

Chapter Five

EU Renewable Electricity Policy: Mixed Emotions toward Harmonization

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The promotion of renewable sources of energy (RES) has, like energy policy overall, traditionally been a Member-State concern in the European Union (EU). At the national level it has a relatively long history: many Member States have supported the introduction of RES through various instruments and measures ever since the 1970s. In those early years, climate change and the environment were not among the primary drivers of policy. Instead, national governments were primarily responding to the global energy crisis and looked for a replacement for oil. In other words, renewable energy policy was primarily a response to concerns over energy supply security. Environmental concerns were slowly rising on the agenda during the 1970s but they remained secondary until the late 1980s, when the growing environmental awareness in society paved the way for green parties and policies across Europe.

Thus, the drivers behind RES policy have shifted, but, in any case, the result has been that a plethora of national governance approaches have flourished. Different Member States have developed different approaches to governing RES and also different technological niches. For instance, when it comes to renewable electricity promotion, Denmark became a forerunner in wind energy with its programs for supporting wind power industry, and is now home to the world's largest wind industry, VESTAS (West-Jutlandish steel technology). Sweden had promoted bioenergy crops in the 1970s and 1980s and implemented a carbon tax on energy production in 1991, which induced an almost full phaseout of fossil fuels in the district heating sector (Nilsson, et al. 2004). Germany established a Feed-In-Law in 1991 which guarantees a price for vendors of renewable electricity which enabled a rapid growth in both wind and solar industries

(Jacobsson and Lauber 2006). Despite Member-State differences in approach, and a relatively inactive European Commission (hereafter: the Commission) (up to recently), the EU as a whole has experienced a strong growth in renewable electricity production, thanks largely to the various support schemes and policy instruments to promote the deployment of renewable electricity, such as wind, solar, and biomass (Figure 5.1).

This chapter presents the various instruments and initiatives proposed and taken by the EU and its Member States to promote RES since it came onto the EU-policy agenda in the late 1990s. The analysis focuses on renewable electricity generation, and only briefly touches upon other facets of RES, such as biofuels for transport or the heating sector. It assesses and discusses what progress has been achieved by the EU and how far it is from having a common RES policy. Seeking to understand and explain the reluctance and mixed progress in RES, it examines both obstacles that the EU has faced in making progress and what considerations have motivated EU bodies and Member States in both furthering and impeding the creation of a common policy in this area. Based on this discussion, it discusses the prospects for further Europeanization of RES policy in the medium term future.

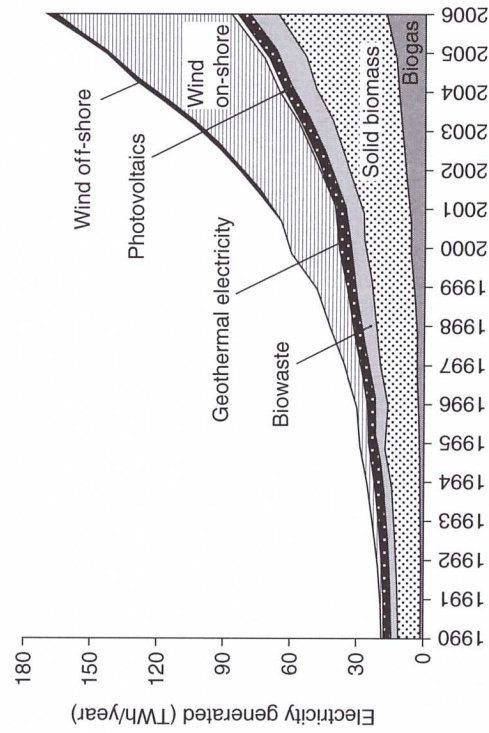


Figure 5.1 Growth in renewable electricity generation (in TWh per year)
Source: Nilsson et al. 2009.

EU Policy Developments in Renewable Energy

Energy issues have always been part of the EU-policy discourse, but they did not take a front seat on the agenda until the 1990s. At first, the focus was on developing the internal energy market, and the first market package was put in place in the mid-1990s (CEC 1996). The Commission did not really consider renewable energy promotion as a policy priority until 1997, when a White Paper was released (CEC 1997), in view of developing a first RES directive. In these first deliberations, it was clear that the Commission strived for a harmonized European policy based on a market approach. The ideas for a harmonized market-based policy-instrument were further developed in a 1999 Working Document (CEC 1999). However, the wide variety of policy measures already in place at the national level, and the different experiences made with these, rendered the political debate about policy measures a difficult one. The first RES Directive 2001/77/EC on the promotion of electricity produced from RES was adopted after several years of negotiations involving debates on harmonization of national support systems, country targets, and the definition of RES (CEC 2001; Rowlands 2005). It set an overall indicative target of 22 percent electricity from RES by 2010, and included individual targets for each Member State. Tradable Renewable Electricity Certificates (TREC)s were mentioned in the directive but Member States resisted both harmonization of national support systems and a common system. No agreement was reached about a common instrument (Lauber 2007).

The debate about what policy measures were effective continued in the EU, and many Member States continued on their own paths, although clearly inspired and learning from each other (Busch and Jörgens 2005). Operating support is currently the most important support mechanism although many other policy instruments are used at the national level including modifications to the permitting procedure for new and enhanced installations, tax rebates, R&D support, and investment support (capital subsidies). Within operating support, two principal measures are currently used: the feed-in tariff (FIT) and the TREC (CEC 2008a) (see Table 5.1 for a summary comparison).

Generic market-based instruments such as TREC under a quota obligation have been implemented in seven Member States. This type of instrument typically fixes a quantity of RES to be achieved

Table 5.1 Summary comparison of FIT and TREC

	<i>The FIT</i>	<i>The TREC</i>
Support constituency	Favored by the majority of Member States—implemented in 18 MS, RES industry, green NGOs	Favored by many parts of the Commission and some Member States—implemented in 7 MS, most major power utilities, industrial organizations
Pricing mechanism	Differentiated tariffs, above 50 Ec for photovoltaic and below 10 for wind, fixed for a time period	A uniform (but fluctuating) certificate price set by market conditions
Outcome	Deliver large quantities of RES—also those that are early stage and more expensive	Deliver large quantities of the most cost-efficient RES technologies.
Market effect	Should promote competition between suppliers of a specific production technology	Should promote competition between different production technologies
Type of market efficiency	Dynamic efficiency	Static efficiency

and facilitates this by issuing green certificates that can be traded TREC. TREC systems were introduced in countries such as the United Kingdom (UK), Sweden, Italy, and Belgium in the early 2000s. Technology-specific support measures coupled with the obligation of distributors to purchase renewable electricity at fixed prices (depending on technology)—so-called feed-in tariffs or premiums (FITs)—have been implemented in 19 Member States. Spain and Germany are two of the major EU countries deploying FIT. From an economic theory point of view, the two systems are not that different; the FIT system fixes the price and lets the market set the volume, whereas the TREC system fixes the volume and lets the market set the price.

While Member States were busy implementing their national approaches through the 2000s, the Commission kept arguing for a harmonized policy framework, which would be better aligned with the internal market policy. Not much happened, however, until 2006, when the EU's top leadership started to take a profound interest in renewable energy issues. As will be discussed later, this interest was fuelled by both energy security and climate change concerns. The result was that between 2006 and 2008, renewable energy met an ever-increasing policy interest and activity. For instance, in 2006 during

the UK presidency it became, for the first time, part of the agenda at the European Summits (the meetings of the heads of government). There was significant political pressure to ramp up the EU energy and climate policy. In March 2007, the European Council reached a landmark agreement on an overall binding 20 percent renewable energy target for the EU by 2020, along with targets of 20 percent reduction in greenhouse gas emissions, and a 20 percent increase in energy efficiency. They requested the Commission to develop a policy proposal for how this would be achieved.

In January 2008, the Commission presented the draft directive “on the promotion of renewable source of energy” replacing the 2001 directive (CEC 2008c). This was part of a larger climate and energy package which also contained the new Emissions Trading System (ETS II), provisions on energy efficiency, and support for developing carbon capture and storage technologies. The proposed RES directive contained national targets for renewable energy shares, provisions for trade in “Guarantees of Origin” (“GOs”) of renewable energy (a mechanism similar to the TREC system), and targets for renewable energy in transport (including biofuels). The overall binding 20 percent renewable energy consumption target for the EU by 2020 was allocated to different Member States (Figure 5.2). The target for renewable energy in transport was set to increase the share of renewable energy, including hydrogen, electricity from renewable sources of energy, and biofuels, to 10 percent by 2020. Sustainability criteria for biofuels for transport (but not for biomass energy more generally) were added to ensure that the production and supply chain of biofuels is sustainable. It included criteria for minimum greenhouse gas emissions savings compared with conventional fuels, as well as criteria against the cultivation of energy crops for such fuels on land that is currently covered by forest or where endangered species live.

According to normal regulatory procedure, the proposal was coprocessed in the European Parliament and the Council. The Council, in the formation of the Heads of State, and the European Parliament passed the directive in December 2008. During the processing of the proposal, the most significant change was that the proposed common policy instrument of GO trading was abandoned. Instead, GOs would be used purely for verifying compliance with targets and a flexible mechanism was put in place for statistical cooperation. These so-called statistical transfers, which can only be conducted under the condition that the selling Member State has reached its interim renewable targets, can also be applied in cases where Member States cooperate on joint projects (European Parliament and Council of the

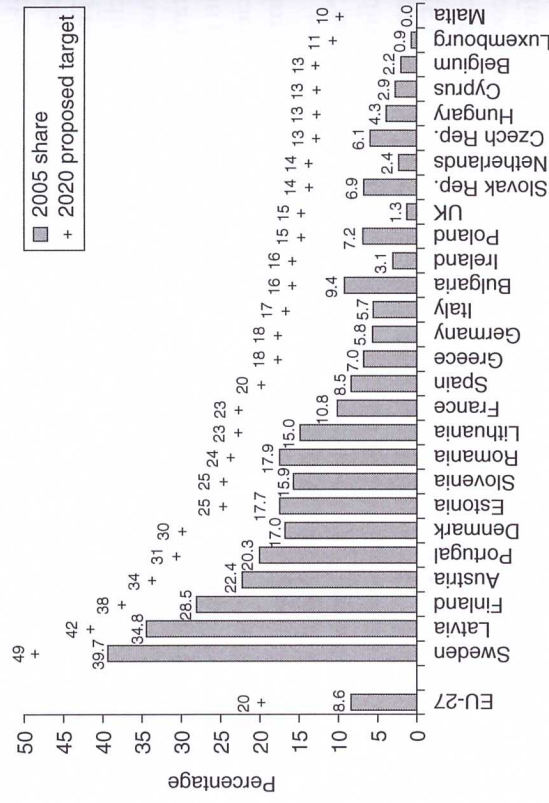


Figure 5.2 Renewable energy use and goals for 2020 in the climate and energy package of 2008

European Union 2009). One other important change was to loosen the sustainability criteria concerning greenhouse gas emissions savings—rendering the target easier to achieve (European Parliament and Council of the European Union 2009).

Assessment: EU Progress toward a Common RES Policy

The brief account above shows that the progress of the EU in the area of RES policy is ambiguous. On the one hand, there are many signs of progress, both in terms of policy development and in concrete achievements in RES growth. First, the EU has, at the level of its Member States, taken strong actions to promote RES, and many Member States have been active for over two decades, leading to significant growth in RES production and industries. Second, there has also been a certain centralization and power shift to Brussels in the new RES directive compared to the old one. One might claim that the EU has achieved a common policy in terms of the objectives

for renewable energy, including binding quantitative targets up to 2020. Although environmental groups have argued that the climate and energy package is too weak to resolve Europe's energy and climate problems, the 2006 to 2009 developments on renewable energy, including the Council decisions in May 2007 and December 2008, are indicative of a very strong progress in the area. The EU has through these decisions established a common policy on RES, in terms of binding targets for each country and commitments to pathways toward these targets. In this sense, considering the lack of constitutional mandate, the Commission has been successful in pushing Member States toward promotion of renewable energy as a policy objective.

However, the EU is still far from having a common policy in the RES area. The instruments and approaches deployed in Member States have not been much coordinated. The EU has not, despite the best intentions from in particular the Commission, been able to harmonize, nor develop a common instrument such as happened with for instance greenhouse gas mitigation with the EU ETS. As a result, there are potentially important inefficiencies in how EU RES growth is being advanced. The Commission has, unsuccessfully so far, advocated harmonization with a flexible market regime based on quotas and trading. Important Member States and increasingly important industrial and environmental interests have resisted such policies and successfully challenged the effectiveness of trading systems compared to technology-specific support measures through FIT (CEC 2008a). As already noted the debate is unresolved between those that advocate a market-based trading mechanism of certificates or Guarantees of Origin; and those that advocate the use of fixed pricing such as FIT (Midttrun and Gautesen 2007).

Provided that the EU pushed hard for policy harmonization in the 2001 directive and then again in the 2008 directive, failing both times and caving to pressures from Member States, it must be deduced that the EU is relatively far from developing harmonized or common RES policy-instruments. That a harmonized RES policy is not realistic in the foreseeable future is confirmed by interview respondents in Brussels. Member States are seemingly increasingly wedded to their national support systems. As expertise and interest groups build up around them they have become institutionalized over time, and there is currently little to suggest that the Commission will regain the force it had in the 1990s for pushing through internal market reforms in this area (Nilsson, et al. 2009).

Drivers and Impediments toward the Creation of a Common RES Policy

The overall positive progress on RES policy can be attributed to a wide range of drivers. Substantial policy drivers can be found that are related to all three “pillars” of energy policy:

- The energy security issue, growing on the agenda in the 2000s not least due to the Russia-Ukraine gas disputes in 2006 and in 2008, but also in the face of increasing oil prices and an increasing sense of vulnerability and resource competition with growing economies such as China.
- The internal market issue, that is the wish to expand the competency of the EU into the energy domain and secure a competitive and efficient energy supply for European industries and consumers.
- The climate change issue, where the EU has set upon itself to be a global leader in climate change mitigation, setting an example and paving the way for others to follow.

These fundamental and “slow” drivers notwithstanding, the processing and adoption of the RES directive in 2008 was a remarkably speedy one. Several more practical and short-term factors played into this. First, the institutional setup with the revolving six-month presidency played a role. France saw the climate and energy package as a prestige project that it wished to conclude during its presidency (July–Dec 2008). Without it, the legacy of the French presidency would have been far weaker on the whole. President Sarkozy decided to lift the issue to the Summit level (the gathering of the European governmental heads) rather than the “normal” Council level (the formation of the energy ministers) and was able to secure a deal despite strong skepticism on behalf of several Member States. Raising the political stakes to this level rendered it more difficult for skeptics to block or stall the process. Another crucial factor was the time constraint. European Parliament elections were due in June 2009, and a new Commission would be installed in autumn 2009. If the decision had not been taken by June 2009, the negotiation process would have had to restart, with delays of at least a year. This would then render impossible a strong European position at the United Nations (UN) climate change talks in Copenhagen in 2009, a meeting for which much hope was pinned at the time.

Third, the package proponents in the Council and Parliament were concerned about the agenda and interest of the incoming Czech presidency (for the first half of 2009) as they had voiced concerns about it during Council discussions and the Czech government was generally seen as both “Euro-skeptical” and skeptical to climate change mitigation.

In other words, there were both long-term agendas, and short-term politico-institutional factors enabling the rapid overall progress of the renewable energy agenda in the EU. How, then, can we understand the lack of progress in developing a common policy? The immediate explanation is that influential Member States such as Germany and Spain opposed a common instrument, and along with them came other countries who had put in place FIT systems, and the new RES-based industries (wind power industries etc.) that have grown dependent on these systems. The Spanish and German systems have in fact induced a substantive increase in renewable electricity as well as helped create a new industry. The two countries also account for most of the growth in European wind power capacity over the last decade, accounting for 21,000 MW and 12,000 MW installed wind capacity, out of the total EU capacity of 48,000 (EUROSTAT 2009). In Germany, who put in place their Feed in Law already in 1990, renewable sources today account for ca. 15 percent of the electricity supply. Spain’s current system of FIT was put in place in 1997 through the Electric Power Act 54/1997, and updated in the Royal Decree in 2004. The current premium for wind is 40 percent of the average electricity tariff, and for solar 250 percent (Ragwitz and Huber n.d.). Complementary measures such as regulations requiring new housing to install solar panels provided additional triggers for the rapid expansion. In 2008, Spain accounted for 41 percent of the world market of installed solar power, installing 2,460 MW out of the world total 5950 MW (Germany installed 1,860 MW and the rest of Europe 310 MW) (Solarbuzz LCC 2009). Thus, there were strong new business interests at stake who defended the FIT system, working both through Member States and through renewable lobby organizations such as European Renewable Energy Council (EREC)—the umbrella organization of the European renewable energy industry, and European Renewable Electricity Federation (EREF)—an organization for independent power producers that exclusively produce renewable electricity; groups that, according to a Commission official, were “very good at getting their point across.”

Aside from, and to some extent underlying, these interest-based explanations, there are also more ideational mechanisms at play. The

reason for the Commission to push for a TREC system is of course that it in the Commission's view represents the most internal-market compatible approach. Since the 1990s, market efficiency considerations lie more or less at the heart of the Commission's *raison d'être*. Following a market efficiency logic, TRECs held the promise to deliver RES in the most cost-effective way possible. However, this is yet debated, not least because comparisons between systems are difficult to make. Through their designs, the measures are pursuing partly differing objectives and are based on different policy perspectives. The TREC approach is primarily concerned with market efficiency by way of inducing the delivery of the renewable electricity technology that has the lowest production cost into the system, whereas the FIT approach is concerned with building up new industries and technologies and helping them onto the market. Sweden's TREC system, started in 2003, has been criticized for not inducing growth in wind power but merely converting existing boilers to biomass-based generation (consistent with the theory—the cheapest option). Indeed, in the first round, most of the certificates were allocated to existing production capacity, where there was a great deal of unexplored capacity in combined heat and power production. Nonetheless, as it has become clear that the system will be extended another ten years, investors have become more confident, and recent figures demonstrate that wind power investments have been taking off very rapidly. One can expect there to be some truth in the theoretical assertion that the TREC system induces a stronger competitive pressure between different generation technologies to stimulate cost-efficient designs. Such a pressure is not present in the feed-in system where revenue is secured. Therefore, proponents of TREC argue that maintaining FIT systems for too long may slow down technology development and forego efficiency potentials. Proponents of TREC emphasize the economic efficiency of the system—the ability to deliver the least expensive green electricity and induce a competitive market between different technologies. Proponents of FIT, on the other hand, emphasize how it induces investor confidence as a result of the fully predictable revenue stream from the fixed price, and that support levels can be adapted to the specific needs of different technologies and nurturing new industries by way of providing long-term stability to protect niche markets (Fouquet and Johansson 2008). In the FIT system the competitive pressure lies not between technologies but *within* each power generation technology, for instance between different equipment manufacturers and suppliers, although due to production capacity constraints the last few years, this pressure has been rather weak.

Thus, the debate over RES policy instruments, and in particular the divide between those that advocate FIT and those that advocate TRECs, is also a debate about framing and what objectives are the most important ones on the agenda. From this perspective, another explanation emerges: the European policy agenda has in recent years been dominated not by the internal market but by concerns about innovation, employment, industrial growth and security. As these concerns have taken over, this played into the hands of those advocating national support systems in general and FIT systems in particular. This pattern manifested clearly in the Council deliberations over the new directive between January and December 2008. Although opinions of Member States on the TREC/GO issue were far from aligned as the Council began its process, a positive tone toward TREC/GO was maintained. For examples, the press release of the Council in February 2008 concluded that “the importance of trade in guarantees of origin has been underlined as a flexible instrument which should enable and not hinder Member States to reach their targets.” (Council of the European Union 2008). However, at the top of the agenda now was the issue of competitiveness—not the advancement of the internal market. In addition, problems with wind-fall profits not only from ETS but also from GO trading had been acknowledged by the Commission in its impact assessment (CEC 2008b). The concern for industrial competitiveness played out in favor of national support schemes and against GO trading, as national support schemes were seen as more important drivers for industrial growth and innovation. Several GO friendly countries were turning more negative or becoming uncertain about the merits of the system (in particular given the provisions in the proposal creating legal uncertainty). The overall picture of positions at the time show that the opposition was rising, with many governments viewing the proposal as too uncertain (Nilsson, et al. 2009). Formerly strong GO proponents like the UK agreed that the Commission's proposal was problematic and instead worked toward an alternative voluntary mechanism together with, for example, Poland and Germany. As noted earlier, in December 2008 the Council and Parliament agreed on the new RES directive without the mandatory GO trading.

Summing up the key obstacles against harmonized or common policy instruments, the key aspect is that national governments that cut a lot of ice in the EU-policy arena have invested in and institutionalized support systems. A growing range of actors, such as environmental NGOs and renewable energy industries of different types, have developed high stakes in the continuation of FIT systems. These

groups formed alliances with powerful Member States such as Spain and Germany, and many other supporting countries. Their positions and arguments were underpinned by experts and analysts that took a growing interest in innovation and early market support. As the overarching political agenda of the EU switched away from internal market efficiency to issues of security, competitiveness, and innovation, it played further into the hands of those advocating against harmonization (Toke 2008).

Prospects for Future Progress in EU RES Policy

European RES policy is still only in what might be considered the “take-off” phase. As Member States are being pushed to deliver on the targets up to 2020, there is no doubt that strong policies will need to be developed in the coming years. However, this is unlikely to occur through harmonization any time soon—renewable policy-instruments will remain a national affair in the short to medium term. The Commission’s own working paper (CEC 2008a) showed a shift in its thinking as regards instrument harmonization; “. . . harmonization of support schemes remain a long term goal on economic efficiency, single market and state aid grounds, but that harmonization in the short term is not appropriate. By adopting best practices or combining national support schemes Member States can continue to reform, optimize and coordinate their efforts to support renewable electricity” (p. 17). Clearly, modifications to FIT, TREC, and other systems will be made but on the whole, Member States appear prepared to continue on their trodden paths, and FITs are become increasingly popular. For instance, the UK introduces a system of FIT for certain technologies alongside its more generic TREC system. Finland has recently opted for a FIT system. At the time of writing, Norway (not an EU but an EEA [European Environment Agency] member) is reluctantly contemplating joining Sweden in a joint TREC market.

Both FIT and TREC have contributed to considerable market expansion, the emergence of learning networks and growing political strength of industry associations for suppliers and owners of renewable energy. Such institutional change has induced European leadership in RES. However, it should also be noted that this leadership comes at a cost, as it implies politically orchestrated transfers of resources between stakeholders (i.e. from electricity consumers or

tax payers to renewable industries). Costs have been significant both in FIT and TREC systems. The systems are therefore contingent on strong political support.

Therefore, in the short and medium term, further Europeanization of RES policy appears unlikely. What are the more long-term future prospects for a common EU RES policy? Based on the perspectives discussed in this chapter, future advances will depend on the development of four sets of variables, discussed briefly below.

The Relative Prominence of Overarching Policy Agendas in the EU

As competitiveness and economic concerns are ever increasing compared to 2006 and 2007, and United Nations Framework Convention on Climate Change (UNFCCC) negotiations keep stumbling, a further tightening of the European energy policy toward climate-policy goals appears unlikely. One question is whether or not climate has a particular status in the public opinion (which has not been a topic of this chapter). This momentum also depends on developments in climate science and observed impacts around the world. But on balance it seems that after agreeing on the “Package” the EU-policy machinery has turned to implementation mode—maintaining targets but not going much further. This will shape also the level of ambitions in RES policy. Of course, RES policy is shaped also by other agendas, at EU, national and local levels, including innovation and competitiveness, and these, combined with security concerns, may become more important than climate change in driving RES-policy developments in the future. The internal market agenda, which has dominated the European integration project as well as much of the world’s economic policies since the 1980s, has come under increasing attack not least in the wake of recent economic turmoil globally. In particular those concerned with competitiveness have begun to advocate more strongly that their end objective is not always compatible with free markets. Instead, innovation policies and security policies may be as critical to the achievement of a competitive Europe. As a result, the interest in public initiative and publicly funded programs is increasing across layers of society, among politicians, businesses, NGOs, energy analysts, and even mainstream economic analysts. Here the renewed Lisbon strategy and what Europe is doing in its Lead Market and green economy initiatives may entail RES policies more on the

innovation and technology-support side. In any case, the near future is likely to hold a more balanced approach to market promotion than in the past, including possibly a further relaxing of state-aid rules, as well as further and more variety and fragmentation in Member-State initiatives, rather than common policies based on internal market efficiency concerns.

The Institutional Relationship between Member States and the EU

At the institutional level, as regards the balance between Europeanization and Member-State autonomy, the recent patterns of RES policy and the Commission's own conclusions suggest that a continued considerable discretion will be left to Member States about how best to promote renewable energy. This includes a relaxation of state-aid rules, which have become increasingly generous over the last few years (Flåm 2009). The European integration project moves forward in jumps and impasses, but lately the momentum has considerably stalled, following the failure to get positive outcomes when posting the new constitution to public referendum. It appears unlikely that much more competency will be moved to the EU level unless the advocates can tie in such a movement to the supply security agenda. (It should be noted that although advocates of national autonomy have played the supply security card, it can be argued that an advancement of supply security is actually rather contingent on stronger European integration.)

The Relative Influence of Different Interest Groups with a Stake in RES Policy

Concerning the role and relative influence of different actors, the recent European RES-policy development shows an interesting and at least partly new pattern of advocacy power to smaller niche organizations with specialized interests (such as renewable energy producers) at the expense of the large incumbents with their more principled arguments (such as Business Europe) (Nilsson, et al. 2009). Also the major power producers have lost some ground, from a previously very privileged market position. In the case of RES, this new advocacy

pattern played out in favor of national interests and against the internal market and Europeanization process, which tends to benefit the larger players. One reason may be that as the complexity of policy is increasing, the larger players have increasing difficulties forming a clear position, as they represent diverging interests on particular topics. Niche groups that can capitalize on agendas, such as new and renewable energy producers, will continue to have a strong voice in European energy policy.

New Empirical Evidence about the Merits of Different Support Measures

Much of the political debate about policy measures has so far been informed by modeling results and principal arguments. Economic modeling, performed for instance in the Commission's own impact assessments demonstrated benefits from efficiency gains from TREC instruments (CEC 2008b). However, empirical evidence from a wide experience of RES policy across Europe is now building up (see, for example, Bergek and Jacobsson 2010). This chapter has not studied this evidence in detail, but the Commission's own review of the performance of support schemes stresses that support schemes need to be adapted to a competitive internal electricity market, and also that well-adapted FIT regimes have generally been the most efficient and effective support schemes (CEC 2008a). Experiences with FIT had proven that they helped build up new industries and quickly reach results. However, the findings and the underlying definition were contested by internal-market advocates. For instance, the Commission defined efficiency by comparing support costs to generation costs, rather than looking at the full cost of the support; "The closer the level of support is to the generation cost, the more efficient a support mechanism is in terms of covering the actual costs. If the level of support is below the generation cost, which is the case in many of the Member States, it is not effective [sic!] as it is too low to trigger substantial investments in renewable electricity generation" (p. 9). There is clearly a need for further research and evidence about the real impacts of different instruments.

Conclusions

EU progress on RES policy is mixed. On the one hand, the last decade has witnessed a very rapid engagement with RES issues at

the European level, and the EU has established relatively ambitious and binding targets for Member States in the medium term. On the other hand, the EU has not been able, despite its best intentions, to establish a common RES policy-instrument. Thus, the process of Europeanization of RES policy is there, but may be characterized as “hesitant” (Wettestad, et al. 2011).

Both the progress and the obstacles can be explained by long-term factors about what agendas are important and how these shift over time, and by short-term factors about what interests and what actors cut the most ice in the decision making process. As regards agendas, RES policy received a boost as it responded to all three pillars of energy policy heralded both by the Commission and by most Member States—security, climate, and cost. The advancement of European RES policy in 2007 and 2008 was in particular a result of the coupling of the climate change and energy security agendas. Brussels policy entrepreneurs were able to capture the prominence, media attention and political salience of the climate change concern, and couple it to the supply-security concerns emerging due to, for instance, Russia’s foreign policy agenda, and draw upon analytical and political support from the rapidly growing interest groups and coalitions relating to renewable energy production.

Paradoxically, at the same time as these factors advanced RES policy in general, they undermined the Commission’s wish to deepen the European harmonization of policy by advancing internal-market compatible policy-instruments. The overarching EU strategic agenda shifted away from internal market concerns to concerns over security, innovation and competitiveness, which impeded the advancement of the common policy-instrument. The debate is of course still on-going as to whether policies that nurture development, learning effects and market diffusion of RES technologies in a protected environment are better for European innovation and industrial development than harmonized market-based policy-instruments intended to ensure efficient market-based resource allocation (Nilsson, et al. 2009).

Regarding actors and interests, the role and power of the Commission in setting the agenda appears to have diminished over the examined time period and strong Member States have recovered the power of initiative. In addition, new interest groups have emerged with successful advocacy strategies, often forming alliances in unexpected combinations.

The future prospects for EU RES policy depends on the development of different agendas, institutional relationships in the European policy-making system, actors and interests, and the gathering of new

evidence about the effectiveness and efficiency of different policy measures. The combined picture suggests that further harmonization is possible but that a common instrument, in particular one based on the TREC approach, is unlikely in the short-to-medium term.

Acknowledgments

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Chapter Six

Energy Savings and Efficiency

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In June 2005, when introducing the European Commission's Green Paper on energy efficiency (EC 2005), then energy commissioner Andris Piebalgs declared energy efficiency to be the top priority during his term as commissioner. This was no bad choice. The Barroso Commission (2004–2009) would be the last commission to have an impact on the European Union's (EU's) compliance with its Kyoto commitment, and the recent enlargement to include ten new Member States was a strong reminder of the huge potential, still unexploited, in energy efficiency. In addition, the Green Paper correctly observed that within the EU-15, a lot of low-hanging “energy efficiency fruit” remained on the trees. And this, despite energy efficiency having been part of the EU's “Energy and Environment” program since the early 1990s. In quantitative terms, the Green Paper estimated that 20 percent of Europe's gross energy consumption was “wasted” unnecessarily.

As happens so often in politics, however, events have taken over. Beginning in early 2006, reinforced in 2007, and culminating with the Commission's 2008 Energy and Climate Package (20–20–20: 20 percent reduction in greenhouse gas emissions, 20 percent renewable energy, and 20 percent improvement in energy efficiency) and the subsequent Council and parliament decisions on the package in 2008 and 2009, energy efficiency has been put on the back burner in favor of more glamorous policies such as renewable energy, emissions trading, and energy security of supply. Nevertheless, energy efficiency is still fully alive, to a large extent thanks to legislation proposed by the earlier Prodi Commission (1999–2004) but only slowly working its way through the cumbersome process of Council and Parliament negotiations and subsequent implementation (or nonimplementation) in Member States' legislation. Still, there is no evidence that energy efficiency has managed to make the quantum leap that would be justified by virtue of its being the most cost-effective policy option to reduce CO₂ emissions and improve energy security of supply.

In principle, energy efficiency is part of the EU's overall 20–20–20 strategy, to be attained by 2020. Where the greenhouse gas and renewable energy objectives have been translated into binding legislation, however, this is not the case with the energy efficiency objective. It is not difficult to explain why. First, the 20 percent target is to be achieved against a business-as-usual scenario, something that is difficult, if not impossible, to quantify. Second, energy efficiency cuts across virtually all economic sectors (industry, power production, appliances, buildings, transport, etc.), some of which are partly covered by other pieces of legislation. The result is that energy efficiency ends up as the second priority (if at all a priority), and it should be no surprise if some five to ten years in the future, we will see another Green paper on energy efficiency discussing how to pick the low-hanging fruit.

The Energy Efficiency Action Plan

In October 2006, the Commission presented an Energy Efficiency Action Plan as a follow-up to the 2005 Green Paper on Energy Efficiency (EC 2006). The plan exemplified the fact that it is easier to identify the efficiency improvement potential than to prescribe the measures that will turn the potential into reality. In fact, much of the plan simply reported on measures already proposed or agreed or measures following previous decisions to review existing policies or directives already in force. The annex listed 57 specific actions to be carried out in the course of the remaining years of the (first) Barroso Commission, a number that by itself should raise some suspicion of a lack of focus. Analysis by Commission Directorates-General led to the expectation that implementation of the action plan would deliver a 13 percent reduction in gross energy consumption by 2020 relative to business-as-usual projections. This was probably an optimistic expectation, and it was subject to the uncertainty of calculating future energy consumption using business-as-usual assumptions.

The action plan covered a number of areas. Among the most important were the following.

Appliances and Other Energy-Using Equipment

Inclusion of appliances and other energy-using equipment was particularly important because energy efficiency requirements for them

are considered internal market legislation and, as such, are subject to full EU harmonization. It was also important because existing EU-legislation in the area stopped well short of requiring levels of energy efficiency for different types of appliances. In fact, much of the existing legislation reflected a desire to protect producers of less efficient appliances rather than the subsequent users. Whereas one might expect the market to favor energy-efficient appliances because of their lower cost of use, experience has shown that the price of an appliance weighs more heavily in purchasing decisions than the expected cost of using it.

The action plan identified 14 groups of appliances for which the Commission would propose new or reinforced minimum energy performance standards during the period 2007–2008. Insufficient allocation of resources for the work has made the timing slip, but the assessment, that this was, so far, the most important part of the action plan, remains valid. In the meantime, the actual implementation of the performance standards continued to be done through the 2005 “Ecodesign” Directive (2005/32/EC).¹

Services and Energy End-Use Efficiency

This part of the action plan was limited to making a reference to the directive on Energy End-Use Efficiency and Energy Services (2006/32/EC), which is discussed below.

Buildings

The Energy Performance of Buildings Directive (2002/91/EC) has so far had little impact on the overall energy consumption in buildings within the EU.² This failure is partly due to the directive's limited scope (new buildings and major renovation and only buildings of more than 1,000 square meters) and partly to the fact that implementation is still left to a great extent to Member States. In addition, enforcement is slow and insufficient. The EU institutions do not have to go very far to observe the sad state of affairs. Brussels, like former socialist Member States, is full of poorly insulated houses.

The problem does not lie with the Commission. How to improve the energy performance of the hundreds of millions of houses and apartments throughout the EU, under completely different climatic, infrastructure, and economic conditions, is virtually impossible to

put in a single formula, even one with considerable flexibility. The inconvenient truth is that even a modified directive with a broader scope than the one presently in force is unlikely to have much impact on energy consumption in buildings unless individual Member States make it a national policy priority. For this reason, the potential 11 percent reduction in total final energy consumption identified in the action plan is likely to remain only a potential for years to come, which is regrettable.

Energy Transformation

The action plan expressed confidence that improved energy efficiency in the power production sector would be taken care of by the emission trading scheme (ETS), which is discussed below. The fact that the action plan said nothing about the energy intensive industries covered by the ETS would lead one to believe that the Commission shared the same optimism on the achievements of the ETS in this sector.

Transport

By 2006, the Commission had determined that the automobile industry was unlikely to be able to deliver the necessary efficiency improvements to achieve the promised goal of 140 grams of CO₂ emissions per kilometer (g/km) by 2008/2009. Subsequently, the Commission proposed, and Council and Parliament agreed to, binding standards for CO₂ emissions (and thereby energy efficiency) by passenger cars up to 2020.

Nevertheless, it is important to recognize that, while the agreed target was not achieved, the energy efficiency of European passenger cars has improved much faster over the last ten years than that of cars in most other markets, such as the United States. Adopted legislation is likely to continue to promote this trend, but it is uncertain whether the lower penalties for exceeding the limit values, insisted on by the Council, will mean that car manufacturers (and buyers) will prefer to pay the penalties rather than shift to more efficient vehicles.

The action plan further announced the intention to include aviation in the emission trading scheme, a step that has now been taken and which will be operational from 2012. This development is unlikely, however, to have any significant impact on aviation energy efficiency over and above what will already happen because of concern in the

sector over high fuel cost. The issue is further dealt with in the section on the ETS.

Regrettably, the action plan said nothing about energy efficiency in heavy-duty vehicles (trucks and buses). The potential for energy savings in this area is less than that with passenger cars, but it is still too large to ignore.

Energy Efficiency in the New Member States

The action plan had very little to say about what to do to address the often very inefficient use of energy in the new Member States. It is obvious that this is generally not a priority for the governments of those countries, but it is nevertheless an area that could potentially deliver both economic benefit and meaningful employment. Nevertheless, not a single specific action out of the 57 proposed was aimed at the new Member States.

The Directive on Energy End-Use Efficiency and Energy Services

Another important development in 2006 was the adoption of a new directive on Energy End-Use Efficiency and Energy Services (2006/32/EC).³ In principle, this directive could be a cornerstone in EU energy efficiency legislation. It replaces the 1993 SAVE Directive and requires action on the part of Member States, both to set energy savings targets (although only indicative ones) and to ensure that final energy consumption is measured and paid for by the consumer (but only if it is not too difficult or expensive). The directive addresses public as well as private energy consumption, and it obliges to some extent companies delivering energy to consumers to promote savings in final energy use. Not least, it obliges individual Member States to develop national Energy Efficiency Action Plans (EEAPs) and to update these on a regular basis.

Whereas the scope of the directive responds to calls made from many sides for many years for stronger EU legislation on more efficient end use of energy, the fact that the directive contains few substantive measures that are sufficiently precise and binding to allow the Commission to take Member States to court should limit the enthusiasm. The directive might well end in the category of EU legislation

where success is mainly observed in those Member States that would have taken the measures anyway. It is beyond doubt that close monitoring by the Commission will be essential, something that might well consume considerable resources.

The first round of national EEAPs, due by mid-2007, was not encouraging. Most were late and few went beyond putting on paper what was already in the pipeline in the different capitals. Few plans, if any, reflected serious government involvement across ministries on the issue.

Of course the final judgment on the merits of the directive should not be based on reports due less than 18 months after the legal text is finalized. A much better test will be the 2011 reports, but under present economic conditions one can fear that governments will content themselves with the decline in energy consumption resulting from the slowdown of the economy, rather than moving more ambitiously on energy efficiency. Press reports on the promotion of the "green new deal" are not encouraging (e.g., Lean 2008).

Energy Efficiency in the Emission Trading System

Another potential source of improvement in energy efficiency is the EU's ETS. The ETS is described elsewhere in this volume, so only the more specific potential achievements of ETS with regard to energy efficiency in the sectors covered by the scheme will be addressed here.

First, it is important to recognize that the purpose of the ETS is to achieve cost-effective CO₂ emission reductions, not necessarily to promote energy efficiency. Nevertheless, the Commission has, such as in the EEAP and at numerous less formal occasions, promoted the view that the ETS is *the* measure to ensure the achievement of energy efficiency in the respective sectors. Since it has been demonstrated that energy efficiency in industry is among the most cost-effective means of reducing CO₂ emissions, one would expect demonstrable effects on industrial energy efficiency. Yet this is not really the case.

In order for the ETS to deliver on energy efficiency, it is necessary that the system work according to intentions, including by delivering a sufficient CO₂ price. But how would one judge whether a given CO₂ price is sufficient?

Here comes the second observation: A given carbon price has a very different relative impact on the actual cost of using coal or natural

gas. Approximate price levels in October 2010 were as follows: 70 euros per ton of coal, 150 euros per 1000 cubic meters of natural gas, and 15 euros per ton of CO₂. Adding the cost of the respective CO₂ emissions increases the price of coal by 60 percent, but adds only 15 percent to the price of natural gas. Presently the relatively high coal prices and lower gas prices, 15 euros per ton of CO₂, may be sufficient to encourage a shift from coal to gas, but it is unlikely to have any significant impact on the efficiency of new gas-fired power plants, let alone the improvement of existing ones.

A similar argument applies to the energy-intensive industries. In the few instances where coal is used as an industrial fuel, the ETS may provide some additional incentive to improve energy efficiency, but not in the broader use of natural gas. This differential impact would change, of course, if CO₂ prices were higher. Even at 30 euros per ton, however, CO₂ would add only 30 percent to a gas price of 150 euros per 1000 cubic meters, so the effect would still be modest at best.

There are three reasons why the ETS is unlikely to provide the incentive needed for significant energy efficiency improvements in the industrial sector. The first is that the CO₂-price is unlikely to be high enough. Adding the economic downturn and the possible life-extension of German nuclear power plants to what one could reasonably expect to be the assumptions underlying the Commission's January 2008 proposal for extending the ETS after 2012 points to a declining price level in the years to come. The second reason is that even a price of, say, 30 euros per ton of CO₂ does not add sufficiently to the fuel price to cause a significant difference. The third is that most industries require a payback time of two or, at most, three years in order to justify investing in energy efficiency. Not many projects will pass that hurdle because of a modest increase in the energy cost due to the CO₂ price.

This last point is the real obstacle to effectively using economic instruments more broadly to promote energy efficiency, and it reflects a problem that extends well beyond the ETS. It is a general observation that enterprises, public authorities, or private citizens are not likely to pay up front for lower future energy costs unless the up front payment is recovered over a very short period: usually less than three years, often even less than that. Thus we are presented with a paradox. It is increasingly being accepted that global climate change is the most serious environmental problem mankind has ever faced. Nevertheless, policy responses are in many cases limited to actions that deliver a comfortable profit to those expected to act. One might ask where our urban air-quality policy would be today if

no reduction measures from car emissions had been required unless they were profitable.

A Horizontal Assessment

This description of recent developments in EU policy on energy efficiency is not exhaustive, but it should provide a realistic flavor of the ambitions, directions, and challenges. It shows a policy area that enjoys a high level of recognition of its potential, but which can still claim only modest achievements. It is an area subject to subsidiarity discussions, since many of the potential measures (buildings, small and medium-sized enterprises [SMEs], taxation issues, etc.) are predominantly of national concern, and yet are often not given, at the national level, the attention that would be expected in an area of importance for a common EU energy policy. Add to that the ideologically charged discussion of the virtues of the ETS and an overarching policy to achieve the EU climate policy objectives, and it is no surprise that the achievements so far fall short of the potential.

The more important question, however, is how much progress we can expect in the future. Is it possible to have justified expectations of significant energy efficiency improvements in the EU over the next ten years? The answer is "yes." We will certainly see an improvement. Appliances of all sorts to be sold over the next ten years will definitely be more energy efficient than those that are being replaced. Automotive fuel efficiency will continue to improve, although not necessarily as much as the recently adopted legislation might indicate. New buildings will certainly be more energy efficient than those being torn down.

Does this mean that, by 2020, most of the "low-hanging fruit" will have been picked? Certainly not. If the low-hanging fruit today represents 20 percent of energy end use, by 2020 it will most likely still be above 15 percent. This seeming paradox is partly due to the inability of the ETS (in its present form) to promote energy efficiency in the sectors covering roughly 50 percent of total CO₂ emissions and thus also roughly 50 percent of energy consumption. But it is also due to the fact that there is insufficient overall policy drive outside the ETS sectors to make energy efficiency a priority. And, finally, technological development generates new low-hanging fruit. In a different area, renewable energy, we have seen how wind energy has moved from being an expensive ("high-hanging fruit") technology to become

virtually competitive with most other sources of electric power in the span of a decade. High-efficiency light bulbs offer another example.

Key to the modest expectations for the penetration of available energy efficiency technology in the coming decade is the lack of push from the policy areas that ought to drive improved energy efficiency: climate change and security of supply. Contrary to what has been stated by the Commission, repeated by most EU-leaders, and believed by the media, EU climate policy is at best ambitious only in the long term (2050). Certainly in the short term, it is inconsistent with a 2050 target of 80–95 percent reduction in greenhouse gas emissions, as agreed by the EU in the fall of 2009. In order to be consistent with the 2050 target, the 2020 target of a 20 percent reduction should be much more ambitious. When the Commission proposed its 20–20–20 package in January 2008, it was perfectly well aware that collective EU emissions were already well below 1990 levels, by around 7 percent in 2006. This achievement was largely due, however, to the 2004 enlargement, since the new Member States had emissions significantly below their 1990 levels thanks to the collapse of their production base from socialist times. The Commission also had reason to expect that by 2010 (the central year in the Kyoto period 2008–2012), EU-15 emissions would be 8 percent below 1990 levels (including some contribution from collective development mechanism [CDM] projects) and that EU-27 emissions would be around 5 percent lower than that because of the situation in the new Member States. Recent data from the European Environment Agency show a dramatic fall in 2009 emissions, taking total EU-27 emissions more than 17 percent below 1990 levels, or more than necessary to meet the 2020 target of a 20 percent reduction if one takes into account the possibility of achieving around 5 percentage points of the reduction through CDM projects.

Whereas the 20 percent reduction target was never ambitious, recent developments have removed any consistency with any of the long-term targets, be it a 60–80 percent or an 80–95 percent reduction by 2050. It is also difficult to imagine that the present reduction and energy policy offers much of a driver for the innovation hoped for by the Commission in its "Europe 2020" development strategy. Political action is greatly needed.

This state of affairs will have important implications for future energy efficiency developments. Apart from those subject to legally binding legislation (appliances), the push for initiatives will be reduced, if not disappear altogether. Within the ETS system, carbon prices would be expected to fall and not to have a big impact, since even present prices are already too low to deliver much of one. Outside

the ETS sectors, governments will find it less demanding to meet their national 2020 targets, and the urgency to do something about energy consumption in existing buildings or in SMEs (not covered by the ETS) will evaporate. This development obviously runs contrary to the idea of a “green new deal,” of which investment in a climate friendly (and more energy efficient) economy is a cornerstone.

The lack of ambition in the EU climate policy has a couple of potentially perverse effects as far as energy efficiency is concerned. One is in relation to renewable energy. The fact that the renewable energy targets are legally binding gives renewables the upper hand over energy efficiency. The renewables energy policy is the only really ambitious part of the 20–20–20 package, and it cannot be concluded that it alone will be enough to deliver on the otherwise unambitious targets for greenhouse gas emissions and energy efficiency. In this case, we would run the risk that much of the fully developed energy efficiency technology will remain on the shelves of the respective companies, and that much-needed further technology developments will not take place. Similarly, one can fear that the considerable prestige invested by the Commission in the ETS will make the Commission feel less inclined to push for the full implementation of the 20 percent improvement in energy efficiency, since this might lead to a further weakening of the CO₂ prices and thus cast doubt on the environmental efficiency of the system.

As far as energy security of supply is concerned, the recession has also changed the outlook considerably. Coal and gas have turned into a buyer's market and will most likely remain so for several years, and the outlook for the oil market is that only in 2012 at the earliest will oil consumption be back at 2007 levels, thus providing some breathing space relative to the global shortage previously expected around 2015. Security of oil supplies in particular, however, remains a concern due to constantly rising consumption in several developing countries and the fact that global discoveries have kept up with just one-third of global consumption. Thus it is unlikely, in spite of good reasons in the medium term, that concerns about energy security of supply will provide sufficient momentum in the short term to promote energy efficiency beyond its present, relatively moderate level.

Conclusion

Energy efficiency is anchored, but not solidly, in EU energy and climate policy. Energy efficiency is likely to improve over the next decade, but

it will not come anywhere close to taking advantage of the technical potential for cheap or even profitable energy/CO₂ reductions. If the new Barroso Commission, which took office in 2009, is to be serious about the medium- to long-term CO₂ reduction needs, it will have to review the recently adopted energy and climate legislation as a matter of urgency, not least in light of the impact of the economic recession. Leadership in the area of energy efficiency need not be expensive. In fact, it is more likely to be profitable for the EU if correctly designed.

Notes

1. Directive 2005/32/EC of the European Parliament and of the Council of July 6, 2005. *Official Journal of the European Union*, no. 191 (July 22, 2005): 29–58.
2. Directive 2002/91/EC of the European Parliament and of the Council of December 16, 2002 on the energy performance of buildings. *Official Journal of the European Union*, no. 1 (Jan. 1, 2003): 65–71.
3. Directive 2006/32/EC of the European Parliament and of the Council of April 5, 2006. *Official Journal of the European Communities*, no. 114 (April 27, 2006): 65–85.

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