10 Norway

Certificate supporters turning opponents

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Introduction

By 2016, Norway had the most technology-neutral support mix in Europe, which also offered very low levels of support. The story of how Norway ended up with this particular support mix involves a range of puzzling twists. Elsewhere in Europe, large electricity utilities and environmental organizations have clashed over how to design renewables schemes. In Norway, however, they joined forces in the early 2000s and campaigned for an electricity certificate scheme. It took more than ten years before they succeeded – and then, when this scheme started running in 2012, the utilities did an about-face and called for the system to be removed. At this point, it took only three years before the Storting (the Norwegian Parliament) followed suit and decided that no new projects were to be added to the scheme after 2021 (Innst. 401 S. 2015–2016: 30). Then, in 2015, Norway adopted a very modest investment support scheme for small-scale renewables. Hence, the country has ended with an exceptional ‘less is more approach’ to renewables development.

This chapter asks: *Why did Norway end up with one of the most technology-neutral and least-generous support-scheme mixes in Europe?* When the production of renewable electricity boomed elsewhere in Europe at the turn of the millennium, Norway already had close to 100% renewable electricity production (SSB 2020a; MPE 2008a). Why, then, did it develop a support scheme for renewable electricity? Norway had grown accustomed to being self-supplied in energy, but then came several years where it failed to provide all the electricity needed to cover consumption; moreover, the government and the electricity industry had been expecting further continuous growth in domestic energy consumption (NOU 1998). Hence, there was a thirst for more domestic production of renewable electricity. Large-scale hydro had become controversial: due to nature preservation concerns there was political agreement on preserving Norway’s remaining major streams and waterfalls – not damming or regulating them for hydropower production (St.meld. nr 37 2000–2001). This added to the surge of interest in other options – onshore windpower in particular.

As a European Economic Area (EEA) country, Norway is required to implement most EU rules concerning renewable energy (MPE 2019). However,

renewables support in Norway came to follow a different pattern than in the EU. When most EU member states adopted feed-in schemes, Norway adopted a certificate scheme for renewable electricity; and when other countries shifted to auctioning and feed-in premium, Norway scrapped its large-scale renewables support (Boasson, Faber and Leiren 2021, this book). When we began to work on the present volume, we assumed that the influence of the European environment would prove to be strongest in cases where the EU wielded considerable formal authority and one policy recipe was dominant (see Boasson 2021a, this book). But in Norway, the European environment proved to have influenced Norway more when EU steering was rather weak and when an approach other than the one Norway adopted dominated. Why has Norway been influenced by the European environment in this unexpected way?

Can the answer lie within the Norwegian organizational field of electricity production? Most of the time, this field has been as segmented as in many other European countries, but between 2000 and 2010 it was characterized by turf battles between large electricity utilities and the Ministry of Petroleum and Energy (MPE). Further, environmental organizations in Norway have much closer relations with the electricity industry than elsewhere. Can these characteristics of the organizational field explain how the Norwegian support mix came to develop?

We expect the political field to be more important when renewables support is politically salient, and the formal authority over the issue is diffused, i.e. executive power is shared between several parties and the legislative assembly has significant formal powers (Boasson 2021a). Politically, renewables support has rarely received major political attention in Norway, with the exception of the period around 2006–2007. Did politicization contribute to reduce the importance of the European environment or the organizational field? Or would the Norwegian support mix have developed in largely the same way regardless of the political field?

Researchers have examined the development of Norwegian climate policy, but few have delved into the renewables policy more specifically, and longitudinal studies – like the one presented here – have been missing. This chapter chronicles the development of Norwegian support to renewables electricity from the 1970s and until 2016. Some scholars such as Espen Moe (2012), as well as Anne Therese Gullberg and Guri Bang (2014), have compared Norwegian renewables policies and those of other countries. This chapter challenges some of their conclusions, particularly as regards the importance of EU steering and the role of the Norwegian petroleum industry.¹

Highly technology-neutral renewables support mix

The Norwegian support-scheme mix consists of two main elements: an electricity certificate scheme that provides extra support to renewables projects included in the scheme prior to 2021, and up-front investment support for small-scale renewable electricity in residential buildings. The latter is part of a larger support scheme that encompasses both energy efficiency and other small-scale renewable energy measures.

In 2012 Norway joined the Swedish certificate scheme, and thus the Swedish–Norwegian scheme emerged (MPE 2010c). The Norwegian government committed to financing 13.2 TWh in new renewable electricity production (including small hydro) by 2020 as their share of the common Norwegian–Swedish certificate market (MPE 2010a). All actors who transmit electricity to end-users or who consume the electricity they produce themselves were required to purchase green certificates (Lov om el-sertifikater 2016: § 16). Norwegian renewable power plants with construction start-up date by September 2009 have been part of the certificate scheme. In addition, small hydropower plants constructed as early as January 2004 were included in 2015 (Lov om el-sertifikater 2016: § 8). The actual support level would change over time, as the value of the electricity certificates would depend on the relation between supply and demand of renewables certificates in Norway and Sweden.

Purchasers of green certificates do not buy the actual electricity; they buy a certificate that confirms their economic contribution to the operation of green electricity somewhere within the area where the scheme applies (see Boasson and Leiren 2020, this book). The number of certificates that actors are required to purchase varies according to a pre-determined ratio, growing annually and peaking in 2020, and then gradually falling until the end-year in 2035 (Lov om el-sertifikater 2016: § 17). Norwegian participation in the Norwegian–Swedish scheme expires in 2021, but all projects included in the scheme at that time will be awarded funding until 2035.

In 2015, Norway started to offer investment support to home-owners who produce their own renewable electricity and feed the surplus back to the grid (Enova 2019, *Teknisk Ukeblad* 2014). The maximum support level per building is some €2500. The electricity may come from solar photovoltaics (PV), small-scale wind or biopower (up to 15 kW in installed effect). All residential buildings are eligible for support, but not commercial or state-owned buildings. The scheme is technology-neutral, but it is primarily small-scale, roof-top PV that receive support (Enova 2018). Small-scale electricity production can also be included in the green certificate scheme, but due to the registration cost, it is not profitable for most producers to join the scheme (Norsk Solenergi 2019).

In addition to these two schemes, Enova awards funding to innovative energy solutions that can contribute to reduce emissions (Enova 2020). A new technological solution, or a new combination of different technological solutions, can be awarded support only once. Thus this is not support to the operation of renewables electricity, but is one-off R&D support for pilot projects and technology development. Hence, this scheme falls outside the scope of this book.

Chronological Story: blooming late and withdrawing early

Prior to 1999: emergence of a liberalized large hydropower system

Abundant waterfalls with tremendous energy potential led Norway to develop a hydropower-based electricity system. Like many other countries, it struggled

to find the right balance between the volume of supply and demand of electricity, and in order to solve this challenge, Norway liberalized its electricity system already in the 1990s. This led to a shift in the institutional logic of the organizational field of electricity – which was to have profound implications for discussions on renewable electricity in the 1990s.

From 1945 until the 1980s, investments in large hydropower expanded radically (Midttun 1987; Thue 1996). This allowed for the emergence of a strong energy-intensive industry, crucial to the development of the Norwegian welfare state. The Norwegian Water Resources and Energy Directorate NVE (henceforth Energy Agency) was made responsible for hydropower investments, operations, transmission and energy regulation – an arrangement that encompassed the major power producer, the transmission system operator and a construction advisory body (Nilsen and Thue 2006; Thue 1996). The aim was to enhance the quality and effectiveness of large hydropower technology. There were some hydropower stations operated by smaller regional corporations, but these were of minor importance. Despite widespread protests against the construction of large dams and interference with waterfalls from the 1970s and onwards, massive hydropower developments continued.

A small nuclear reactor had been established for research purposes in the late 1950s, and the oil crisis of the 1970s spurred further discussion of nuclear power, but all plans were shelved a few years later (Reinertsen and Asdal 2010). As several large hydropower plants were under construction and oil had been discovered on the Norwegian continental shelf, there was no urgent need for more domestic energy production. This also meant that there were no actors pushing hard for the development of new renewable energy.

The Energy Agency had as a key goal to ensure sufficient supplies of electricity (Midttun 1987; Thue 1996). It regularly estimated future electricity demand, and the state and local municipality-owned power producers adjusted their investment plans in line with these estimates. The price of electricity was set by the government and did not necessarily reflect actual investment and operation costs (Bye and Hope 2005: 5269). As energy-demand predictions overestimated actual developments, electricity production capacity substantially exceeded demand in the 1980s. Moreover, the Energy Agency focused far more on achieving technological improvements than on ensuring cost-efficient production (Midttun 1987: 102–109).

In 1986, Statkraft was outsourced from the Energy Agency and established as a state-owned utility controlling one third of Norway's electricity production (Bye and Hope 2005: 5269). But this did not solve the problem of matching production to actual consumption of electricity. Discontent with the economic losses of the state and municipal-owned production facilities underpinned demands for a profound liberalization reform. In 1990, a new energy law established a liberalized electricity market, with a spot market for trade of interruptible power, providing all actors access to the grid, and outsourcing transmission grids from Statkraft to Statnett, the new state-owned Transmission Systems Operator (TSO) (*ibid.*: 5271). This liberalization reform did not mean privatization, so there was

no influx of new private electricity corporations. A common Swedish–Norwegian electricity market was established in 1996, with Finland and Denmark joining somewhat later.

Historians have described how the reform brought a shift among Norwegian power producers, from the logic of large hydro-technology development to a market logic (Thue 1996; Nilsen and Thue 2006). Rather quickly the main objective of corporate actors changed, from constructing well-functioning large hydropower and ensuring specific volumes of power supply to a particular geographical area, to maximizing the profits from existing power stations. The overarching objective of the MPE also changed, as it now aimed at minimizing the use of public resources and the costs for consumers and ensuring that the energy producers did not reap excessive profits (Thue 1996; Nilsen and Thue 2006). By the mid-1990s, engineers had lost many central positions to economists in the electricity industry as well as in governmental organizations.

As the inflow of water in large hydro follows a stochastic pattern (Bye and Hope 2005: 5269), electricity prices in Norway after liberalization fluctuated according to variations in precipitation (NOU 1998: 4). Prices peaked during the dry winter of 1995–1996, and the Energy Agency and other experts elsewhere expected increases in a similar fashion as had been the case historically (NOU 1998). Even though the price was set by the Nordic market and not by the Norwegian government, this still became a politically salient issue. The price spike in 1996 was held to be caused by inadequate domestic production capacity, and politicians across the political spectrum voiced concerns about Norway becoming dependent on electricity imports (NOU 1998: 5).

Climate change had become an important political issue already in the late 1980s, but renewable energy sources were not initially central in Norwegian climate discussions. However, the government started to offer modest R&D support, to be determined on a case-by-case basis (Gjerløw 1996). A windpower development programme resulted in the construction of eight windpower turbines in the 1990s, purchased abroad (NOU 1998: 335). At this stage, feed-in support schemes had started to spur renewables investments in Germany and Denmark, and the European Commission (the Commission) had begun preparations on a new renewable energy directive. Although these European developments received scant political attention in Norway (NOU 1998; St. meld nr. 29 1998–1999), Norway's largest hydropower producers were involved in the European power-producers' promotion of a common EU electricity certificate scheme (Boasson 2015: 115). Moreover, the first large-scale windpower construction in Norway was financed through the Dutch voluntary electricity certificates, and it eventually proved very profitable for Statkraft (Riksrevisjonen 2010: 48; Statkraft 2006). Hence, the electricity industry embraced this support-scheme idea; but, because Norway in 1994 had voted against joining the EU, MPE officials were not involved in EU-level discussions of support to renewables (Boasson 2015: 111–119).

At this stage, there seemed to be no need for a support scheme for small photovoltaic (PV), as this energy source had been expanding rapidly, with as many as 70,000 units installed already by 1997 (NOU 1998: 317). These PVs were

primarily installed at holiday cabins where there were no grid connections. Norwegian industry produced components for PVs, but mainly for export. In 1998, a governmental task force concluded that electricity from PVs was unlikely to make any significant contribution to Norwegian energy production in the foreseeable future (NOU 1998: 320, our translation).

The main climate-policy issue in Norway in the late 1990s was the construction of gas-power plants, adding fossil fuels to the renewable Norwegian electricity system. A political majority supported construction of gas-fired power plants, while the minority coalition government then in office opposed it (Boasson 2015: 86). In 1999, the government, as part of a White Paper focused on constraining the development of gas power, proposed adopting more specific domestic renewables targets, aiming for 4 TWh renewable heating and 3 TWh windpower by 2010 (St. meld nr. 29 1998–1999). Paradoxically, the decreasing profitability of gas power now led the electricity utilities to intensify their search for profitable investment options in renewable electricity, while gas-power construction became more contested politically (Boasson 2015: 89–92). The utilities initiated a host of windpower projects in the late 1990s – but if these were to become profitable, a new support scheme would be needed (NOU 1998: 337). Hence, the government set about preparing the development of a support scheme aimed primarily at large-scale windpower (St. meld nr. 29 1998–1999).

By the end of 1999, the Norwegian government was posed to create the country's first renewable electricity support scheme, and the Norwegian utilities had embraced electricity certificates as the best support-scheme design. However, as we will see in the following, the corporate actors had a hard time convincing the public administration about the advantages of electricity certificates.

2000–2004: a cost-efficient renewables support regime fails to spur investments

What was to become a ten-year conflict over how to design the support scheme for renewables electricity started in 2000. In this section, we will see that the conflict about support to renewables remained an internal issue in the organizational field in the period 2000–2004.

In March 2000, the minority Centre coalition government resigned over the gas-power issue (Boasson 2015: 88–89), and a new minority Labour government took office. The gas-power conflict had been rooted in the government's proposals in the White Paper that also proposed establishing renewables targets and a support scheme for renewables (St. meld nr. 29 1998–1999). On the same day that the government resigned, the Storting voted to increase annual domestic windpower production by 3 TWh by the year 2010. This represented a turning point, as it meant development of operational support for renewables. At this stage, a global cost-efficiency approach had become entrenched in Norwegian climate policy, with the national climate strategy relying on the application of the flexibility mechanisms in the Kyoto commitments, global emissions trading and opting only for domestic mitigation options with low costs (Boasson and Lahn 2017). Against

this backdrop, MPE was tasked with setting up support schemes for heating and electricity that would reduce governmental spending to a minimum; a new state enterprise, Enova, would operate the schemes (St. meld nr. 29 1998–1999; Ot. prp. nr. 35 2000–2001).

Only months after the Storting had decided to create a cost-effective Enova scheme for electricity, the majority of its members called for the Labour government to consider an electricity certificate scheme instead (Budsjett-innst. S. Nr. 9 2000–2001). Boasson (2015: 111–119) has shown that this decision came about because Statkraft and environmental organizations had joined in efforts to influence the Storting. At this stage, few political parties had developed firm views as to which support scheme for renewable energy they preferred: they simply wanted a more ambitious policy. Statkraft argued that Norway had to keep up with European developments and that the EU was now set to develop a pan-European certificate scheme, even though the certificate promoters in Brussels had lost the EU discussions over this (Boasson 2020b; St. meld nr. 37 2000–2001).

In his 2001 New Year's speech, Prime Minister Jens Stoltenberg (Labour) proposed introducing a new ban on major new large-scale hydropower development, which later gained support from a firm parliamentary majority (St.meld. nr 37 2000–2001). As most actors expected domestic energy demand to grow steadily, this made the new support scheme more important. In 2001, a Liberal/Conservative minority coalition took office and allowed the MPE to develop a support scheme in line with the first parliamentary decision, rather than the later call for a certificate scheme. The Ministry designed a support scheme that neither resembled the feed-in schemes elsewhere in Europe nor had much in common with the electricity certificate idea, as it offered support only to projects that needed the lowest level of support in order to achieve profitability (Boasson 2015: 120–121). In fact, this scheme resembled the feed-in premium auctioning schemes that would become widespread throughout the EU more than a decade later (see Boasson, Faber and Leiren 2021, this book).

In November 2002, the government issued a White Paper that rejected the creation of a Norwegian certificate scheme, arguing that it would be a good idea only if a pan-European scheme could emerge (St.meld. nr 37 2001–2002: 107). The White Paper also expressed doubt as to whether an EU renewable electricity scheme would fall under the EEA agreement (and would thus be legally binding on Norway). At this stage, Statkraft joined forces with other utilities and environmental organizations in a coordinated campaign, calling for the Storting to instruct the new government to adopt a certificate scheme and implement the EU Renewables Directive (Boasson 2015: 121; Kollbeinstveit 2009: 22). Statkraft found the certificate idea intriguing; it saw opportunities for considerable profits from the voluntary certificate scheme (trade with guarantees of origin) rooted in the Renewables Directive. By this time, the Swedish certificate scheme was up and running (Boasson et al. 2021, this book).

The joint campaign from electricity utilities and environmental groups proved successful. After having left the executive government, Labour now changed its position on renewables certificates, joining the parliamentary majority and

instructing the new government to initiate negotiations with Sweden on joining their certificate scheme (Innst. S. 167. 2002–2003: 18–19). In line with inputs from the electricity industry, they also called for the Renewables Directive (2001/77/EC) to be included in the EEA agreement, as they regarded this as a precondition to enable Norwegian actors to take part in ‘international certificate trade’ (Innst. S. 167. 2002–2003: 18–19). This formulation gives the impression that the Directive underpinned the emergence of a pan-European scheme, but that was not the case (see Boasson 2021b, this book).

The certificate scheme idea fit hand-in-glove with Norwegian electricity industry’s way of operating after liberalization. A wave of mergers among municipally owned companies ensured that, by 2008, the ten largest of Norway’s 200 energy producers controlled 70% of the country’s power production (MPE 2008a). Statkraft alone represented 30% of production capacity; it had substantial minority ownership in a handful of other large power producers, and commanded superior economic and analytical resources (Nilsen and Thue 2006). It had also acquired power plants in several other European countries. Eventually, most electricity producers joined together in the Norwegian Electricity Industry Association (later named Energy Norway) (Boasson 2015: 115). Coordination of lobbying efforts became a key task of this association, where Statkraft was the dominant actor. Both the MPE and Statkraft focused on economic efficiency – the former aiming at minimizing societal costs, the latter at maximizing corporate profits. The energy-intensive industry produced wafers for solar PVs, but these actors exported their products and did not take part in discussions on the Norwegian support scheme (Kollbeinstveit 2009). Hence, Norway did not have a new renewable energy industry that aimed at ensuring the development of renewable energy technology.

Precipitation was low in the winter of 2002–2003, and, as a result the price of electricity soared (St.meld. nr. 9 (2002–2003)). The consumers had to pay, while the power producers reaped large profits. Because the state and the municipalities owned most energy producers, this led to increased public revenues. The media, however, were brimming with consumer protests. Labour was among the political parties that most forcefully blamed the Conservative coalition government for the high electricity prices (Innst. S. nr. 167 2002–2003). Still, it was the spikes in the price of electricity and the gas-power struggle that were subject of the most heated political arguments, not the tug-of-war between the government and the Storting about renewables support-scheme design. The repeated electricity certificate instructions from the Storting must be understood in light of the fact that Norway had three minority governments between 2000 and 2005. No matter which parties were in opposition, renewable energy support provided a good opportunity to criticize the government. Because the political salience of renewable energy was limited, few politicians actually delved into the details of the green certificate scheme (Boasson 2015: 111–119).

EFTA Surveillance Agency (ESA) plays the same role in relation to EEA countries as the Commission does for EU member states. Most EU member states notified their first support schemes to the Commission (Boasson 2021b,

this book), but Norway did not notify ESA initially. In 2002, ESA called for Norway to notify its schemes, and the MPE embarked on five years of tough negotiations with ESA on whether the Enova support scheme violated the state-aid rules. Initially, the Ministry held that the Enova scheme did not fall under the EU definition of ‘state aid’ (MPE 2003). Later, it began arguing that the Norwegian renewable support scheme had been designed with a view to minimizing societal costs, and that, because no party would receive more state aid than needed to realize the production of renewable energy, it was not ‘state aid’ (MPE 2004). However, cost-efficiency was not the main concern of the ESA, which instead probed into why Norway did not follow the extra-cost methodology prescribed by the state-aid guidelines. This method was technology-specific: all projects that applied for state aid should be granted the support they needed in order to become just as profitable as conventional power production (Boasson 2021b, this book).

Two years followed in which Norway tried to persuade the ESA to accept that the Enova scheme could not be aligned to the extra-cost model (ESA 2005a, 2005b; MPE 2004). The Ministry argued that because hydropower requires huge investments, using this as a reference technology would allow for unreasonably high levels of support (MPE 2003: 7, 2004). Eventually, it managed to persuade the ESA that the minimizing societal costs approach made more sense than the extra-cost model; but still, ESA first endorsed the modified Norwegian support scheme in 2006 (ESA 2005a, 2006).

By late 2004, the government had yielded to the instructions repeatedly given by the Storting and issued draft legislation for a certificate scheme for public consultation (MPE 2005). A unilateral Norwegian scheme was never seriously discussed, primarily because economic calculations showed that a common scheme with Sweden would be far more cost-efficient (St.meld. nr 37 2001–2002: 109–123; MPE 2004). Energy economists were tasked with assessing the efficiency of the scheme; most of the ensuing reports were issued in 2005 (Kollbeinstveit 2009: 22). As the scheme would increase energy production, it might eventually reduce market prices, but that effect was hard to predict (Energy Agency 2004).

Despite favourable wind conditions in Norway, there were few applications for windpower support from the cost-efficient Enova scheme in these years, and by 2005 only a capacity of 1.1 TWh windpower had been constructed. Although small hydro had not been included in the Enova scheme, a host of new, small actors initiated a rush of new projects (Yttri 2019). The coalition government (Christian Democrats, Conservatives, Liberals) encouraged this development (Yttri 2019: 333) and also promised that the forthcoming certificate scheme would reimburse some of the costs of small-scale hydropower plants constructed after January 2004 (*Stavanger Aftenblad* 2004).

Even though politicians had occasionally paid attention to renewable energy support in the period 2000–2004, it never became a salient political issue. Politicians were more preoccupied with discussions over gas power and electricity price peaks, and the MPE staff were kept busy aligning Norway’s support schemes with EU state-aid regulations.

2005–2009: politicization of renewable electricity support

By 2005, the lack of stable political steering signals about the renewables support design had led to frustration within the electricity industry. As the climate issue had an upswing in salience in general, renewables support finally gained political salience.

The 2005 elections brought a change of government, with the Labour Party forming a majority red/green coalition with the Socialist Left and the (traditionally agrarian) Centre Party. Although renewable energy had not been high on the agenda during post-election negotiations, the new government readily declared that it would continue to negotiate with Sweden on a common green certificate scheme (Soria Moria 2005). In parallel, a string of energy economy reports, which had been ordered by the previous government, concluded that a certificate scheme would *not* be a cost-effective climate measure (see Kollbeinstveit 2009: 22). One report noted how a certificate scheme would bring an immediate increase in the price of electricity and a burden on the consumers (Golombek and Hoel 2005). Another report concluded that the increased renewables support would reduce the prices and thus the value of existing large hydropower production (Aune et al. 2005). Hence it was unclear whether the utilities or the consumers would profit from a certificate scheme, but all reports agreed that companies with the most profitable windpower projects could reap higher profits that would be needed for overall profitability.

These reports led Labour to re-assess its position towards certificates. Labour politicians feared that the parliamentary minority would blame them if the scheme served to increase the price of electricity. As one interviewee (see Boasson 2015: 119) concluded, ‘we were living in the shadow of the power price issue’.

The electricity utilities and environmental organizations continued to promote a shift, referring to the high support levels in the Swedish green certificate scheme (MPE 2007). They also continued to frame certificate schemes as the most successful scheme in Europe and called for Norway to implement the EU Renewables Directive (see MPE 2005). Partly because few Norwegian actors were informed about recent European developments away from certificates and towards feed-in in Europe, these arguments gained a foothold.

Politicians recall it as demanding to collaborate with the administration in the MPE on the certificate issue (see Boasson 2015: 119). All along, the Swedish government demanded that Norway adopt a high renewables target, on the grounds that if the coherent target became too low, only the least costly projects would be realized – and these were to be found mainly in Norway, not in Sweden (Energimyndigheten 2005). Labour politicians and administrative actors alike wanted a low Norwegian target: the higher the target, the more likely that the certificates would gain a high value and corresponding increase in electricity price. Given the lack of greenhouse gas emissions from the Norwegian electricity sector, this would not be a cost-efficient climate measure. Thus, the Norwegian government held out for a far lower ambition level than the Swedes were ready to accept (MPE 2006; see Kollbeinstveit 2009: 30–31).

Now the electricity utilities competed for the best projects and enhanced their organizational capacities. Five of the ten largest utilities included windpower in their organizational structure, and many smaller companies created shared windpower development subsidiaries (see Agder Energi 2007; BKK 2007; NTE 2004; Statkraft 2005). Only one rather large utility, EC-O, opposed the certificate scheme, worrying that new electricity production would reduce the profits from existing large hydropower (MPE 2005).

Eventually, negotiations with Sweden failed, due to Norwegian reluctance. The electricity industry reacted with an outcry, immediately gaining support from the political opposition (see *Innst. S. nr. 205 2006–2007*: 5). It was particularly surprising that the populist right-wing Progress Party joined the bandwagon. According to one interviewee (2), the party seized this opportunity to show that they had changed from basically denying climate change as anthropogenic, to supporting climate measures that would profit the consumer, believing that the certificate scheme would reduce electricity price-levels in general. In the coming months, electricity shortages and soaring electricity prices in northwestern Norway contributed to make the negotiation failure seem even more severe (Normann 2015: 187).

With the political competition intensifying, the red-green government hastily initiated efforts aimed at sweetening the retreat from green certificate plans. It promised to develop an alternative scheme that would take account of the concerns of all three parties in government: it would offer high support, but it would be financed by the state and not the consumers and would offer similar support levels to various technologies (MPE 2006). Further, the scheme would offer producers an add-on to the electricity price – not a guarantee of a set electricity price, as other feed-in schemes in Europe did at that time.

It was first at this stage that political appointees in the MPE realized that the EU guidelines on state aid severely constrained their work on designing an alternative scheme (Boasson 2015: 121). After months of internal deliberations, the government notified the ESA of their hybrid scheme (*St.meld.nr. 11 2006–2007*). But instead of straightforwardly following the same criteria they had applied with the previous Norwegian notification process, the ESA now referred to new precedents created by Commission notifications of EU support schemes over the past two years (ESA 2007). Thus, the Norwegian government came to realize that, due to deliberations with the ESA, substantial time would be needed to develop a new scheme. Given the current high political salience of the issue, this put the ruling coalition in a very difficult position.

According to two interviewees (1, 6) who played leading roles in developing the support scheme, the prospects of a long and cumbersome ESA process prompted the government to initiate new negotiations with Sweden about Norway joining the green certificate scheme. After all, green certificate schemes were exempted from the general ban on state aid. A political appointee (Interview 6) noted that the government had much contact with the environmental organization Zero in this period. The minority in the Storting now lauded the government for ‘finally coming to its senses’ (see e.g. *Innst. S. nr. 145 2007–2008*). In taking this

decision, the government was challenging the MPE administration, which did not favour such a scheme (see Gullberg and Bang 2014: 108). According to Åslaug Haga, Minister of Petroleum and Energy from 2007 to 2008, ‘the new negotiations with Sweden about a common green certificate scheme would never have happened if the iron triangle [the MPE, the Ministry of Finance and the Prime Ministers’ Office] had got it their way’ (Haga 2012: 296, own translation). This shift to certificates took place despite the decreasing popularity of such schemes elsewhere (Boasson 2021b, this book). Interestingly, the European turmoil over the support-scheme-related content of the Renewables Directive attracted hardly any attention in Norway.

Conflicts over how to design the renewables support hindered actual investments in renewables in this period (Riksrevisjonen 2010). Aiming to compensate for this, in 2008 the government awarded Enova greater funding for its running scheme for windpower – and, between 2008 and 2011, windpower with an annual production of 1 TWh was constructed, most of which was operated by large Norwegian utilities (Enova 2014: 5). Still, the target of 3 TWh annual production by 2010 was not met.

The parties in government disagreed about how to approach the new round of negotiations. According to one interviewee (6), the Centre Party and the Socialist Left Party disagreed on whether to include small-scale hydro, whereas Labour was still reluctant to increasing renewables production significantly. In parallel with these tumultuous political discussions in Norway, the EU member states had agreed to introduce binding domestic renewables targets for later inclusion in the revised Renewables Directive (Boasson 2021b, this book). As the first version of the directive was already included in the EEA agreement, the Norwegian government readily accepted implementation of the revised one (Regjeringen 2007). Interviewees (1, 6) underline that the Norway–EU negotiations on the new directive and the Norway–Sweden negotiations about the certificate scheme were conducted in parallel, without being interrelated. As small-scale hydro was less costly than windpower, it would be easier to meet new renewables targets if this technology were included. Thus, the inclusion of small-scale hydro in the certificate scheme made it easier for Labour to accept a rather high target for the scheme. At this point the political stakes had become high: the government would lose face if it withdrew from the negotiations with Sweden a second time. The parties in government found themselves with little leeway, and they had to accommodate the demands from Sweden.

Late in 2009 Norway and Sweden agreed on the main principles for the new scheme. Norway committed to a 13.2 TWh electricity target by 2020 – half of the joint Swedish–Norwegian 26.4 TWh target (MPE 2010a, 2010b). Negotiations with the EU eventually resulted in Norway agreeing to increase its share of renewables in domestic energy consumption from 58% to 67.5% (NOU 2012: 38), with the certificate scheme as the main measure for reaching this target.

In the shadow of the certificate dispute, plans for offshore wind were launched in 2005 (Norman 2015: 185). Many actors aimed at developing new technological offshore solutions, such as Statkraft and other major Norwegian utilities, but also

large petroleum companies (Statoil/Equinor and Shell) and petroleum equipment producers. The government had asked leaders from the electricity and petroleum industries to draft a special report on offshore wind. They recommended adoption of a technology-specific feed-in scheme for offshore wind only (MPE 2008: 20–21). The Storting responded with more R&D funding, but no additional support scheme was developed (Norman 2015: 186–187).

The years 2005 to 2009 saw considerable drama with respect to renewable energy, ending with a radical shift in policy. Norwegian politicians showed an unprecedented engagement in the development of a support scheme for large-scale renewables; this finally resulted in a decision to join the Swedish green certificate scheme. Although financially powerful actors engaged to promote feed-in for offshore wind, they did not succeed; and technology-specific solar power support was not an issue at all.

2010–2016: an uncontroversial shift away from large-scale renewables support

After 2010, renewables were no longer a salient political issue. Norway was producing more electricity than it needed domestically; electricity prices dropped, and the electricity utilities changed their position towards the certificate scheme. Eventually, all of this resulted in a significant policy shift.

The new Swedish–Norwegian certificate scheme was put into operation in January 2012 (MPE 2010a, 2010b). In the same year, a task force appointed by the Norwegian government, with politicians as well as experts, concluded that after 2009, Norway would be producing significantly more electricity than it needed, and the power surplus would gradually increase (NOU 2012: 17). The task force did not come up with any recommendations about the future of the certificate scheme (NOU 2012: 74), but a few months later, the Minister of Petroleum and Energy announced that the scheme would run only until 2020 (Nettavisen 2012). An electricity utility interviewee (5) describes the industry's initial promotion of electricity certificates as rooted in misplaced expectations as to developments in energy demand and electricity prices: in fact, the latter dropped significantly after 2010 (SSB 2019). Introduction of new renewables electricity through the certificate scheme may have contributed to reducing the electricity prices, but many other factors were also involved – such as greater energy efficiency, increased inflow of water in many large hydropower plants, the financial crisis, lower costs of windpower equipment and the construction of fewer interconnectors than originally planned (NOU 2012) – so that the electricity demand failed to rise as expected. In 2015, Norway's electricity corporations had the lowest profits in more than a decade (SSB 2020b), and Statkraft ended with a substantial deficit (Statkraft 2016).

In 2012 the certificate price was far lower than expected, only half of what it had been in 2008 (Energy Agency 2019). Interviewees (1, 6) say this came as a surprise, as the theory behind the scheme predicted that the certificate price would increase when the electricity prices drop. As this was a shared Swedish–Norwegian

scheme, it did not matter from which country the actual renewables certificates came: Swedish certificates could contribute to fulfilling the Norwegian targets, and the reverse. One interviewee (1) pointed out that Swedish investors knew and understood the certificate scheme, whereas the Norwegians had a ‘wait and see’ approach. According to two interviewees (1, 5), Norwegian utilities initially positive to market logic lost their enthusiasm when they experienced the fluctuating support levels in addition to low electricity prices.

Examination of the party programmes prepared for Norway’s general elections in September 2013 shows very little attention to the future of the certificate scheme (Arbeiderpartiet 2013; Fremskrittspartiet 2013; Høyre 2013; Kristelig Folkeparti 2013; Miljøpartiet De Grønne 2013; Senterpartiet 2013; Venstre 2013; Sosialistisk Venstreparti 2013). The few parties that mentioned certificates merely called for minor adjustments to them. Many parties wanted to promote more expensive renewables technologies but were not very specific on how to design such schemes. The election outcome led the red-green coalition to resign. The Conservatives and the Progress Party agreed on a governmental declaration, stating that they would develop a new energy-policy White Paper, increase renewable power production, consider adjustments in the certificate scheme and offer tax deductions for energy-efficiency investments in residential buildings (Regjeringen 2013). In the Storting, the new minority government had support from the Liberal Left and the Christian Democratic Party.

Once in office, the new government initiated encompassing public consultations in preparation for the new White Paper on energy policy (Meld. St. 25 2015–2016). In 2014 a range of actors provided written inputs, but few paid attention to the certificate scheme (Regjeringen 2014), with two exceptions: Energy Norway, the business association of the Norwegian electricity industry, and Statkraft asked for no new projects to be included in the scheme after 2020. In 2015, small hydro-power plants constructed as early as January 2004 were included in the scheme (Lov om el-sertifikater 2016: § 8). This significantly reduced the volume of new facilities that needed to be constructed in order to achieve the ambitions of the scheme.

According to interviewees 2 and 4, the MPE worked hard to ensure broad agreement on the need to remove the electricity surplus and to stop the certificate scheme by 2020. Initially, corporations with the most expansive windpower plans and the environmental organizations resisted, but ‘in the end no one was against’ (Interview 2). Interviewees 2 and 7 underlined that, because most electricity corporations had municipal owners, society at large would profit from a higher electricity price, as this would make the local municipalities richer. One environmental organization interviewee (4) said they had no chance of ‘winning a war for a prolonged scheme’, and in any event, ‘we had the feeling we had won, it was so cheap to develop wind power in Norway, it was almost profitable at market prices’.

In April 2016, the government finally issued its energy White Paper, where it concluded that no new objective for the Norwegian certificate scheme would be introduced for the period after 2021 (Meld. St. 25 2015–2016: 188). At this stage

Norway already had achieved a 69% renewables share of its energy consumption, higher than that required by the EU (Meld. St. 25 2015–2016: 187). Hardly any protests arose and a majority in the Storting endorsed the proposal, with the ‘creation of space for more technology-specific support schemes’ as a rationale but without proposing a new scheme (Innst. 401 S. 2015–2016: 30). Only the Socialist Left Party called for the certificate scheme to be prolonged.

The Energy White Paper discussed offshore wind, without any specific support proposals. Solar power was discussed primarily as a phenomenon outside Norway; and although a modest investment support scheme for small-scale renewables in residential buildings had been introduced one year earlier, this attracted scant attention (Meld. St. 25 2015–2016: 188).

Interviewees 2, 3 and 4 explained that the small-scale renewables scheme was rooted in the government declaration’s promise of introducing tax deductions for energy-efficiency investments in residential buildings. According to these interviewees, the government immediately encountered a problem with the introduction of such a measure, and therefore they turned to Enova and asked it to develop a support scheme instead (see also *Teknisk Ukeblad* 2014).

At this time, the environmental organization Zero, together with leading architects and building construction corporations, had started to promote rooftop PVs in Norway (Zero 2013). Zero joined forces with other environmental organizations and various business associations who already had a coordinated campaign aimed at influencing implementation of the energy-efficiency formulation in the governmental declaration (*Norsk Teknologi* 2014). Thus, it was a rather broad collation that eventually called for PV support to be included in the new energy-efficiency scheme. In the end, Enova launched a scheme offering up-front investment support with equal support levels for a wide range of energy-efficiency and renewable-energy technologies, but solar PV was expected to be the most attractive technology (*Teknisk Ukeblad* 2014).

In other settings, MPE and the Energy Agency officials argued that decentralized small-scale, costly renewables production did not fit the Norwegian energy system (Zimmermann 2018). But none of the interviewees recalled that these actors tried to prevent PV from being included in the new Enova scheme. Moreover, interviewees 2 and 3 underlined that neither the executive government nor the Storting played much of a role in this process. Later, the Liberals, one of the parties that had ensured the government a majority, succeeded in getting the government to accept that certificates could be granted to small-scale renewable electricity production, but because they had to pay a fee in order to be included in the scheme, few actually received such support (Statsbudsjettet 2016).

The organizational field of electricity production had remained rather unchanged, although Statkraft had increased its share of electricity production to some 35% (MPE 2019). Moreover, Statkraft had gained a more prominent position in Europe, particularly as operator of hydropower in Sweden and as a wind-power developer in the UK (Statkraft 2020). Statkraft was still fully Norwegian state-owned, with most of the remaining electricity production owned by regional and local governments. Cross-ownership became increasingly common, but

most hydropower producers were small: only 11 had more than 250 employees (Espelien 2017). Several petroleum-related corporations had started to develop offshore wind, but they focused primarily on markets outside Norway, as did producers of solar PV equipment.

In 2016, windpower provided only 1.4% of Norwegian power production, and very few windpower corporations had emerged. Interviewees 1, 2, 4 and 5 expected more construction in the final phase of the certificate scheme and held that windpower might soon become profitable even without support. Norway has not seen an influx of new renewables actors, as was the case in some other countries. One interviewee (1) put it like this: ‘we sit here laughing at the Germans who are ruining themselves on feed-in. The costs have been enormous – but then, they have gained new industry and jobs. Maybe we should have thought of that too?’

Discussions and conclusions

By 2020, Norway had a technology-neutral renewables support mix, with no prospects of offering large-scale renewables investors any support after 2021. This policy outcome was the result of decades of complex decision-making processes. How have the European environment, the Norwegian organizational field of electricity production and the domestic political field contributed to the development of the support scheme, and how have these three spheres influenced each other over time?

We start with the importance of the *European environment*. Even though Norway had hardly any CO₂ emissions from electricity production, climate change heightened the focus on renewable electricity in the 1990s. The Norwegian electricity industry soon became interested in electricity certificates, primarily through participation in EU-level discussions and the Dutch certificate scheme that financed a Norwegian windpower project. The government in 1999 proposed to introduce a cost-efficient support scheme which resembled neither a certificate scheme nor a feed-in scheme. Hence, we cannot say that the European environment affected the actual decision on support schemes in Norway in the period leading up to 1999, although some actors had been inspired by EU-level developments.

In the early 2000s, Norwegian civil servants developed an auctioning scheme aimed at minimizing support. However, the utilities gained increasing interest in electricity certificates and, together with environmental organizations, they succeeded in getting the opposition, which had a majority in the Storting, to embrace their idea. As a result, the government half-heartedly started negotiating a common scheme with Sweden but later withdrew. Although European environment impulses from around 2000 had long-lasting impact on some key actors, they did not actually influence policy decisions in this period.

Gullberg and Bang (2014: 109) conclude that Norwegian members of Parliament simply did not consider alternatives to a joint Swedish–Norwegian certificate scheme in 2008 – but this is not fully accurate. The parties in government had tried to develop another scheme, but EU state-aid rules obstructed the

development of a special Norwegian support scheme. Even though EU state-aid practice at this stage was quite open to more technology-specific schemes, the cumbersome process made the Norwegian government withdraw its proposal. Thus, the government turned to certificates again. The Swedish scheme had been up and running for a while, and although the certificates scheme had fallen out of fashion elsewhere, Norwegian actors seemed basically unaffected by feed-in gaining prominence over certificates in Europe.

According to Gullberg and Bang (2014: 103), Norway's willingness to join the Swedish certificate scheme was spurred by the binding domestic targets in the 2009 Renewables Directive. However, the detailed process tracing shows that it was European certificate impulses from ten years earlier that now came to fruition, while the binding target had little importance. The government was under pressure to show its support to renewables; and, because EU state-aid rules made it hard to develop a special Norwegian scheme, certificates appeared as the only viable option. Indeed, it seems likely that Norway would have adopted an electricity certificate scheme at this stage irrespective of the binding EU targets.

Note that Norway did not adopt any scheme for small-scale renewables during the 2005–2009 period: thus, the growing focus on small-scale renewables and the popularity of feed-in in Europe did not influence Norway.

From 2014 and onwards, Brussels governed the development of renewables schemes in the EU and EEA countries, with the Commission gaining authority to require auctioning combined with a feed-in premium. Also in 2014, the EU decided against adopting binding domestic renewables targets for 2030. It is hard to say what Norway would have done if new domestic 2030 renewables targets had been imposed, but the lack of new targets made it easier to withdraw from the certificate scheme. Norway introduced investment support to small-scale renewables in residential buildings in 2015; but Norway adopted a far more technology-neutral scheme than did most EU countries. Thus, we see that the European environment played a very modest role for Norwegian developments in this period.

On the whole, then, the European environment influenced Norwegian actors in the early 2000s, when EU steering was weak and no particular scheme dominated. The European environment had less importance in Norway, when the EU later gained more authority and a particular support mix became dominant. This contrasts with our expectations (see Boasson 2021a) and shows that EU impulses can be important even when EU steering is weak; also, that it can take a long time before European impulses actually influence domestic policy developments in Norway.

Can the *domestic organizational field* explain more of the developments in Norway than does the European environment? The liberalization of the Norwegian electricity system started back in the 1990s, and the institutional logic shifted away from technology development and towards market thinking. Until around 1999, the segmented field was quite united, focusing mainly on how to make existing large hydro more profitable. Although interest in windpower solutions was rising, the technology-specific feed-in scheme that emerged in Europe contrasted with the economic institutional logics that had come to dominate the organizational field in Norway.

In the 2000–2004 period, conflicts between the market based-economic logic of Statkraft and the cost-minimizing logic of the MPE led them to favour differing support schemes. While the latter wanted a scheme to the lowest societal costs, Statkraft wanted a scheme that would enable greater corporate profits. The electricity certificate idea was in line with the logic of the corporate actors, whereas the government developed an auctioning/feed-in premium type of scheme. Failing to influence the MEP, Statkraft and other large electricity utilities targeted the Storting, with the backing of environmental organizations. Turf battles continued throughout the period, but the issue never gained enough saliency to ensure stable political steering signals. Hence, development of the support-scheme development was primarily determined by the MPE administrative staff in this period.

Only when the government withdrew from negotiations with Sweden in 2006 did renewables support become a salient political issue. There ensued a few years when policy development was determined mainly by the political field and not the organizational fields.

After 2010, however, the electricity utilities changed their preferences, siding with their former foes in the MPE. With the low level of investments in renewables, the organizational field did not experience fragmentation, instead becoming more segmented than before. As we expected (see Boasson 2021a), this has served to make the organizational field more influential. With the entrenched resistance to certificates in the Ministry and Statkraft now going against a prolonged scheme, it is not surprising to find that more marginal actors see this reversal as unstoppable. The introduction of marginal support to small-scale renewables has come about through low-level negotiations between various actors on the fringe of the organizational field. Unsurprisingly, given the modest support levels and technology-specificity, the dominant actors have not mobilized against this. However, no support scheme for offshore wind has been developed.

Although some offshore wind promoters, such as Statoil (later Equinor), were powerful in their own right, they did not hold a sufficiently strong position within the organizational field of electricity production to succeed in their demands (see also Normann 2015: 189). According to Espen Moe (2012: 19), ‘Norway, with its powerful petroleum industry, has fed vested interests and built institutions to support the already existing industry, to the detriment of renewables’. The process tracing undertaken in this chapter has shown another story, with petroleum actors having played no direct role in the development of Norwegian support to renewables.

Finally, we turn to the role of the *political field*. In line with our expectations, the political field has generally had little importance for development of the Norwegian scheme in periods when the issue was not politicized. In the 1990s, politicians agreed that the government should promote renewables more than they had done, but they were not particularly engaged in how the support scheme should be designed. From 2000 and onwards, the Storting repeatedly asked for a shift to green certificates. But here we see the same pattern with most parties in and out of government: when in opposition they embraced certificates,

but once in government they were convinced by the MPE administrative staff. We may say that they jumped onto the certificate-scheme bandwagon merely in order to symbolize their general support to renewable energy, without any deeper engagement.

The issue changed from low to high salience in the period 2005–2009. This was prompted by the government's retreat from negotiations with Sweden, and the political optics proving highly negative. However, when EU state-aid rules were found to obstruct the rapid development of a special Norwegian hybrid scheme, the government had to re-initiate negotiations with Sweden in order to save its credibility at home. With the issue becoming increasingly salient, the government was now willing to agree to far higher renewables ambitions than before.

After 2010, support to renewable energy again faded as a political issue: for instance, the failure to meet the 3 TWh windpower target attracted scant attention. Moreover, in 2012, the same government that had taken Norway into the Swedish scheme now stated that it would not be prolonged after 2020, even though few new renewable-energy power plants had been constructed in Norway. A new government came into position in 2013, and in the following years, the political leadership of the MPE worked to ensure unity within the organizational field. When in 2016 they finally recommended that the Storting pull out from the Swedish–Norwegian scheme, this was readily endorsed without much discussion. The Storting called for replacement of the outgoing scheme but did not work to ensure that the government followed up. At this stage, the development of renewables support was determined by the segmented organizational field, whereas the political dynamics had limited importance. A few years later, a boost in windpower construction in the final phase of the Norwegian certificate scheme made windpower highly controversial – but our material indicates that issues of nature conservation did not affect the 2016 decision.

Further, the political field has not been important for the introduction of the modest support offered to small-scale renewables for residential buildings. True, the scheme is rooted in the governmental declaration, but the initial political formulation was exclusively about energy efficiency, with no mention whatsoever of small-scale renewables. The design of the actual support measure was negotiated between Enova and actors at the fringes of the organizational field, with little to no political involvement.

Against this wider backdrop, we again ask: why did Norway end up with the most technology-neutral and least-generous support-scheme mix in Europe? Here we can conclude that the main reason was that this was in line with the preferences of the structurally dominant actors in the segmented organizational field: the Ministry of Petroleum and Energy, and Statkraft. Since it took so much time for Norway to introduce a well-functioning support scheme for renewables, no new actors with major interests in new renewable electricity development emerged. In the period 2005–2009, the Norwegian political field ensured that the European certificate idea came to fruition – but, after 2010, policy developments were steered primarily by the organizational field, with political dynamics playing a limited role.

Interviewees

- 1 Civil servant, Norwegian Energy Agency (NVE), 22 February 2016, Oslo
- 2 Former political appointee (Progress Party), Ministry of Petroleum and Energy, 21 June 2018, Trondheim
- 3 Environmental organization representative, Zero, 25 June 2018, Oslo
- 4 Civil servant, Enova, 21 June 2018, Trondheim
- 5 Electricity industry representative, Statkraft, 14 October 2016, Oslo
- 6 Former political appointee (Centre Party), Ministry of Petroleum and Energy; electricity industry representative, Energi Norge, 18 February 2016, Oslo
- 7 Civil servant, Swedish Energy Agency, 14 October 2016, Oslo (identical to Interviewee 6 in Chapter 8)

Note

- 1 I have previously examined the development of the support schemes for renewables electricity and heating between 2000 and 2010 (Boasson 2015); parts of the chronological story that follows draw on that earlier publication.

References

- Agder Energi (2007) *Årsrapport 2006*. Kristiansand, Norway: Agder Energi.
- Arbeiderpartiet (2013) *Vi tar Norge videre: Arbeiderpartiets program 2012–2017*. Oslo: Arbeiderpartiet.
- Aune, F., T. Bye & P.V. Hansen (2005) *Et felles norsk-svensk elsertifikatmarked*. Retrieved from www.regjeringen.no/globalassets/upload/kilde/oed/rap/2005/0004/ddd/pdfv/246613-ssb_rapp_svensk_norsk_el_mai_05.pdf, 10 January 2020.
- Boasson, E.L. (2015) *National Climate Policy: A Multi-field Approach*. London: Routledge.
- Boasson, E.L. (2021a) 'A dynamic multi-field approach', pp. XX–XX 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) 'The Europeanization of renewables support', pp. XX–XX 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., H. Faber & K. Bäckstrand (2021) 'Sweden: Electricity-certificate champion', pp. 171–192 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. & B. Lahn (2017) 'Norway: A dissonant cognitive leader?' pp. 189–203 in R.K.W. Wurzel, J. Connelly & D. Liefferink (eds), *Still Taking a Lead? The European Union in International Climate Change Politics*. London: Routledge.
- Boasson, E.L. & M.D. Leiren (2021) 'Comparing renewable support mixes', 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.
- BKK (2007) *Årsrapport 2006*. Bergen: BKK AS.
- Budsjett-innst. S. nr. 9 (2000–2001) *Innstilling fra energi- og miljøkomiteen om bevilgninger på statsbudsjettet for 2001 vedkommende OED og MD*. Oslo: Stortinget, Energi- og miljøkomiteen.

- Bye, T. & E. Hope (2005) 'Deregulation of electricity markets: The Norwegian experience', *Economic and Political Weekly* 40(10–16 December): 5269–5278.
- Directive (2001) 'Directive 2001/77/EC of the European Parliament and of the Council on the promotion of electricity produced from renewable energy sources in the internal electricity market', *Official Journal L*(283): 33–39.
- Energimyndigheten (2005) *Konsekvenserna av en utvidgad elcertifikatmarknad*. Eskilstuna, Sweden: Energimyndigheten.
- Energy Agency (2004) *Grønne sertifikater: Utredning om innføring av et pliktig sertifikat-marked for kraft fra fornybare energikilder*. Report no. 11/2004. Oslo: Norges Vassdrags and Energidirektorat (Energy Agency).
- Energy Agency (2019) *Kvartalsrapport nr. 1. May 2019*. Oslo: Norges Vassdrags and Energidirektorat [Energy Agency]. Retrieved from www.nve.no/media/8129/1kv2019_kvartalsrapport-for-elsertifikatordningen.pdf, 11 January 2020.
- Enova (2014) *Etablering av vindkraft i Norge. Enovareport 2014:5*. Enova: Trondheim.
- Enova (2018) 'Solceller brer om seg på norske hustak', *Press Release*, 12 April. Retrieved from <https://presse.enova.no/pressreleases/solceller-brer-om-seg-paa-norske-hustak-2475553>, 12 January 2020.
- Enova (2019) 'El-produksjon', Retrieved from www.enova.no/privat/alle-energitiltak/solenergi/el-produksjon/, 13 January 2020.
- Enova (2020) 'Fullskala innovative energy- og klimateknologi', Retrieved from www.enova.no/bedrift/innovasjon-og-klimateknologi/fullskala-innovativ-energi-og-klimateknologi/, 11 March 2020.
- ESA (2005a) 'Subject: The Energy Fund. Letter from the ESA to the Norwegian delegation to the European Union', 04.03.2005/1000–1. EFTA Surveillance Authority.
- ESA (2005b) 'EFTA Surveillance Authority Decision of 18 May 2005', 18 May.
- ESA (2006) *Subject: The Norwegian Energy Fund*. Letter to the MPE. Case no. 57473. Even No. 365569, 3 May.
- ESA (2007) *Operation Aid for Electricity Production from Renewable Energy Sources*. Letter to the MPE, 14 November. Case no. 62684.
- Espelien, A., B.R. Holmen, G. Fasting, O.M. Stokke, K. Wifstad & A. Bruvoll (2017) *Fornybarnæringen i Norge*. Menon Economics Report 89/2017. Oslo: Menon. Retrieved from www.menon.no/wp-content/uploads/2017-89-Fornybarnæringen-i-Norge.pdf, 20 February.
- Fremskrittspartiet (2013) 'FrPs valgprogram 2013–2017', Retrieved from <https://nsd.no/polsys/data/filer/parti/10374.pdf>, 14 January 2020.
- Gjerløw, T. (1996) *17 år med ENØK og alternative energikilder*. Oslo: Olje-og energidepartementet [Ministry of Petroleum and Energy].
- Golombek, R. & M. Hoel (2005) *Pliktige elsertifikater*, Rapport 1/2005. Oslo: Frischsenteret.
- Gullberg, A.T. & G. Bang (2014) 'Look to Sweden: The making of a new renewable energy support scheme in Norway', *Scandinavian Political Studies* 38(1): 95–114.
- Haga, Å. (2012) *Rødgrønn. Slik jeg ser det*. Schibsted: Oslo.
- Høyre (2013) *Nye ideer – bedre løsninger. Høyres Stortingsvalgprogram 2013–2014*. Oslo: Høyre.
- Innst. S. nr. 167 (2002–2003) *Innstilling fra energi- og miljøkomiteen om innenlands bruk av naturgass mv*. Oslo: Stortinget.
- Innst. S. nr. 205 (2006–2007) *Innstilling fra energi- og miljøkomiteen om samarbeid om håndtering av CO₂ på Mongstad*. Oslo: Stortinget.
- Innst. S. nr. 145 (2007–2008) *Innstilling fra energi- og miljøkomiteen om norsk klimapolitikk*. Oslo: Stortinget.

- Innst. 401 S. (2015–2016) *Innstilling til Parlamentet fra energi- og miljøkomiteen om Kraft til endring – Energipolitikken mot 2030*. Oslo: Stortinget.
- Kollbeinstveit, A. (2009) *Grønne sertifikater: Et norsk perspektiv på saken om et pliktig elsertifikatmarked mellom Sverige og Norge*. A CANES Working Paper. Oslo: Fridtjof Nansen Institute.
- Kristelig Folkeparti (2013) *Kristelig Folkeparti Politisk Program 2013–2017*. Oslo: Kristelig Folkeparti.
- Lov om el-sertifikater (2016) *LOV-2011-06-24-39*. Oslo: Olje- og energidepartementet.
- Meld. St. 25 (2015–2016) *Kraft til endring: Energipolitikken mot 2030*. Oslo: Ministry of Petroleum and Energy.
- Middtun, A. (1987) *Segmentering, institusjonelt etterslep og industriell omstilling*. Doctoral Dissertation. Uppsala, Sweden: Uppsala University.
- Miljøpartiet De Grønne (2013) *Arbeidsprogram 2013–2017*. Oslo: Miljøpartiet De Grønne.
- Moe, E. (2012) 'Structural change, vested interests, and Scandinavian energy policy-making: Why wind power struggles in Norway and not in Denmark', *Open Renewable Energy Journal* 5: 19–31.
- MPE (2003) *Regard Notification of the Energy Fund – Request for Additional Information*. Letter from the MPE to ESA. MPE 2003/00000. 11.09.2003.
- MPE (2004) *Regard Notification of the Energy Fund – Request for Additional Information*. Letter from the MPE to ESA MPE 2002/1281. 09.06.2004.
- MPE (2005) 'Høringsuttalelser [Responses to public consultations]', Retrieved from www.regjeringen.no/nb/dep/oed/dok/hoeringer/hoeringsdok/2005, 27 January 2019.
- MPE (2006) 'Støtteordning for fornybarelektrisitet', *Press Release*, 5 October.
- MPE (2007) 'Hørings-utkast til forskrift om støtteordning for produksjon av elektrisk energi fra fornybare energikilder', Retrieved from www.regjeringen.no/nb/dep/oed/dok/hoeringer/hoeringsdok/2007, 2 October 2007.
- MPE (2008a) *Fakta 2008 om energi og vannressurser i Norge*. Oslo: Ministry of Petroleum and Energy.
- MPE (2008b) *Vindkraft osshore – industrielle muligheter for Norge*. Utarbeidet av Enerirådet. Oslo: Ministry of Petroleum and Energy.
- MPE (2010a) *Avtale mellom Den norske stat ved Olje- og energidepartementet og Enova SF om forvaltning av midlene fra Energifondet i perioden 1. juni 2008 til 31. desember 2011*. Oslo: Ministry of Petroleum and Energy.
- MPE (2010b) 'Møte om etableringen av et felles sertifikatmarked', *Press Release*, 29 April.
- MPE (2010c) *Høringsnotat (forslag til lovvedtak) om lov om elsertifikater: 8 Desember 2010*. Oslo: Ministry of Petroleum and Energy.
- MPE (2019) 'The EEA agreement and Norwegian Energy Policy [Updated 04.01.2019]', Retrieved from <https://energifaktanorge.no/en/eu-lovgivning/eos-avtalen-og-norsk-energipolitikk/>, 10 December 2019.
- Nettavisen (2012) 'Regjeringen vil fjerne støtten til grønn energi', Retrieved www.nettavisen.no/nyheter/regjeringen-vil-fjerne-stotte-til-gronn-energi/3495951.html, 11 December 2019.
- Nilsen, Y. & L. Thue (2006) *Statens kraft 1965–2006*. Oslo: Universitetsforlaget.
- Normann, H.E. (2015) 'The role of politics in sustainable transitions: The rise and decline of offshore wind in Norway', *Environmental Innovation and Societal Transitions* 15: 180–193.
- Norsk Solenergi (2019) 'Rammebetingelser', Retrieved from www.solenergi.no/sttteordninger, 15 December 2019.

- NOU [Norges Offentlige Utredninger] (1998) *Energi- og kraftbalansen mot 2020*. NOU 1998:11. Oslo: Statens Forvaltningstjeneste.
- NOU [Norges Offentlige Utredninger] (2012) *Energiutredningen – verdiskapning, forsyningsikkerhet og miljø*. NOU 2012:9. Oslo: Statens Forvaltningstjeneste.
- NTE (2004) *Årsrapport 2003*. Steinkjer, Norway: Nord Trøndelag Elektrisitetsverk.
- Ot.prp. nr. 35 (2000–2001) *Opprettelse av ENOVA*. Oslo: Stortinget.
- Regjeringen (2007) 'Fornybardirektivet. EØS-databasen [updated 19 April 2007]', Retrieved from www.regjeringen.no/no/sub/eos-notatbasen/notatene/2005/nov/fornybardirektivet/id2430390/, 10 January 2020.
- Regjeringen (2013) 'Politisk plattform for en regjering utgått av Høyre og Fremskrittspartiet', Retrieved from www.regjeringen.no/contentassets/a93b067d9b604c5a82bd3b5590096f74/plattform.pdf, 11 January 2020.
- Regjeringen (2014) 'Skriftlige innspill til Energimeldingen', Updated 15 November 2014, Retrieved from www.regjeringen.no/no/tema/energi/fornybar-energi/Energimeldingen/Skriftlige-innspill/id2010109/, 10 January 2020.
- Reinertsen, H. & K. Asdal (2010) *Fra naturfredning til klimakamp. Norges Naturvernforbund 1914–2014*. Oslo: Senter for teknologi, innovasjon og kultur.
- Riksrevisjonen (2010) *Riksrevisjonens undersøkelse av måloppnåelse i klimapolitikken*. Dokument 3:5. Oslo: Office of the Auditor General of Norway.
- Senterpartiet (2013) *Senterpartiets prinsipper og handlingsprogram 2013–2017*. Oslo: Senterpartiet.
- Soria Moria (2005) 'Politisk plattform for en flertallsregjering utgått av Arbeiderpartiet, Sosialistisk Venstreparti og Senterpartiet' [Also called 'Soria Moria Declaration'], Retrieved from www.regjeringen.no/nb/dep/smk/dok/rapporter_planer/rapporter/2005/soria-moria-erklaringen.html?id=438515, 31 January 2011.
- Sosialistisk Venstreparti (2013) *Del Goda! Arbeidsprogram for Sosialistisk Venstreparti 2013–2017*. Oslo: Sosialistisk Venstreparti.
- SSB (2019) 'Elektrisitet', Updated 28 November 2019. Retrieved from www.ssb.no/energi-og-industri/statistikker/elektrisitet/aar, 10 December 2019.
- SSB (2020a) 'Elektrisitet', Retrieved from www.ssb.no/energi-og-industri/statistikker/elektrisitet/aar, 10 January 2020.
- SSB (2020b) '08389: Resultatregnskap for foretak i kraftnæringen (mill. kr), etter eiergruppe, statistikkvariabel og år', Retrieved from www.ssb.no/statbank/table/08389/tableViewLayout1/, 10 January 2020.
- Statkraft (2005) *Årsrapport 2004*. Lysaker, Norway: Statkraft.
- Statkraft (2006) *Årsrapport 2005*. Lysaker, Norway: Statkraft.
- Statkraft (2016) *Årsrapport 2015*. Oslo: Statkraft.
- Statkraft (2020) 'Internasjonalt gjennombrudd', Retrieved from www.statkraft.no/om-statkraft/statkrafts-historie/internasjonalt-gjennombrudd/, 3 March 2020.
- Statsbudsjettet (2016) 'Statsbudsjettet 2016', 23 November 2015. Retrieved from www.statsbudsjettet.no/Upload/Statsbudsjett_2016/dokumenter/pdf/budsjettavtale-2016.pdf, 4 March 2020.
- St. meld nr. 9 (2002–2003) *Om innenlands bruk av naturgass*. Oslo: Ministry of Petroleum and Energy.
- St. meld nr. 29 (1998–1999) *Om energipolitikken*. Oslo: Ministry of Petroleum and Energy.
- St. meld nr. 37 (2000–2001) *Om vasskrafta og kraftbalansen*. Oslo: Ministry of Petroleum and Energy.
- Stavanger Aftenblad* (2004) 'Steensnæs gir grønt lys for minikraftverk', 13 February.

- Teknisk Ukeblad* (2014) 'Fra nyttår kan du få enøk-fradrag', 8 October. Retrieved from www.tu.no/artikler/fra-nyttar-kan-du-fa-enok-fradrag/232336, 30 January 2020.
- Thue, L. (1996) *Strøm og styring*. Oslo: Ad NotamGyldendal.
- Venstre (2013) *Frihet. Fremtid. Fellesskap. Venstres Stortingsvalgprogram 2013–2017*. Oslo: Venstre.
- Yttri, G. (2019) 'Legitimeringa av norsk småkraft', *Norsk Sosiologisk Tidsskrift* 3(5): 325–339.
- Zero (2013) 'Byggestart for Powerhouse Kjørbo!' *Press Release*, 19 March 2013. Retrieved from <https://zero.no/byggestart-for-powerhouse-kjorbo/>, 10 January 2020.
- Zimmermann, I. (2018) *Småskala kraft – Småskala politikk. En studie av plusskundeordningen 2009–2017*. Master's Thesis, Department of Political Science, University of Oslo.