counterbalance the opposition to nuclear: nuclear energy produced no CO₂ emissions (Hatch 2007). However, the governing coalition of conservatives and liberals did not support CO₂ taxation or other tough climate measures (Hatch 2007). Concerns about climate change threatened further division of the SPD, which had strong ties to the powerful coal

interests. The party became more united in its rejection of nuclear power after Chernobyl, but the issue of global warming gave rise to questions of the feasibility of a nuclear phase-out. The SPD struggled for years to reconcile environmental, anti-nuclear and pro-coal factions within the party (Hatch 2007). The FDP and most conservatives viewed renewables as a complementary energy source (Jacobsson and Lauber 2006).

Large utilities reliant on coal and nuclear generation dominated the electricity supply system. These utilities deemed renewable energy uneconomic (Jacobsson and Lauber 2006). They benefitted from exclusive supply contracts with the municipalities and established regional monopolies, and they could refuse feed-in to their grid by local renewable energy producers (Jacobsson and Lauber 2006). With German reunification in 1990, the utilities sought to position themselves in the restructuring of the East German power sector, where six nuclear power plants closed down and coal power plants were modernized (Agora 2015).

Under these circumstances, two backbenchers, representing the CSU and the Green Party, proposed the feed-in tariff, referring to a successful Danish scheme introduced a few years earlier (Zeit Online 2006). While the CSU representative was concerned with the situation of small hydropower plant-owners in southern Germany, who got a very low price for their electricity to the utilities, the Green representative called for investments in new renewable energy sources. The two managed to gain support from other MPs who were interested in renewable energies, and eventually from all parliamentary factions. The *Grid Feed-In Law* (*Stromeinspeisungsgesetz, StromEinspG*) was adopted in October 1990, and entered into force in the following year (Stefes 2010). The *Bundesrat* (the legislative body representing the 16 federated states of Germany) also approved of the support scheme. The German states had previously supported renewables in various ways, and the new law would reduce their financial responsibilities. The utilities failed to mobilize against this new legislation: focusing on the East German energy sector, they had underestimated the future economic and political consequences of a feed-in tariff.

The Federal Ministry for the Environment, which led the government's work on climate change, supported the new law and received strong political backing from the CDU Chancellor. In comparison, the Ministry of Economic Affairs played less of a role in the discussions (Stefes 2010). Eventually, however, the slowdown in economic growth and the mounting costs of reunification strengthened the position of the Federal Ministry for Economic Affairs (Hatch 2007).

The Grid Feed-In Law obliged power companies to purchase electricity from producers of renewable electricity, granting to those who fed into the system a compensation of at least 90% of the average cost of private customers. The law built on the approach of the *ordo-liberal* Freiburg School that stressed the importance of governmental intervention to foster competition and avoid monopolies (Eucken 1990; Morris and Jungjohann 2016). Moreover, the enthusiasts behind the first small renewables plants underlined that energy production should be distributed, democratic and foster a broad range of technologies (Jacobsson and Lauber 2006; Wassermann et al. 2015: 67).

The introduction of the Grid Feed-In Law created an incentive for small, new actors to invest in windpower. Eventually, a range of federal business organizations for renewable energy emerged (Schmid et al. 2016: 266). However, renewables did not fit the utilities' business models, and the law offered no incentives for them to invest in renewables, as corporations were excluded (Interview 5; StromEinspG 1990 §1.2; also EEG 2000 §2.1). In the mid-1990s the established utilities attempted a rollback of the Grid Feed-In Law. In 1996 the German Utilities Association sent a complaint to the Commission, which had asked Germany to reduce its feed-in rates (CJEU 2000, Articles 19–21; Jacobsson and Lauber 2006). The Federal Ministry for Economic Affairs supported the German Utilities Association, but metalworkers, farmers and various groups mobilized massive demonstrations against this proposed rollback. However, the Parliament decided that the distribution system operators (DSOs) could pass on their additional economic burden from buying electricity from renewables to the transmission system operators (TSOs) – and the feed-in rates remained (Boasson 2021a, this book).

Moreover, although the Commission's DG Competition had initially argued that Germany should decrease the rates, the Commission approved the law because the amount of the aid and its impact on electricity prices were minimal (Commission 2001). However, in 1998 the German court asked the Court of Justice of the EU (CJEU) about the interpretation of EU law related to the proceedings between the electricity supplier *PreussenElektra AG* and *Schleswig AG* (de Lovinfosse 2008). In this case, the supplier had refused to pay the DSO the extra costs incurred for buying renewables-produced electricity (Boasson 2021a, this book). The renewables energy feed-in tariff policy was challenged as being inappropriate state aid (Gawel and Strunz 2014). This marked the beginning of a long-lasting controversy between Germany and the Commission.

In the meantime, Germany had introduced a tax, imposed on electricity consumers as part of the law on the initiation of the ecological tax reform. The tax was incorporated into the basis for calculating the feed-in price. The Commission (2001) held that the increase in feed-in price was incompatible with the rules for state aid, but because the German government repealed the Grid Feed-In Law in 2000, the Commission closed the investigation.

The Grid Feed-In Law encouraged small, decentralized energy generation (individuals and citizen initiatives) and contributed to creating jobs and tax income. Broad participation led to widespread acceptance among the public and politicians. In 1998, the Green Party went to the polls with the motto, 'we want 100,000 roof-top photovoltaics' (Interview 8). The campaign was inspired by the Social Democrat Hermann Scheer, who, together with the Green politician Hans-Josef Fell, initiated the German feed-in tariff system. The topic became part of the coalition negotiations between the SPD and the Green Party, resulting in the first red-green coalition government under the leadership of Chancellor Gerhard Schröder (SPD) (Interview 8). A Green politician held the post of Minister of Environment from 1998 to 2005. A Social Democrat with close ties to the coal industry and its trade associations served as Minister of Economy from 1998 to 2002. However, one of the fathers of the law, Scheer, managed to break the opposition from the

coal interests in his party and form a coalition in favour of renewables, by proposing to make mine gas eligible for feed-in (see Morris and Jungjohann 2016: 213). This led to the introduction of a more generous feed-in tariff, described in the next section.

In summary, a societal protest movement against nuclear power managed to stop nuclear projects in the 1970s and gave rise to the Green Party, with its visions of a transition towards renewable energy. However, the CDU, CSU and FDP saw climate change as an opportunity to continue supporting nuclear power. The SPD had been divided on the issue but took an anti-nuclear stance after the Chernobyl accident. Further, after Chernobyl, the government established the Federal Ministry for the Environment, which played a major role in promoting Germany as a leader in fighting climate change. At this point, two backbenchers took the opportunity to promote the Grid Feed-In Law, which was implemented in 1991 and led to the rapid diffusion of wind turbines. When it became apparent that this law had greater effects on deployment of renewables than expected, the large utilities together with the Federal Ministry for Economic Affairs tried to get the law rescinded. However, the wind coalition had already gained considerable public and political clout. Then the Commission questioned the law as being illegal state aid, and the CJEU started its investigation of the *PreussenElektra* case.

2000–2004: renewables gain ground despite the Big Four's opposition

In 2000, the government replaced the Grid Feed-In Law with the Renewables Energy Sources Act (EEG). In the following years, investments in renewables grew exponentially (Wassermann et al. 2015: 68). This growth in investments of renewables occurred despite opposition from the large utilities.

The EEG provided a feed-in tariff not only for renewables but also for mine gas from coal mines. In contrast to its predecessor, the EEG differentiated to a larger extent among various renewable energy sources. Whereas the initial feed-in remuneration had been uniform across technologies, the EEG tariffs differentiated between energy technologies, capacity and location of the plant. Location of the plant as a criterion was introduced to ensure a profitability of wind turbines also in less windy regions, aimed at achieving a more equitable distribution of windpower plants all over the country (Ohlhorst 2015). The remuneration of each technology was based on scientific estimates of the production costs of various renewable energy sources (Mendonca 2007). As the costs of installing solar were particularly high, photovoltaic operators received the highest reimbursement.

The EEG set a target of increasing the share of electricity generated from renewable sources from 5% to 10% by 2010. Grid operators were required to prioritize renewable electricity into the grid, and renewable electricity producers would get a fixed rate of return over 20 years, ensuring predictability for the power producers. The rate would decrease every year, so that each year the level for new plants was reduced by a certain percentage. This combination of a fixed rate and an annual decrease in support 'has been of global importance for the

introduction of renewables and the development of such technology' by bringing the price down (Interview 8; see also Zeit Online 2006).

In order to adhere to the Commission's guidelines on national regional aid,² the government incorporated into the EEG a set of provisions on making an annual progress report of the status of costs and deployment of renewable energies (Mendonca 2007: 32). Making location a criterion for remuneration was also a way of complying with the guidelines on over-compensation: the government would avoid having to pay too-high compensation rates for wind energy (Mendonca 2007).

However, pressure against renewables grew. The CDU/CSU and the FDP opposed the introduction of the EEG – with few exceptions – as they regarded 'renewables growth targets [as] utterly illusory' (Gründinger 2015: 238). Moreover, as the new act would drive up electricity prices, the Federation of German Industry was concerned about German competitiveness, arguing that the law would create excessive burdens for the industry (Jacobsson and Lauber 2006). Similarly, the German Utilities Association criticized the law for imposing higher costs on consumers. The Federal Ministry for Economic Affairs supported such concerns, but its role was weakened as the second red-green coalition (October 2002–October 2005) shifted responsibility for renewable energy to the Federal Ministry for the Environment. Support for the Greens had increased since the last election, in contrast to the SPD, bolstering the Greens' ability to strengthen the standing of the feed-in approach at the cabinet table. As a result, the energy sector was spread over two 'hands', one in favour of renewable energy and feed-in tariffs and the other promoting the interests of the utilities and market-oriented support schemes (Interview 6). The ministerial transfer of responsibility for renewable energy brought greater awareness of renewable energy in the German governmental administration and strengthened the support for the feed-in tariff system (Bruns et al. 2009: 15).

This took place despite the increasing power of the utilities. Several energy companies merged at the turn of the millennium, eventually leading to the 'Big Four': E.ON, RWE, EnBW and Vattenfall. This was a result of Germany's accommodating the EU's first Electricity Directive (Kungl 2015). Together with the Federal Ministry for Economic Affairs, the Big Four spoke in favour of developing an electricity certificate scheme, preferably at the EU level (Fouquet and Johansson 2008). While the feed-in tariffs made possible the emergence of new renewable-energy firms (Kungl 2015), the Big Four were hardly interested in investing in renewables: specializing in coal and nuclear, they regarded the renewables rates of return as too low (Interviews 5 and 8).

Nuclear energy remained disputed. All the political parties agreed on the need for international action to combat international climate change, and for more rapid growth in renewables, but disagreed about the role of nuclear (Hake et al. 2015). A major election promise of the Greens had been to phase out nuclear power plants. The SPD was not particularly fond of nuclear, either, but had inner-party conflicts on how to implement a phase-out (ibid.). In 2000, after difficult negotiations, the red-green coalition and the energy utilities reached a 'nuclear

consensus' (Bundesregierung 2000), transposed into law two years later. This nuclear consensus gave Germany's remaining 19 nuclear power plants a lifetime of 32 years. The phase-out was a major political accomplishment, even though Green supporters felt the pace was too slow (Morris and Jungjohann 2016: 200). The nuclear phase-out strengthened the case for renewables, which became the only climate-friendly energy source.

At the EU level, the Commission incorporated concerns about renewable energy in its state-aid guidelines in 2001 (Boasson 2021a, this book). The *PreussenElektra* verdict in 2001 settled the issue, when the Court of Justice of the EU decided that this feed-in tariff, under the given conditions, did not count as state aid, because there was no involvement of financial sources by the state. As a result, the Commission could not prevent other EU member states from copying the German feed-in tariff.

The EEG was never meant to be static; it was continuously evaluated and changed accordingly. The first reform was scheduled for 2004 'to adjust tariffs and other provisions to technological and market developments' (Gründinger 2015: 241). Some changes had also become necessary after the first EU Renewables Directive 2001 had entered into force; this directive set for Germany a non-binding target of a 13% renewables share in electricity production by 2010. The German government wanted to achieve this by introducing an even more differentiated tariff structure (Boasson 2021a, this book). The Federal Ministry for the Environment's first draft of the amendment led to a conflict between the Green Minister of Environment and the more coal-friendly Minister of Economics from the SPD (Mendonca 2007). Arguing that the rates were too high, the Minister of Economics proposed a tendering system instead.

In 2003 the Parliament, following a proposal from the Federal Ministry for Economic Affairs, decided to exempt energy-intensive industry from the EEG surcharge (Special Equalization Scheme Act 2003). Industrial interests and power suppliers wanted exemptions for industrial consumers to protect German firms so that they would continue to be able to compete internationally (Gründinger 2015). This surcharge exemption was important for maintaining consensus about the EEG (Interview 7).

In 2004 the red-green majority in Parliament decided to revise the government bill, largely against the proposal from the Minister of Economy (Mendonca 2007). In the *Bundesrat*, Länder, which had conservative governments, opposed the bill. While the course of the EEG was not fundamentally altered, the law became much more detailed – with adjustments made 'to account for increasing market complexity, minimize unjustified windfall profits and to strengthen incentives for innovation and cost reduction' (Gründinger 2015: 245). The revised act introduced clear regulations for grid costs: plant operators were responsible for paying for grid connection, whereas the grid operator would have to cover costs related to upgrading the grid (Mendonca 2007). The fee structure was differentiated further, and payment conditions for biomass, biogas, geothermal and PV energy improved. Increased tariffs made photovoltaic more attractive commercially, leading to a solar boom.

Larger corporations and utilities were made eligible for feed-in tariff support (EEG 2004 §2). However, large utilities, parts of the industry, the FDP and CDU politicians began questioning the necessity of a feed-in tariff with such high rates. They argued that the EEG was too expensive, contravened market rules and led to more regulation and a vast extension of the grid (Mendonca 2007). The industry and big energy corporations had the financial resources for lobbying against the EEG but also important ties to policy-makers. How to deal with the expansion of renewables was contested. The renewable industries began to join forces, establishing better-organized and more professional lobby structures (Gründinger 2015: 252). These circumstances played an important role in the 2005 national elections where energy issues became politicized, as shown in the next section.

In summary, German renewables support became more generous, encompassing and technology-specific – possible because the CJEU had ruled that the German scheme did not fall under the Treaty's definition of state aid. The issue was highly politicized. While all the parties agreed to speed up the growth of renewables, there was disagreement on how to support renewables and on the size of such support – also among the ministers in the red-green government. However, renewables gained clout at the cabinet table when the Federal Ministry for the Environment was given the responsibility for renewables in 2002.

2005–2009: increasing remuneration rates generates feed-in opposition

Renewables issues became increasingly politicized due to increasing expenses and the argument that the feed-in tariff distorted the electricity market. In the 2005 election campaign, all parties (CDU, SPD, the Greens, FDP, die Linke) addressed climate or energy concerns and called for renewable energies as part of the German energy mix, but they continued to disagree on nuclear phase-out and how to support renewable energy (Greenpeace 2005). The Green Party and the SPD expected the EEG to make Germany an industrial world leader in terms of PV and wind energy (SPD 2005; Bündnis 90/Grüne 2005). In contrast, the CDU/CSU and FDP wanted to change the scope of German renewable energy policy. The CDU programme called for reducing subsidies for renewables but aimed at keeping at least a 12.5% share of renewables in the overall electricity mix (CDU 2005: 19). The FDP wanted to abolish the EEG and replace it with a more market-friendly model and called for retaining nuclear power in the energy mix (FDP 2005: 18).

After the elections, the CDU/CSU and SPD created the 'Grand Coalition' with Angela Merkel as chancellor and Sigmar Gabriel (SPD) as Minister of the Environment. Although industrial interests called for Germany to drop its climate-leadership ambitions (Jänicke 2010), the coalition agreement between CDU/CSU and SPD continued along the same climate and energy policy path as the former red-green coalition (Bundesregierung 2005). In the coalition agreement, the government called for a reform of the EEG without any major changes. For Merkel, known as the 'Climate Chancellor' because of her efforts in getting climate action

on the agenda internationally, it was important to implement climate activities and to set ambitious national climate targets to gain international credibility.

According to the 2005 coalition agreement, the EEG should be retained in its basic structure, but some specific matters (like tariffs) should ‘be adjusted to the economic efficiency of the different technologies’ (Gründinger 2015: 258). In 2009 the government introduced amendments making the EEG 2009 far more detailed than the previous act. It increased the renewables target (to 30% by 2020), extended industry privileges, and introduced a growth corridor with flexible degression. In order to react flexibly to market growth, the degression rate for solar was made dependent on the size of installations (Hermanns 2008). This new method of calculating the renewable energy surcharge boosted windpower production, while contributing to making the spot-market electricity price negative at that time. In this situation, power generators preferred to pay buyers to take electricity rather than ramping down their plants (Agora 2014). The 2009 amendment made the EEG levy jump abruptly, without providing any compensation payment to those who had to cover the costs of the support scheme (Interview 10).

The inflated returns strengthened the opponents of the support instrument (Interview 10). Promoters of the feed-in tariff highlighted that the high rates of return contributed to greater investment and cheaper solar energy production worldwide (Interview 10), but renewables interest groups, like the German Solar Association, which benefitted from the high rates, lost credibility by continuing to promote conservative prognoses (Seibt 2014). The increased renewables shares threatened the dominance of the Big Four: in 2004 they had 90% of all electricity, but by 2010 this was reduced to 77% (Bundesnetzagentur 2011).

There was another important change in energy policy at this time. The EU’s Third Energy Package brought new rules for unbundling (i.e. the obligation to separate energy supply and generation from the operation of transmission networks, to avoid unfair infrastructure access) (Commission 2017). This regulation resulted in ‘engraving changes’ (Interview 9), forcing the integrated power companies to sell their electricity transmission network operators (Hesse and Bauchmüller 2010; Kloc and Koska 2012). Required to sell off revenue-generating activities, the big utilities found themselves in a difficult situation (Interview 12).

In summary, in this period, German renewables policy followed the same path as under the previous government. The solar and wind industries grew rapidly. The introduction of a new way of calculating the renewable energy surcharge made the levy jump, fuelling opposition to the feed-in tariff.

2010–2016: introduction of auctioning after state-aid inquiry

In the ensuing period Germany gained worldwide fame for its *Energiewende*, while domestic opposition increased.

The conservative-liberal coalition (elected in 2009) initiated the *Energiekonzept* (an energy strategy adopted in September 2010), aimed at achieving national consensus on contentious energy issues, such as the development of renewable energies and the electricity grid and plans for dropping the nuclear phase-out

(Bundesregierung 2010). The concept – especially concerning the nuclear phase-out – was heavily criticized by the opposition as well as environmental NGOs. In March 2011, six months after the concept was adopted, the Fukushima disaster occurred. Four days later, Chancellor Merkel announced a temporary three-month halt of the plan to extend the life of nuclear power plants, a safety check of all nuclear power plants and permanent shutdown of the seven oldest ones (Schreurs 2012). Suddenly there was consensus among all the parties in Germany that nuclear power was no longer an option (Huenteler et al. 2012) – and this at a time when some 20% of electricity production was nuclear (Statistisches Bundesamt 2019). Fukushima had demonstrated that nuclear mishaps of major magnitude could also occur in technologically advanced countries. The accident ‘tipped a precarious political balance . . . against nuclear power and towards renewable energy sources’ (Schreurs 2012: 31). Supporting nuclear power was no longer politically feasible. In July 2011, the Parliament decided to reverse the 2010 decision to grant nuclear power plants a lifetime extension, voting overwhelmingly in favour of shutting down eight plants and phasing out the remaining nine by 2022 (Wassermann et al. 2015).

This development was accompanied by the rapid acceleration of electricity and heat generation from renewable sources. However, many were concerned by this rapid development. In addition to the increasing surcharge on power, there were technical challenges and high cable costs related to offshore wind parks and bringing the electricity onshore (Schreurs 2012). Resistance to onshore wind increased in areas with high windpower potential. Another issue was the lack of a high-voltage grid infrastructure that could transfer electricity from the northern states, which produce considerable amounts of wind electricity, to the southern states, where there is a demand for more electricity (Schreurs 2012). Pressure on the grid from the growing windpower capacity in northern Germany made it relevant to curb the feed-in tariff for renewables (Apunn 2015).

The organizational field had changed significantly. In 2012, renewables provided more than 20% of domestic electricity production, and almost half of the renewables capacity was owned by local actors, such as individual citizens or farmers, cooperatives or other citizen organizations (Statistisches Bundesamt 2019; Schmid et al. 2016: 265–266). The number of such cooperatives soared, from 35 in 2005 to 365 in 2013. In addition, a diverse group of new renewables investors entered the field: between 2010 and 2013, local governments created 70 new public utilities, but also actors from other societal sectors diversified the field, including energy intensive-industry, banks and insurance companies and project developers. These actors tended to be located near the generating facilities and favoured an EEG that promoted the construction of a wide range of small-scale renewables plants where the electricity was needed – not at sites that would entail the lowest production costs (Schmid et al. 2016: 272; Schmid et al. 2017).

Conflicts between renewables actors and the established utilities were less prevalent, with many actors seeking to find ways of ensuring that the increase in renewables created fewer market distortions, such as negative electricity prices (Schmid et al. 2017). Several renewables plant owners tested out new business

models, such as opting out of feed-in and getting consumers to pay a little extra for an electricity portfolio heavy in renewables (Wassermann et al. 2015). Such direct marketing of renewables became increasingly prevalent after 2010, although there was significant disagreement on how to regulate this.

The Big Four increased their renewables investments but were hesitant to embrace direct marketing (Wassermann et al. 2015: 70). They continued to lose market shares, with their total generated electricity decreasing by almost 16% from 2010 to 2013 (Bundesnetzagentur 2014: 30). They faced a dire economic situation created by the financial crisis, with the closure of many of their nuclear sites and increasing shares of intermittent renewable energy changing the price-setting mechanisms in the electricity market. E.ON was hardest hit: it recorded a profit fall of €1.9 billion in 2011 – the year in which the German nuclear phase-out was decided (bpb 2013). While the EEG surcharge soared between 2009 and 2013 (Wassermann et al. 2015), annual remuneration for renewable technology fell rapidly (Nestle 2016: 2) and the government struggled to adjust remuneration levels accordingly. Against this backdrop, the Big Four stepped up their calls for a less expensive, more cost-efficient EEG and for better plans on how to achieve a cost-effective system of climate-friendly energy supply (Kungl 2015). A representative from a business association argued that, since 2011, ‘the system was running against the wall. No one can bear this, the costs’ (Interview 4).

The political debate on whether to control the volume of renewable energy became very heated (Interview 9). The conservative-liberal government agreed that renewables needed to become more responsive to market signals and modified the EEG Act again in 2012. Inspired by the direct marketing business models that had emerged, they presented a market premium scheme as a voluntary alternative to feed-in tariffs (BEE 2013; Wassermann et al. 2015). When renewables (and mine gas) operators decided to sell their electricity directly, in line with the voluntary alternative, they could claim support in the form of market premiums paid on top of the market price for electricity, substantially covering the gap to the feed-in tariff amount. The plant operator, and not the transmission network operator, would be responsible for selling the electricity on the market. This was expected to increase flexibility of renewables plants, including voluntary curtailment at times of negative prices, thereby reducing system integration costs (Purkus et al. 2015). However, politicians from the Green Party and the left-oriented *die Linke*, environmental groups, several renewable-energy providers and many researchers criticized the introduction of direct marketing, arguing that it would reduce the diversity of renewable energy producers (Interview 14; Wassermann et al. 2015: 71).

Under such circumstances, the liberal FDP’s Minister of Economy, Philipp Rösler, called for drastic cuts in funding and tariffs, and a photovoltaics cap at 9000 megawatts by 2020 (Enkhhardt 2012). During the federal election campaign in September 2013, renewables support and the related costs were a key issue. The Environment Minister, Peter Altmaier (CDU), indicated that the *Energiewende* would cost about €1000 billion until 2030 (*Frankfurter Allgemeine* 2013).

Together with Rösler, he proposed reducing the feed-in tariffs for new plants by €1 billion annually.

The pressure was great. The neoliberal German think-tank and advocacy organization New Social Free Market Initiative conducted a massive campaign to ‘stop the EEG and save billions’. Low-income earners were addressed as part of this campaign (Interview 6), but energy poverty has otherwise generally attracted scant attention (Interview 5; see also Morris and Jungjohann 2016). Referring to rising costs, Altmaier increased the pressure on the opposition, the Green Party in particular (Der Spiegel 2013). Sigmar Gabriel (SPD) followed suit, arguing that it was necessary to stabilize costs and protect German industry (Sturm 2014). Industrial competitiveness was a key topic (Interview 5):

The energy transition will become a model of success only if it is economically feasible. Germany has a very privileged position and can afford a lot of investments, but only if, in the end, German industry becomes substantially able to compete through the energy transition, otherwise it will fail.

(Interview 7)

CDU/CSU won the 2013 elections and created another Grand Coalition with SPD. The new government transferred responsibility for renewable energy from the Federal Ministry for the Environment to the Federal Ministry for Economic Affairs (Interview 15). The aim was to concentrate energy responsibilities in one ministry, under Vice-Chancellor Gabriel as minister (Interviews 7 and 15). The entire department working on the energy transition in the Federal Ministry for the Environment, about 80 civil servants, was moved to the Federal Ministry for Economic Affairs (Interview 7).

Interviewees argue that the shift of responsibility weakened the Federal Ministry for the Environment and increased the weight accorded to large industrial interests represented by the Federal Ministry for Economic Affairs (Interviews 4 and 8). Others indicate that the emphasis on costs increased after the shift, but primarily because ‘He [the minister] took office to reduce the costs’ (Interviews 6 and 7).

Three alternative ways of controlling deployment, thereby cutting costs, were discussed, based on scientific and economic consultations: cap (a limit to how much renewables could be installed), electricity certificates (where the government sets the quota and the remuneration level is set by the market) and auctions. ‘My impression was that many were fundamentally opposed to deployment control [e.g. Friends of the Earth, Greenpeace, German Trade Union Federation, the Greens]; however, if volume control were to be conducted, then procurement by tender would be the best alternative’ (Interview 9). Since the early 2000s, the utilities and FDP had supported a certificate system, but they turned to support a bidding system prior to EEG 2014 (Lauber and Jacobsson 2015). The CDU favoured market premiums until about the same time, with some members in the business wing promoting a bidding scheme. Shifting to a certificate scheme would entail less technology-specificity, thereby favouring the least costly technologies

and projects (Ecofys 2014: 74). This debate showed how political and economic actors discussed the fundamental principles of the EEG, a price-oriented support scheme with technology-specificity.

The utilities, fearing bankruptcy, favoured auctions and put the Federal Ministry for Economic Affairs under strong pressure (Interviews 3 and 8). They considered auctions advantageous for large companies, as such companies have more large-scale projects, making it easier for them to develop competitive offers (Interview 5). Environmentalists argued that the utilities had only themselves to blame for not having invested in renewables; however, there was some understanding in the green camp about bankruptcy concerns. One interviewee (3) stated, ‘Mr Gabriel made an argument, which I can personally understand. He says that if one of the Big Ones goes insolvent, then the *Energiewende* will no longer be a good role model for the outside world’. Germany may be able to pay the remuneration rates, but they are too expensive for other countries to follow suit (Interview 5).

Smaller renewables actors feared the introduction of more market exposure and competitive bidding, and a citizen energy alliance was created in 2014 (Schmid et al. 2016: 266). The CDU/CSU and SPD coalition agreement gave priority to cutting costs related to the renewable energy support scheme, introduced growth corridors with annual technology-specific targets and mentioned procurements by tender as one such support-scheme design (Bundesregierung 2013). One civil servant argues: ‘At that point it was relatively clear that we would get procurements by tender and goals [volume] that would be controlled’ (Interview 9). One opposition politician agreed: ‘We realized early what the deal [auctions] was, and couldn’t change much’ (Interview 8). He was referring to how the influence of the opposition is limited under the conditions of a Grand Coalition (Interview 6).

The Grand Coalition government stated that it would start dialogue with the Commission and other member states as soon as possible about how to develop the support scheme for renewables in accordance with EU law (Bundesregierung 2013). In December 2013, the Commission opened a formal investigation into whether the EEG was compatible with EU state-aid rules (Commission 2013). The Commission argued that Germany had substantially amended its EEG Act since the *PreussenElektra* judgement, and that the EEG was now considerably different. Since 2008 the new CJEU rulings had also broadened the application of the EU state-aid rules concerning support for renewables (Boasson 2021a, this book).

Among the issues that the Commission addressed was the ‘green power privilege’, which provides a reduced surcharge for suppliers if 50% of the electricity portfolio is based on domestic renewables (Gawel and Strunz 2014). This may discriminate between domestic and imported electricity – in contravention of state-aid rules. The Commission also criticized the levy reduction for energy-intensive industries. This exemption is aimed at preventing relocation of such industries to countries with lower electricity costs (Gawel and Strunz 2014).

The Commission’s focus on the exceptions from the EEG levy for energy-intensive industries was particularly difficult for the German government, as ‘the industrial exceptions from the EEG levy are essential for creating political

consensus on the *Energiewende*' (Interview 7). Some companies needed this exemption in order to be able to compete internationally (see n-tv 2014). As one interviewee (7) argued, 'Without the exceptions for industry, the EEG system and the whole *Energiewende* can't achieve consensus in Germany. I have to say, their [the Commission's] focus was cruel, building up maximum pressure'.

The Commission's initiation of a formal investigation into the EEG created uncertainty. If the Commission should conclude that the recipients had been granted unlawful aid, they would have to repay (Boasson 2021a, this book). One interviewee (7) pointed out that company repayment obligations could run to billions of Euros. Hence, the government negotiated with the Commission, trying to reform the EEG while ensuring that it was in line with the state-aid rules. That the EU itself was in the midst of revising its state-aid guidelines made the process even more challenging. One MP found the process opaque, as the Parliament did not receive continuous information; he saw the EU as a 'shadow negotiator' during domestic German EEG discussions (Interview 15). When the Minister of Economics presented the draft to the Parliament in early June 2014, he argued that it could no longer be changed because it had already been negotiated with the Commission (Fischer 2017). Commission representatives have confirmed that the revision of the EU state-aid guidelines and the Commission's negotiations with Germany were closely intertwined (see Boasson 2021a, this book).

In July 2014, three months after the EU had adopted new state-aid guidelines, the German government substantially amended the EEG. First, EEG 2014 applied growth corridors to all technologies and provided detailed figures about the planned increase in installed power for the various energy sources, outlining global targets: at least 35% of gross electricity consumption from renewables by 2020, 50% by 2030, 65% by 2040 and 80% by 2050.

Second, the government introduced 'breathing caps' for onshore wind and biomass. This left the market premium as the only way of direct marketing for new installations – however, depending on the extent to which newly installed capacity is in line with the corridors. Thus, financial support for onshore wind and biomass under the new law is reduced quarterly (not annually) as of 2016 and may be increased or decreased if growth exceeds or falls below the corridor targets.

Third, the revised act made direct marketing (introduced in 2012 as a voluntary option) obligatory, but not for small renewables plants. The market premium became the primary support instrument (Purkus et al. 2015). However, the traditional feed-in continued for small-scale projects. This was important because it is individuals, farmers, small companies and communities who have installed solar panels on their roofs and invested in windmills who have driven the *Energiewende* forward. This actor diversity has created widespread acceptance for the *Energiewende*, exceptional in terms of strengthening public participation as part of the technological energy transition (Morris and Jungjohann 2016).

Further, the EEG 2014 introduced pilot tendering for freestanding PV installations. The first auctions were held in 2015, which was very controversial politically (Interview 9). Bidding procedures were already a discussion topic in Germany, but interviewees (7, 9, 15) indicated that the state-aid inquiry speeded up the shift

towards a tendering system. One policy advisor argued that this ‘would certainly not have been so fast . . . if the Commission had not said, “no matter what you do, we need the tender as default”’ (Interview 7). For example, while the Commission questioned the exemptions from the EEG levy for energy-intensive industries in the opening letter (Commission 2013), the final letter accepted such exceptions on condition that Germany introduces procurements by tender (Commission 2016). However, two interviewees (7, 9) held that auctions would eventually have been introduced even without EU pressure.

Although Germany changed its law in line with the EU 2014 state-aid guidelines, tensions remained between the Commission and Germany.³ One interviewee (9) explained that it was generally unpopular among German politicians across all factions for the Commission to encroach on national responsibilities in the nationally sovereign energy-policy area, as this limits the alternative policies options for national legislators (see also EurActiv 2014).

The EEG 2014 continued to be debated after its entry into force, especially due to concerns about actor diversity and the effects on cooperatives, ‘seen as the most important institutional innovation coming out of the energy transition’ (Szulecki 2018: 33). The German government confirmed that it wanted actor diversity to continue (see § 2, para. 5, sentence 3, EEG 2014), but it remained disputed whether this was possible (Ohlhorst 2018). As part of the pilot for PV, the Federal Network Agency conducted six competitive tenders, with the first round in 2015 (Ministry for Economic Affairs, n.d.). Competition increased with each round, contributing to steadily falling price levels. Based on this experience, the government concluded that competitive tendering as an instrument was successful. Also, relatively small bidders and projects were awarded contracts.

As shown, the German support scheme changed significantly in this period. While there was agreement that the support instrument should differ among technologies, there was much controversy about the shift to greater competition. This happened in a situation where the big utilities promoted auctions, the feed-in promoters were politically no longer a majority and the EU was adopting a new approach to state aid.

Discussions and conclusions

The German renewable support scheme has undergone several incremental changes. While, at the turn of 2016–2017, the feed-in support remained for small-scale renewables plants, the change towards more competition for large-scale producers marked a radical change in approach, albeit following a long German tradition of technology steering. Also in the auctions, various technologies are granted different levels of support – but the level of support is based on actors’ bids in the competitive tenders and is not administered by the state. What explains this development towards a combination of technology steering and competition of renewable electricity support in Germany? Have these changes to the EEG occurred primarily due to pressures in the European environment or conditions in the political or organizational field, or the relationship between them?

While Germany has played a relatively independent role in developing its support scheme for renewable electricity, the evidence still provides support for the expectation that the effect of the *European environment* on national renewables support is stronger in periods when the Commission exerts coercive pressure. However, the effect of member-state peer pressure on policy development is less clear in the German case. In the 1990s, when the original German technology-specific feed-in support scheme emerged, the EU had scant authority over renewable electricity policies and there were no clear European support-scheme trends (Jacobs 2012). As expected, in this period the EU hardly influenced the development of the German feed-in support scheme. Although there was no peer pressure among member states in this period, Germany was inspired by the Danish feed-in, which existed prior to the German scheme.

In later periods, the German scheme has developed in parallel with changes in EU-level renewables policy and state-aid practices, but not without German resistance. In particular, there has been considerable controversy related to the Commission's attempts to use the state-aid rules to force Germany to abandon its feed-in tariffs, and Germany's defiance. Importantly, the 2001 *PreussenElektra* judgement, where the Court decided that the German feed-in instrument did *not* constitute state aid, weakened the Commission's ability to influence the German renewables support scheme and left Germany at peace to determine its own support scheme for more than a decade.

However, Germany had regularly adjusted its support scheme. This gave the Commission a renewed opportunity to instigate an inquiry into state aid and the EEG, putting considerable pressure on the German government to change its support scheme. By this time, new CJEU rulings and new state-aid guidelines had increased the clout of the Commission (Boasson 2021a, this book).

We find that the EU created a political context that strengthened domestic actors who wanted to change the EEG, but that the key explanation for changes in the German renewables support scheme in 2014 lies in the political and organizational fields. Given the entrenched debates on controlling deployment and costs, the data suggests that the German government would have introduced a tendering system even without pressure from the Commission. However, such pressure helped promoters of auctions to speed up the process (Fischer 2017: 336), as the possibility of blaming Brussels enabled the government to overcome the decision-making trap much sooner.

Many countries have been inspired by Germany and copied its technology-specific feed-in scheme. From 1990 to 2010 Germany influenced EU renewables support steering and support-scheme trends in Europe more than the European environment influenced Germany (Jacobs 2012; Vogelpohl et al. 2017). In line with Vogelpohl et al.'s (2017) characterization of Germany as a 'foot-dragger' in connection with its role as a veto player at the supranational level, we find that the European environment has had a greater effect on German policy change when domestic conditions have been open to such influence.

How has the *domestic organizational field* affected policy change in Germany? Given Germany's corporatist and coordinated market economy tradition (Hall and

Soskice 2001), we expected to find particularly favoured interest groups in the organizational field who would be able to bypass political forums and be particularly influential for the development of the support scheme. However, as Hager (2015) notes, the development of the German feed-in tariff grew ‘outside the prevailing channels of institutional power’. Hence, the influence of the organizational field has played out differently from what comparative capitalist literature suggests, partly because the organizational field in the renewable energy sector has not been particularly segmented in this case.

There were two institutional logics. The Federal Ministry for Economic Affairs, with close ties to the big utilities, has favoured cost-efficient, large-scale developments; the Federal Ministry of the Environment and green NGOs have favoured the feed-in tariff, which was informed by the *ordo-liberal* German tradition of the government taking sizeable responsibility for new industry development. The multi-field approach assumes that such divisions in terms of logics will weaken the influence of the organizational field on policy change. In the German case, the feed-in scheme (once enforced) resulted in structural fragmentation within the organizational field, and the technology-specific logic of the *Energiewende* was strengthened among renewables actors, while the utilities became increasingly embedded in a market logic.

In the first period, multiple change processes were underway in the 1990s, including the unification of West and East German energy systems, and a growing focus on nuclear power. These attracted more attention among the dominant organizational field actors (like the utilities) than did the renewable energy support scheme, which was not expected to contribute to major growth in renewable energy. In this period, the large utilities (before the merger that created the Big Four) had certain privileges in the regions.

After the turn of the millennium, conflicts between the two logics grew more intense, and repeated turf battles played out. On the one hand, the energy liberalization reforms initiated by the EU strengthened the market logic and resulted in the merger of energy companies, leading to the ‘Big Four’. On the other hand, renewables actors became more professional and better coordinated, gaining influence when the Federal Ministry for the Environment was given responsibility for renewables. There were enduring tensions between these two turfs in the organizational field. Under such conditions, political engagement increased. In the multi-field approach, this means that the organizational field has been less important in explaining policy change than the political field.

This is also evident later on. In the period 2005–2009, the organizational field remained rife with conflict, with the increased renewables share creating new and unforeseen technical and economic challenges. Conflicts over the renewables support scheme continued in the 2010–2016 period; but the split between utilities and supporters of a competitive approach, on the one hand, and renewables actors and environmentalists, on the other, lessened somewhat as new business models were tested out, helping to making the increased renewables share less disruptive to the German energy system. Key actors now started to combine the two institutional logics that had represented opposites (for a similar change in preferences

among energy industrial actors in Europe, see Lindberg 2019). The possibility that the Big Four might face severe economic challenges was of great concern to the Federal Ministry for Economic Affairs, which took over responsibility for renewables from the Federal Ministry for the Environment. Hence, in this period, the field became more segmented, with more agreement between the actors. These developments underpinned the 2014 decision to change the support scheme. This in turn supports the expectation that the influence of the organizational field on policy change will be greater when the organizational field is segmented than when it is not.

We have already indicated that the *political field* can explain the change in policy better than the organizational field. Has there been intense political salience, and has the German Parliament been powerful over time? The German political system is known for the importance of its legislative assembly, with its many veto powers and distinct bargaining style. Bargaining between the coalition parties in government at the federal level, and between the federal level and the states, is necessary in order to disarm veto players and to enable agreement on policies. The renewable energy support scheme has almost constantly been high on the agenda in parliamentary negotiations. The feed-in tariff policy, originally expected to have only minor effects, proved remarkably successful regarding deployment. This success made it both more popular and increasingly contested in terms of how to control deployment of renewables, and thereby how much funding should be channelled to renewables, and how. Prior to 2000, nuclear was subject to more political competition than renewables, but individual politicians managed to create alliances in the shadow of the more salient energy-policy issue. Two backbenchers were able to mobilize in favour of the first feed-in law.

Already in 2000, opposition to the feed-in tariff became evident, as both the CDU/CSU and the FDP were against adoption of the EEG. However, increasing electoral support strengthened the standing of the Green Party and its Environment Minister, and thereby the feed-in approach, at the cabinet table, where there was also a more coal-friendly Minister for Economic Affairs from the SPD. One important condition for continued support for the feed-in tariff in the second period concerned the exemptions for energy-intensive industry from the EEG surcharge.

Despite consensus about the *Energiewende*, renewables policy remained politicized in the period 2005–2009. The government coalition between CSU/CDU and SPD followed the path of its predecessor, increasing the EEG levy so much that some beneficiaries of the generous feed-in tariff lost political credibility. By the end of the period it had become clear that renewables support design was more complicated than political discussions had indicated: the largely unexpected challenges related to higher renewables shares required the politicians to pay greater attention to the many technical details of the support scheme.

Then, after the 2011 Fukushima disaster, when Germany's political parties had agreed on nuclear phase-out, thereby increasing the importance of renewables, the issue of approaches to renewables support became more politicized. It became crucial to have a smoothly functioning support scheme for renewables, also in view of the political disputes about controlling the deployment of renewables,

and hence costs. This continuing controversy about whether and how to control deployment highlights how the political field has been particularly important to the development of renewables electricity policy in Germany.

Our findings indicate that the influence of the political field on policy development has been strong throughout the history of renewables policy in Germany. Even in the first period when the feed-in support scheme was adopted, at a time when renewables were not a salient issue, the political field was important: German politicians played a key role in initiating this scheme, when two backbenchers were able to get considerable support. This shows how it may be easier to introduce a policy at a time when it is not considered crucial. This period in itself does not give support to the multi-field assumption that the issue must be salient for the political field to be influential; rather, it suggests that when formal authority rests with the Parliament, the issue need not be politically contested for the political field to be influential. In later periods, the influence of the opposition was limited when the government consisted of the Grand Coalition (the two largest political parties in Germany). However, policy development in these periods shows that the political salience of renewables policy has been more important in explaining why the influence of the political field has been greater than that of the organizational field. In light of the multiple streams approach in the public policy literature (e.g. Kingdon 1984), which tends to assume that politicians pay attention to an issue only at brief moments (e.g. in open policy windows, in response to external shocks), the story of the German renewables electricity support is noteworthy: this policy has remained politically salient for more than 15 years.

To conclude, the changes in the German renewable electricity support policy have occurred as a result of an interplay between conditions in the domestic organizational and political fields and pressures in the European environment, which are also intertwined. However, the factors in the political field have been the most decisive. The political field proved unexpectedly important for the introduction of the feed-in tariff in the 1990s. Backbenchers were able to attract support from a majority of MPs at a time when renewables policy was not high on the agenda, and this support instrument was seen as a minor issue. However, once introduced, the feed-in tariff scheme broke up the largely non-competitive electricity generation structure by creating new renewable-electricity generators, with two turfs in the organizational field, each following its own institutional logic. These turfs contributed to exacerbating the political conflict between those favouring the feed-in instrument and those that were opposed.

The support instrument for renewable electricity has remained a highly salient political issue for almost two decades. This highlights the role of the political field in explaining policy change in Germany. In this situation, the European environment has played an important role. By pressuring the German government to change its support scheme, the Commission strengthened the role of change agents (here, opponents of the feed-in tariff instrument) in the domestic organizational and political fields. While the feed-in tariff enjoyed general popularity, there were costs and economic consequences for the utilities. Starting with pilots in 2014, the German government made competitive tenders compulsory for large energy

producers from 2017. This new competitive approach marks a radical break with the feed-in tradition, as those interests (the electricity utilities) that had fought against the support scheme could claim a victory. However, the policy change is still the result of a path-dependent process of incremental changes towards greater market-orientation. The competitive approach may be new in the German renewable electricity sector, but the element of technology steering clearly builds on long traditions in the sector.

Interviewees

- 1 Representative of civil society interest group Bürgerenergie Berlin, 28 November 2016, Berlin
- 2 Renewable industry lobbyist, Bundesverband Erneuerbare Energien, 28 November 2016, Berlin
- 3 Environmental organization representative, Greenpeace, 28 November 2016, Berlin
- 4 Energy industry representative, Energieeffizienz Unternehmen, 29 November 2016, Berlin
- 5 Large energy utility representative, E.ON, 29 November 2016, Berlin
- 6 Political advisor, Green Party, 30 November 2016, Berlin
- 7 Policy advisor, Agora Energiwende, 29 November 2016, Berlin
- 8 Former minister and Green Party MP, 30 November 2016, Berlin
- 9 Civil servant, Ministry for Economic Affairs, 30 November 2016, Berlin
- 10 Former politician, Green Party, 30 November 2016, Berlin
- 11 Renewable energy industry representative, German Wind Energy Association (BWE), 1 December 2016, Berlin
- 12 Consultant at a group of companies providing services for customers in energy and finance industries, 21 February 2017, telephone interview
- 13 Renewable energy lobbyist, European Renewable Energies Federation (EREF), 16 February 2017, Oslo
- 14 Environmentalist, Nature and Biodiversity Conservation Union (NABU), 2 December 2016, Berlin
- 15 Political advisor to CDU energy representative, 2 December 2016, Berlin
- 16 Freelance renewable energy policy expert, 23 February 2017, telephone interview

Notes

- 1 The feed-in premium is equal to the difference between the technology-specific reference values and the average monthly reference market value of electricity for the respective renewable technology. The market value of dispatchable renewables is equal to the monthly average of hourly contract values on EPEX (i.e. the electricity spot market) (Energypedia n.d.).
- 2 This was prior to the Energy and Environmental State Aid Guidelines (EEAG) which the Commission adopted in 2001.

- 3 This is highlighted by the fact that Germany took to court the Commission's 2014 decision that the EEG 2012 constituted state aid. In 2014 the Commission argued that the EEG 2012 fell under state aid but largely accepted the aid, while ordering partial recovery (Commission 2014). The CJEU supported this decision, ruling that the EEG 2012 involved state aid (CJEU 2016). However, in 2019, the CJEU annulled this decision, ruling that it does not constitute state aid (CJEU 2019).

References

- Agora (2014) *Negative Strompreise: Ursachen und Wirkungen*. Berlin: Agora Energiewende. Retrieved from www.agora-energiewende.de/fileadmin2/Projekte/2013/Agora_NegativeStrompreiseWeb.pdf, 1 March 2017.
- Agora (2015) *Understanding the Energiewende: FAQ on the Ongoing Transition of the German Power System*. Berlin: Agora Energiewende. Retrieved from www.agora-energiewende.de/fileadmin/Projekte/2015/Understanding_the_EW/Agora_Understanding_the_Energiewende.pdf, 1 March 2017.
- Apunn, K. (2015) *Connecting up the Energiewende*. Berlin: Clean Energy Wire, 26 January. Retrieved from www.cleanenergywire.org/dossiers/energy-transition-and-germanys-power-grid, 26 March 2017.
- Apunn, K. (2016) *EEG Reform 2016 – Switching to Auctions for Renewables. CLEW Factsheet*. Berlin: Clean Energy Wire, 8 July. Retrieved from www.cleanenergywire.org/factsheets/ecg-reform-2016-switching-auctions-renewables, 26 March 2017.
- BEE (2013) 'Hintergrundpapier zur EEG-Umlage 2014', Retrieved from www.beev.de/fileadmin/Publikationen/Positionspapiere_Stellungnahmen/20131015_BEE-Hintergrund_EEG-Umlage-2014.pdf, 10 April 2017.
- Beermann, J. & K. Tews (2016) 'Decentralised laboratories in the German energy transition. Why local renewable energy initiatives must reinvent themselves', *Journal of Cleaner Production* 169: 125–134.
- Boasson, E.L. (2021a) 'Europeanization of renewables support', pp. 58–72 in E.L. Boasson, M.D. Leiren & J. Wettestad (eds) (this book), *Comparing Renewables Policy. The Role of Political, Organizational and European Fields*. London: Routledge.
- Boasson, E.L. (2021b) 'A dynamic multi-field approach', pp. 32–57 in E.L. Boasson, M.D. Leiren & J. Wettestad (eds) (this book), *Comparing Renewables Policy. The Role of Political, Organizational and European Fields*. London: Routledge.
- bpb (2013) 'Die Großen Vier', Retrieved from www.bpb.de/politik/wirtschaft/energiepolitik/152780/die-grossen-vier, 1 December 2017.
- Bruns, E., D. Ohlhorst, B. Wenzel & J. Köppel (2009) *Renewable Energies in Germany's Electricity Market: A Biography of the Innovation Process*. Dordrecht: Springer.
- Bundesnetzagentur (2011) 'Monitoringbericht', Retrieved from www.bundesnetzagentur.de/SharedDocs/Downloads/DE/Allgemeines/Bundesnetzagentur/Publikationen/Berichte/2011/MonitoringBericht2011.pdf?__blob=publicationFile, 3 April 2018.
- Bundesnetzagentur (2014) 'Monitoringbericht 2014', Retrieved from www.bundesnetzagentur.de/SharedDocs/Downloads/DE/Allgemeines/Bundesnetzagentur/Publikationen/Berichte/2014/Monitoringbericht_2014_BF.pdf?__blob=publicationFile&v=3, 3 April 2018.
- Bündnis 90/Die Grünen (2005) 'Eines für alle: Das Grüne Wahlprogramm 2005', Retrieved from www.portal-sozialpolitik.de/uploads/sopo/pdf/2005/2005-07-10_bt_wahlprogramm_gruene.pdf, 10 April 2017.

- Bundesregierung (2000) *Vereinbarung zwischen der Bundesregierung und den Energieversorgungsunternehmen vom 14. Juni*. Berlin: Bundesregierung. Retrieved from www.energie-fakten.de/pdf/kernenergie-konsens.pdf, 1 December 2017.
- Bundesregierung (2005) *Koalitionsvertrag zwischen CDU, CSU und SPD für die 16. Wahlperiode des deutschen Bundestages: Gemeinsam für Deutschland. Mit Mut und Menschlichkeit*. Retrieved from www.kas.de/c/document_library/get_file?uuid=16f196dd-0298-d416-0acb-954d2a6a9d8d&groupId=252038, 3 February 2019.
- Bundesregierung (2010) 'Energiekonzept', Retrieved from www.bundesregierung.de/ContentArchiv/DE/Archiv17/_Anlagen/2012/02/energiekonzeptfinal.pdf?_blob=publicationFile&v=5, 20 February 2017.
- Bundesregierung (2013) 'Deutschlands Zukunft gestalten. Koalitionsvertrag zwischen CDU, CSU und SPD. 18. Legislaturperiode', Retrieved from www.bundesregierung.de/Content/DE/_Anlagen/2013/2013-12-17-koalitionsvertrag.pdf?_blob=publicationFile, 21 March 2017.
- CDU (2005) 'Regierungsprogramm: Deutschlands Chancen nutzen. Wachstum. Arbeit. Sicherheit', Retrieved from www.kas.de/upload/ACDP/CDU/Programme_Bundestag/2005-2009_Regierungsprogramm_Deutschlands-Chancen-nutzen_Wachstum-Arbeit-Sicherheit.pdf, 14 February 2018.
- CEER (2018) *Tendering Procedures for RES in Europe: State of Play and First Lessons Learnt*. Council of European Energy Regulators. C17-SD-60-03. Brussels: CEER.
- CJEU (2000) *PreussenElektra: Opinion of Advocate General Jacobs Delivered on 26 October 2000. Case 379/98*. Luxembourg: Court of Justice of the European Union.
- CJEU (2016) *Judgment of the General Court of 10 May 2016 – Germany v Commission (Case T-47/15) (1)*. Luxembourg: Court of Justice of the European Union.
- CJEU (2019) *The Court of Justice Annuls the Commission Decision Stating that the German Law on Renewable Energy of 2012 (the EEG 2012) Involved State Aid. Press Release. Judgment in Case C-405/16 P Germany v Commission. No 44/19, 28 March 2019*. Luxembourg: Court of Justice of the European Union.
- Commission (2001) 'Commission closes investigation into grid-feed in law (Germany)', 28 February. Retrieved from www.google.no/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0ahUKEwjWw73fLr3UAhXKAJoKHbd-DI4QFggkMAA&url=http%3A%2F%2Feuropa.eu%2Frapid%2Fpress-release_IP-01-277_en.pdf&usq=AFQjCNGEnMwrw2tNrVmdOGMMERnel7VlpQ&sig2=5RMi88f6ulFxtBp2vf0jA, 1 December 2017.
- Commission (2013) 'State aid: Commission opens in-depth inquiry into support for energy-intensive companies benefitting from a reduced renewables surcharge', *Press Release*, 18 December. Retrieved from http://europa.eu/rapid/press-release_IP-13-1283_en.htm?locale=en. European Commission 2013, 23 March 2017.
- Commission (2014) 'State aid: Commission approves German renewable energy law EEG 2014. Brussels: European Commission press release', 3 July. Retrieved from http://europa.eu/rapid/press-release_IP-14-867_en.htm, 7 April 2017.
- Commission (2016) 'State aid: Commission approves auction scheme for electricity from renewable sources in Germany', *Press Release*, 20 December. Retrieved from http://ec.europa.eu/denmark/node/1206_en, 25 March 2017.
- Commission (2017) 'Market legislation', Retrieved from <https://ec.europa.eu/energy/en/topics/markets-and-consumers/market-legislation>, 21 March 2017.
- de Lovinfosse, I. (2008) *How and Why Do Policies Change? A Comparison of Renewable Electricity Policies in Belgium, Denmark, Germany, the Netherlands and the UK*. Brussels: P.I.E. Peter Lang.

- Der Spiegel* (2013) 'Teure Energiewende. Altmaier warnt vor Kosten von einer Billion Euro, *Der Spiegel*', 20 February. Retrieved from www.spiegel.de/politik/deutschland/altmaier-energie-wende-koennte-eine-billion-euro-kosten-a-884411.html, 7 January 2017.
- Ecofys (2014) 'Design Features of Support Schemes for Renewable Energy', Retrieved from https://ec.europa.eu/energy/sites/ener/files/documents/2014_design_features_of_support_schemes.pdf, 6 January 2017.
- Energypedia (n.d.). 'Feed-in Premiums', Retrieved from [https://energypedia.info/wiki/Feed-in_Premiums_\(FIP\)#Germany](https://energypedia.info/wiki/Feed-in_Premiums_(FIP)#Germany), 10 November 2019.
- Enkhardt, S. (2012) 'Rösler nun doch wieder für Deckel bei Photovoltaik', *PV Magazine*, 24 January. Retrieved from www.pv-magazine.de/archiv/artikel/beitrag/rsler-nun-doch-wieder-fr-deckel-bei-photovoltaik_100007005/#ixzz4YAm1NjNQ, 9 January 2017.
- Eucken, W. (1990) *Grundsätze der Wirtschaftspolitik*, 6th ed. Tübingen: J.C.B. Mohr (Paul Siebeck).
- EurActiv (2014) 'EU states try to bury energy state aid guidelines', *Euractiv*, 14 February. Retrieved from www.euractiv.com/section/energy/news/eu-states-try-to-bury-energy-state-aid-guidelines/, 10 November 2019.
- FDP (2005) 'Deutschlandprogramm 2005: Arbeit hat Vorfahrt', Retrieved from <https://ia801408.us.archive.org/2/items/ArbeitHatVorfahrt/fdp-wahlprogramm.pdf>, 3 April 2018.
- Fischer, S. (2017) *Die Energiewende und Europa: Europäisierungsprozesse in der deutschen Energie- und Klimapolitik*. Berlin: Springer.
- Fouquet, D. & T.B. Johansson (2008) 'European renewable energy policy at crossroads: Focus on electricity support mechanisms', *Energy Policy* 36(11): 4079–4092.
- Frankfurter Allgemeine (2013) 'Energiewende könnte bis zu einer Billion Euro kosten', *Frankfurter Allgemeine*, 19 February. Retrieved from www.faz.net/aktuell/politik/energiepolitik/umweltminister-altmaier-energie-wende-koennte-bis-zu-einer-billion-euro-kosten-12086525.html, 7 January 2017.
- Gawel, E. & G. Strunz (2014) 'State aid dispute on Germany's support for renewables. Is the Commission on the right course?' *Journal for European Environmental and Planning Law* 11: 137–150.
- Greenpeace (2005) 'Energie- und klimapolitische Aussagen der Parteien: Auszüge aus den Parteiprogrammen zur Wahl September 2005', Retrieved from www.greenpeace.de/sites/www.greenpeace.de/files/vergleichparteienenergiewahl05_0.pdf, 6 January 2017.
- Gründinger, W. (2015) *What Drives the Energiewende? New German Politics and the Influence of Interest Groups*, PhD Dissertation, Humboldt-Universität zu Berlin, Berlin. Retrieved from <http://www.wolfgang-gruendinger.de/what-drives-the-energie-wende/>, 2 July 2020.
- Hager, C. (2015) 'Germany's green energy revolution: Challenging the theory and practice of institutional change', *German Politics and Society* 33(3): 1–27.
- Hake, J.-F., W. Fischer, S. Venghaus & C. Weckenbrock (2015) 'The German Energiewende – History and status quo', *Energy* 92: 532–546.
- Hall, P.A. & D. Soskice (2001) 'An introduction to varieties of capitalism', pp. 21–27 in B. Hancké (ed), *Debating Varieties of Capitalism: A Reader*. Oxford: Oxford University Press.
- Hatch, M.T. (2007) 'The Europeanization of German climate change policy', EUSA Tenth Biennial International Conference, Montreal, Canada, 17–19 May. Retrieved from <http://aei.pitt.edu/7897/1/hatch-m-06b.pdf>, 4 February 2017.
- Hermanns, S. (2008) *Das Erneuerbare Energiengesetz 2009 (EEG 2009)*. Praktikumsbericht. München: Universität der Bundeswehr München.

- Hesse, M. & M. Baumbüller (2010) 'Leiser Abschied von der Netz AG', *Süddeutsche Zeitung*, 17 May. Retrieved from www.sueddeutsche.de/wirtschaft/eon-verkauft-strom-netz-leiser-abschied-von-der-netz-ag-1.148422, 7 April 2017.
- Huenteler, J., T.S. Schmidt & N. Kanie (2012) 'Japan's post-Fukushima challenge: Implications from the German experience on renewable energy policy', *Energy Policy* 45: 6–11.
- Jacobs, D. (2012) *Renewable Energy Policy Convergence in the EU: The Evolution of Feed-in Tariffs in Germany, Spain and France*. Aldershot: Ashgate.
- Jacobsson, S. & V. Lauber (2006) 'The politics and policy of energy system transformation – explaining the German diffusion of renewable energy technology', *Energy Policy* 34(3): 256–276.
- Jänicke, M. (2010) 'Die Umweltpolitik der Großen Koalition', pp. 487–502 in C. Egele & R. Zohlnhöfer (eds), *Die zweite Große Koalition: Eine Bilanz der Regierung Merkel 2005–2009*. Wiesbaden: VS Verlag.
- Kingdon, J.W. (1984) *Agendas, Alternatives, and Public Policies*. Boston, MA: Little, Brown.
- Kirchhof, A.M. & H. Trischler (2018) 'Federal republic of Germany short country report. History of nuclear energy and society', Retrieved from http://honest2020.eu/sites/default/files/deliverables_24/FRG.pdf, 2 February 2019.
- Kloc, K. & D. Koska (2012) 'Competition law mechanisms as additional tool of the III Energy Package Implementation', pp. 27–52 in R. Zajdler (ed), *EU Energy Law*. Newcastle upon Tyne: Cambridge Scholars Publishing.
- Krause, F., H. Bossel & K.F. Müller-Reißmann (1980) *Energie-Wende. Wachstum und Wohlstand ohne Erdöl und Uran*. Frankfurt am Main: Ein Alternativ-Bericht des Öko-Instituts Freiburg.
- Kungl, G. (2015) 'Stewards or sticklers for change? Incumbent energy providers and the politics of the German energy transition', *Energy Research & Social Science* 8: 13–23.
- Kungl, G. & F.W. Geels (2016) The destabilisation of the German electricity industry (1998–2015): Application and extension of a multi-dimensional framework. Stuttgarter Beiträge zur Organisations- und Innovationsforschung, SOI Discussion Paper, No. 2016–02, Institut für Sozialwissenschaften, Universität Stuttgart.
- Lauber, V. & S. Jacobsson (2015) 'Lessons from Germany's Energiewende', pp. 173–203 in J. Fagerberg, S. Laestadius & B.R. Martin (eds), *The Triple Challenge for Europe*. Oxford: Oxford University Press.
- Lexikon der Nachhaltigkeit (2015) 'Bundesministerium für Umwelt, Naturschutz, Bau und Reaktorsicherheit (BMUB)', Retrieved from www.nachhaltigkeit.info/artikel/bmu_1456.htm, 3 February 2017.
- Lindberg, M. (2019) 'The EU emissions trading system and renewable energy policies: Friends or foes in the European policy mix?', *Politics and Governance* 7(1): 105–123.
- Mendonca, M. (2007) *Feed-in Tariffs: Accelerating the Deployment of Renewable Energy*. London: World Future Council/ Earthscan.
- Ministry for Economic Affairs (2017) *Gemeinsame Ausschreibungen für Windenergieanlagen und Solaranlagen. Eckpunktepapier*. Berlin: Ministry of Economic Affairs.
- Ministry for Economic Affairs (n.d.) 'Erfahrungswerte sammeln: Pilotausschreibung für Photovoltaik-Freiflächenanlagen', Retrieved from www.erneuerbare-energien.de/EE/Navigation/DE/Recht-Politik/Photovoltaik-Freiflaeche/photovoltaik-freiflaeche.html, 15 November 2019.

- Morris, C. & A. Jungjohann (2016) *Energy Democracy: Germany's Energiewende to Renewables*. London: Palgrave Macmillan.
- Nestle, U. (2016) 'EEG-kosteneffizient wie lange nicht. Standpunkt', *Klimaretter.info*, 12 October. Retrieved from www.klimaretter.info/meinungen/standpunkte/22075-das-eeq-ist-so-kosteneffizient-wie-schon-lange-nicht, 19 November 2019.
- n-tv (2014) 'Zweifel an Gabriels Energiekonzept: Industrie sieht 900.000 Jobs bedroht', *n-tv*, 2 February. Retrieved from www.n-tv.de/politik/Industrie-sieht-900-000-Jobs-bedroht-article12193626.html, 21 March 2017.
- Ohlhorst, D. (2015) 'Germany's energy transition policy between national targets and decentralized responsibilities', *Journal of Integrative Environmental Sciences* 12(4): 303–322.
- Ohlhorst, D. (2018) 'Akteursvielfalt und Bürgerbeteiligung im Kontext der Energiewende in Deutschland: das EEG und seine Reform', pp. 101–104 in L. Holstenkamp & J. Radtke (eds), *Handbuch Energiewende und Partizipation*. Wiesbaden: Springer VS.
- Purkus, A., E. Gawel, M. Deissenroth, K. Nienhaus & S. Wassermann (2015) 'Market integration of renewable energies through direct marketing: Lessons learned from the German Market Premium Scheme', *Energy, Sustainability and Society* 5(12): 1–13.
- RES Legal (2019) 'Promotion in Germany', Retrieved from www.res-legal.eu/search-by-country/germany/tools-list/c/germany/s/res-e/t/promotion/sum/136/lpid/135/, 8 March 2019.
- Schmid, E., B. Knopf & A. Pechanc (2016) 'Putting an energy system transformation into practice: The case of the German Energiewende', *Energy Research & Social Science* 11: 263–275.
- Schmid, E., A. Pechanc, M. Mehnert & K. Eisenback (2017) 'Imagine all these futures: On heterogeneous preferences and mental models in the German Energy Transition', *Energy Research & Social Science* 27: 45–56.
- Schreurs, M.A. (2012) 'Breaking the impasse in the international climate negotiations', *Energy Policy* 48: 5–12.
- Seibt, A. (2014) *Lobbying für erneuerbare Energien. Das Public-Affairs-Management von Wirtschaftsverbänden während der Gesetzgebung*. Köln: Springer VS.
- SPD (2005) 'Vertrauen in Deutschland: Das Wahlmanifest der SPD', Retrieved from <https://ia902605.us.archive.org/9/items/VertrauenInDeutschlandDasWahlmanifestDerSpd/wahlmanifest2005.pdf>, 3 February 2017.
- Statistisches Bundesamt (2019) '37% of electricity came from brown and hard coal in 2017', Retrieved from www.destatis.de/EN/FactsFigures/EconomicSectors/Energy/Energy.html, 14 March 2019.
- Stefes, C.H. (2010) 'Bypassing Germany's Reformstau: The remarkable rise of renewable energy', *German Politics* 19(2): 148–163.
- Sturm, D.F. (2014) 'Gabriel entdeckt den Industriestolz der SPD wieder', *Welt*, 8 April. Retrieved from www.welt.de/politik/deutschland/article126722606/Gabriel-entdeckt-den-Industriestolz-der-SPD-wieder.html, 21 March 2017.
- Szulecki, K. (2018) 'Conceptualizing energy democracy', *Environmental Politics* 27(1): 21–41.
- Tews, K. (2015) 'Europeanization of energy and climate policy: The struggle between competing ideas of coordinating energy transitions', *Journal of Environment & Development* 24(3): 267–291.
- Vogelpohl, T., D. Ohlhorst, M. Bechberger & B. Hirschl (2017) 'German renewable energy policy: Independent pioneering versus creeping Europeanization?' pp. 45–64 in

I. Solorio & H.A. Jörgens (eds), *Guide to EU Renewable Energy Policy*. Cheltenham: Edward Elgar.

Wassermann, S., M. Reeg & K. Nienhaus (2015) 'Current challenges of Germany's energy transition project and competing strategies of challengers and incumbents: The case of direct marketing of electricity from renewable energy sources', *Energy Policy* 76: 66–75.

Zeit Online (2006) 'Das unterschätzte Gesetz', *Zeit Online*, 22 September. Retrieved from www.zeit.de/online/2006/39/EEG/komplettansicht, 14 March 2017.