ARTICLE

Energy transition: What about the Internal EU Energy Market?

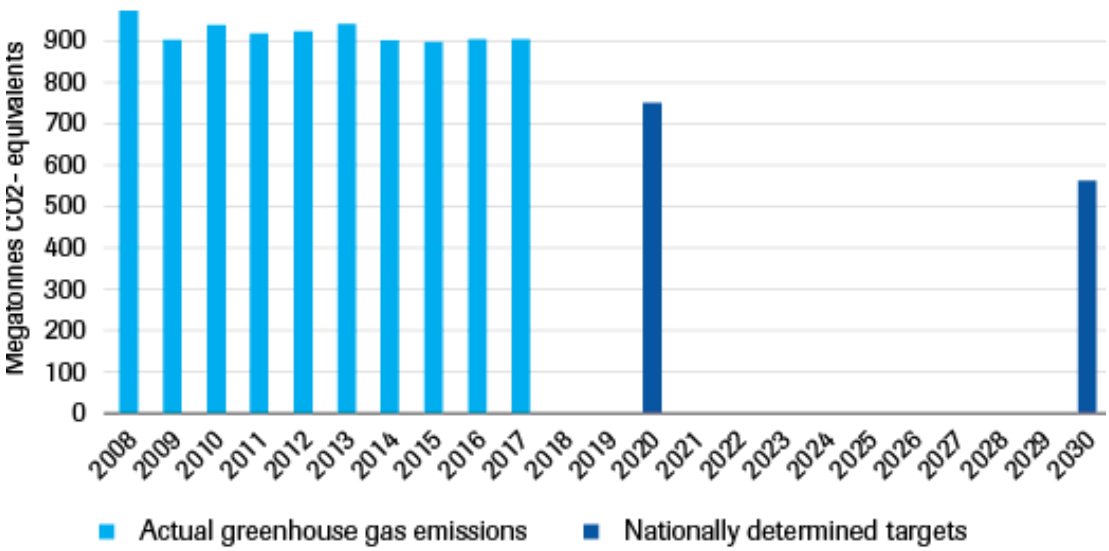
Pier Stapersma

Trouble in the European internal energy market is brewing, if not already visible today. It is clear that the urgency to decarbonise the EU energy system is recognised, but the route to achieve decarbonisation is far from clear.

Lying at the heart of the problem are two notions which are often misunderstood. The first is that 'renewable energy policies' and 'climate policies' are not the exact same thing, even though they are related. The second is that energy flows in the European Union are largely unhindered by national borders, due to the process of completion of the EU internal energy market. Experience with renewable energy policies in Germany and their cross-border market effects gives insights into both notions and offers important lessons for the decarbonisation of the entire European energy economy in the coming years and decades.

Remarkable news from Germany

The first week of 2018 started with remarkable news from Germany. It was reported that "Germany ran 100% on renewables for the first time on New Year's Day".[1] Seemingly, for energy transition in Europe's biggest economy, it was an excellent start of the year. But in the following week, Reuters reported that German Coalition negotiators agreed to scrap the 2020 climate targets. CDU and SPD "had agreed in exploratory talks to form a government coalition that the targeted cut in emissions could no longer be achieved by 2020".[2] So, despite continued long-term commitment to 2030 and 2050 objectives, the near-term nationally determined climate target for 2020 will in fact be missed (Figure 1).



(images/figure-1@2x.png)

Figure 1. German Greenhouse gas (GHG) emissions since the global financial crisis hit Europe and the nationally determined targets for Germany for the years 2020 and 2030 (Agora Energiewende, 2018).

Renewable success, yet climate disappointment started the year 2018 in Germany. These events demonstrate the somewhat counterintuitive notion that 'renewable energy policies and successes' and 'climate policies and successes' are not one and the same thing. In order to obtain a proper understanding of this, and its fallout, it is relevant to go back in time and revisit a number of important agreements and events that shaped energy and climate policies in Europe.

European energy & climate policy: A brief history

In 1992, the United Nations Framework Convention on Climate Change (UNFCCC) was established, followed by the Kyoto Protocol. These international successes provided great impetus to European climate policy-making. In the same period, the way in which European countries approached the energy market changed drastically. While in the 1990s gas and electricity markets in most EU Member States were still dominated by local monopolies, a process of liberalisation of the gas and electricity markets among Member States commenced. In 1996 and 1998, respectively, liberalisation directives for gas and electricity were adopted.

The EU internal energy market started to take shape in the late 1990s and 2000s. The conviction that free markets would automatically lead to the optimal power mix was at the basis of these policies. This led to a flurry of new investments, mergers and takeovers in the industry. Many investors saw this as an opportunity to expand their business across other EU Member States.

The adoption of the EU ETS

A major share of greenhouse gas emissions relates to the energy sector. Climate and energy policy-making are therefore strongly related. The combination of the shift towards an integrated liberalised EU energy market, and the international climate targets derived from the Kyoto period 2008-2012 led to the awareness across Europe that the climate policy of European countries should acquire a supra-national dimension. Moreover, trust in the efficiency of markets combined with confidence in continued European energy market integration led to the adoption of an ambitious pan-European market-based environmental policy instrument, the European Union Emission Trading Scheme (EU ETS). Approximately half of the greenhouse gas emissions in Europe were to be covered by this scheme. In 2005, its establishment was considered a success.

© Martin Fisch / Flickr

Industrial site in Wiesbaden, Germany. Approximately half of the greenhouse gas emissions in Europe were to be covered by the European Union Emission Trading Scheme (EU ETS).

The development of the EU internal energy market and the EU ETS to regulate carbon emissions could be considered as an open invitation to any energy supplier to contribute to clean, affordable, and secure energy for Europe in a non-discriminatory fashion. The price placed on carbon emissions would steer activities towards the more climate friendly solutions.

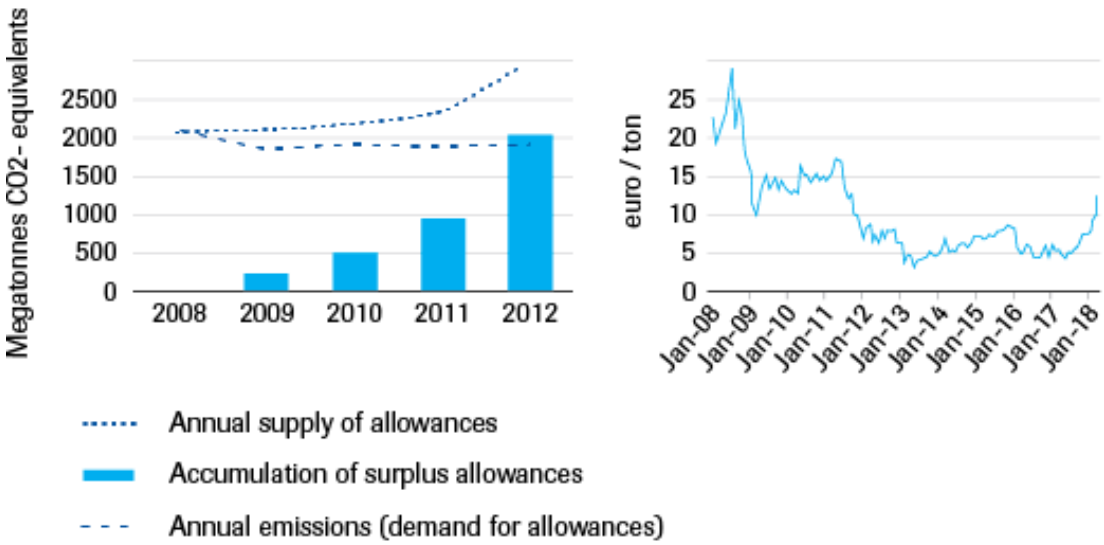
By the second half of the 2000s, the EU, keen to be a leader in the climate change negotiations, wanted to solidify this position with regard to its climate and energy policies. While uncertainty remained over an international climate agreement and governance, and no successor to the Kyoto protocol was in sight, the EU established a framework for the period up to 2020. In 2009, essential legislation was enacted, often referred to as the Climate & Energy Package, in which the 2020 policy goals were laid out.[3] Paris was still a long way down the road, but the EU had at least set its agenda for the period up to 2020.

Breakaway from the established philosophy

Here, something remarkable was happening, which can be interpreted as the start of the breakaway from the established philosophy of regulating the energy sector primarily with the pan-European emission trading scheme, while also respecting the EU internal energy market. The package was based on the agreement in 2007 amongst European leaders to reach the 20-20-20 targets by 2020. That is, multiple targets were set, focusing not only on cutting carbon emissions by 20 percent, but also with improving energy efficiency by 20 percent and achieving a share of 20 percent of renewable energy in the energy mix. Moreover, even though the energy market was regulated under the pan-European emission trading scheme, national renewable energy targets were set, too, to fulfil the EU-wide objective of 20 percent renewable energy in the European mix.

Clearly, this betrayed a lack of confidence in the ETS as a sufficient measure to steer the energy sector towards a cleaner, more sustainable and more efficient energy mix. And perhaps, too, there was an underlying disagreement between stakeholders over what constitutes 'clean', 'sustainable', and 'efficient'. Is all carbon-free energy clean? Is nuclear energy clean? Is renewable energy the only acceptable carbon-free energy solution? Should carbon capture and storage (CCS) be encouraged? How should bio-energy be judged? Opinions differed widely and substantially, and continue to do so today.

The EU-wide 20 per cent target for renewable energy suggests that value was attached to increasing the share of renewables in the European mix, in any case. Importantly, too, the establishment of national sub-targets suggests that all Member States should contribute to it. But no pan-European support scheme for renewables was developed. Rather, the renewables directive gave individual Member States the opportunity to financially support a selected number of energy technologies. Increasingly, the focus shifted away from a technology-neutral approach to reducing carbon emissions, and towards the increase in use of a pre-specified set of renewable energy technologies.



(images/figure-2@2x.png)

Figure 2. Carbon allowances in the EU ETS in the five years following the global financial crisis (left) (data from EC, 2014). Carbon allowance prices, peaking in 2008, just before the global financial crisis hit Europe (right) (data from ICE, 2018).

The aftermath of the crises

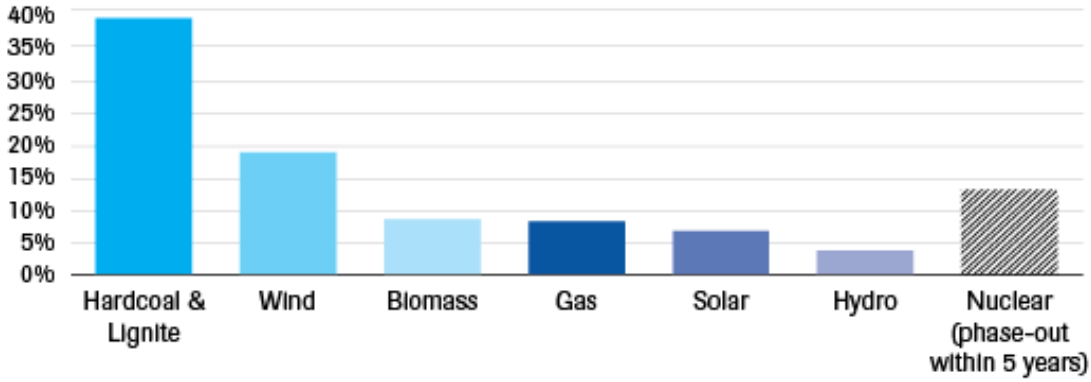
In 2008, the global financial and economic crisis hit the EU. Industrial carbon emissions went down and therefore demand for carbon allowances turned out to be lower than initially anticipated. The supply of allowances had been fixed by regulation to ensure a limited supply of allowances in line with the 2020 emission limits. Year after year, surpluses of allowances led to a growing stockpile of unused allowances (Figure 2). This led to allowance price levels far below the early levels – a situation that persists today. Despite the fact that the emission trading scheme was implemented successfully and functioned according to design, it resulted in a very low cost on carbon emissions. Although the sentiment in the carbon market turned in February and March of 2018, as of yet the emission trading scheme failed to significantly incentivize industry to increase energy and carbon efficiency.

In the centre of the EU: climate & energy in Germany

The following paragraphs focus on recent developments in the German energy mix – which provide a useful case study applicable across the EU. First of all, the focus is justified by the fact that Germany is the EU's most populated country and largest economy. Secondly, and perhaps more interestingly, the ramifications of energy policy choices in Germany are illustrative of the significance of the challenges ahead for other European policy-makers, and demonstrate that renewable energy policies can take a different course than climate policies.

In 2011, the Fukushima nuclear disaster had a particular impact on energy policy-making in Germany. Chancellor Merkel responded with an important switch in energy policy. Eight of the seventeen nuclear reactors were immediately closed. While Merkel's government had been hesitant to phase out nuclear power in the preceding years, the Fukushima disaster changed it all. Earlier governments had set a timeline for closing all German reactors over time (Plan A). But as existing nuclear plants provided large volumes of energy at a low cost, without any carbon emissions, various groups in Germany argued for revising the phase out and extending the lifetime of reactors (Plan B). The Merkel government was working towards Plan B. In 2011, the Fukushima crisis implied a radical return to Plan A. Energy and climate policies in Germany, centred increasingly on the targeted support of a pre-specified set of renewable energy technologies.

In Europe's largest economy, a global industrial powerhouse, the scene was thus set by 2011, less than ten years to go to target year 2020. Nuclear power was then clearly put on its way out. Instead, renewable energy production was on the rise, enjoying financial and regulatory support from national schemes. At the same time, carbon allowances – which were meant to put a cost on greenhouse gas emissions from industrial facilities, including power plants – were cheaper than many expected, leading to some sort of unexpected 'marriage' of coal and RES.



(images/figure-3@2x.png)

Figure 3. Electricity generation shares in Germany in 2017 (data from Fraunhofer, 2018).

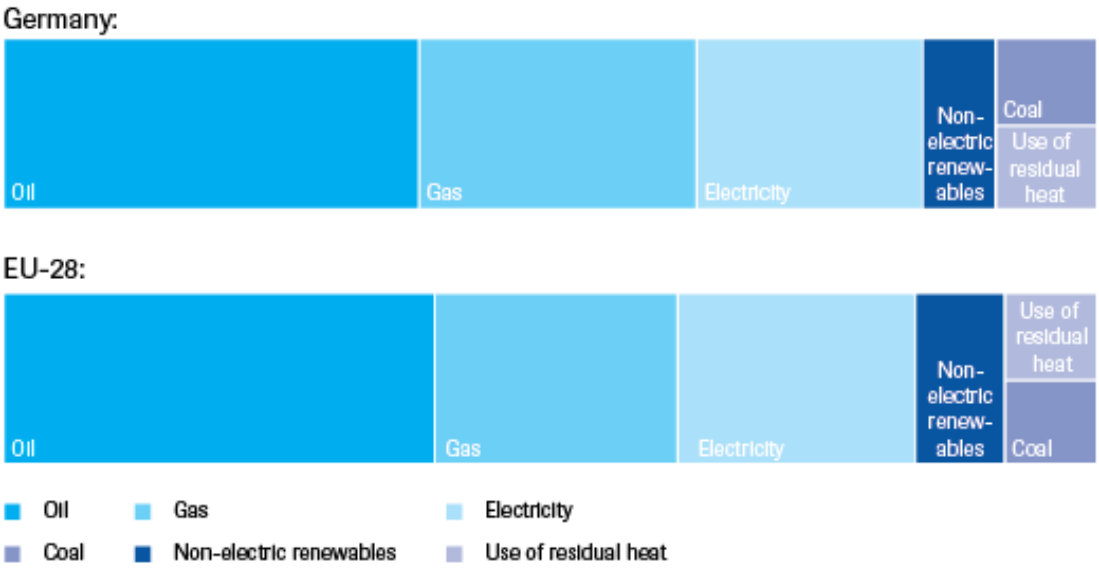
Surprisingly, for industrial electricity consumers in Germany this unimaginable course of events was not that discomforting. Low costs of carbon for the coal-fired and lignite-fired generators kept wholesale electricity prices low. In today's liberalised energy markets in Europe, day-to-day competition between electricity producers is strongly determined by fuel costs, most certainly so if no serious cost is attached to carbon emissions. As a result, coal-fired power plants fared well after the economic crisis and the Fukushima incident, while cleaner gas-fired generators served a supplemental role.

Meanwhile, new renewable energy supplies, financially stimulated through public support schemes, contributed further to a prolonged period of ample electricity supplies and low wholesale prices. Nuclear closures did not therefore lead to excessively high electricity prices. Germany continued to be a supplier of low-cost electricity, not only to domestic industrial consumers, but also to consumers in neighbouring markets. Households and small and medium-sized businesses, not the energy-intensive industries, for which exemptions exist, largely pay the levies to finance the support for renewables.

However, carbon emissions from Germany's energy sector did not drop as much as nationally planned. It is important to note here that energy and climate policies in some Member States had a particularly strong focus on increasing the share of renewables. Often, a strong focus was put on supporting solar and wind, and therefore, on change in the electricity sector. Other bits of the energy demand, e.g. demand in transportation, demand for heating in the built-environment, and industrial energy demand, largely served by fuels other than electricity (see Figure 4), escaped policy attention.

As a result, the carbon reduction potential in those parts of the European energy system did not fully materialise. Neglecting this potential meant that the 2020 targets could only be achieved by highly effective policies in the electricity sector, and failure to implement such policies was likely to result in breaking promises. In Germany, specifically, the one-sided emphasis on the electricity sector, combined with phasing out nuclear power while not significantly reducing carbon emissions from the use of coal, was a recipe for missing 2020 targets, even while electricity generation from solar and wind increased dramatically.

Let us now go back to the headlines from Germany quoted at the beginning of this article. In fact, on New Year's Day, not all energy demand was met by renewables – it was rather demand for *electricity*. Moreover, it should be noted that electricity demand is relatively low on a public holiday like New Year's Day. In addition, weather conditions were favourable to renewable energy production, as Atlantic winds were flying over Western Europe. This is how a milestone for renewables was achieved on one specific day, while short-term climate targets for 2020 are not being met and now seemingly abandoned. A significant rise in electricity generation from wind and solar has been achieved, but the reduction of greenhouse gas emissions of the German economy has not been as significant as planned.



(images/figure-4@2x.png)

Figure 4. Breakdown of final energy use in Germany and in the EU-28 in 2016 (Eurostat).

Elevating EU climate policy to the next level

Why is all this so relevant for European energy and climate policy-making and for Europe's internal energy trade? It is because national policy decisions and approaches have significant cross-border effects. It is because the danger of a one-sided emphasis on the electricity sector looms across the continent, while the EU energy system encompasses more energy carriers than electricity alone (Figure 4). And it is because diverging policy-making and policy competition threatens to hinder progress.

Once again, it is relevant to come back to the electricity and gas directives of the 1990s, which established the EU internal energy market according to the philosophy of the EU single market. Electricity flows across national borders. Energy in the internal market is just another tradeable good, and electricity offered cheaply on the market in one EU Member State can flow to other Member States, no matter which EU household sponsored it. Coal-fired and lignite-fired power generation that cannot be absorbed in one EU Member State, because the wind is blowing and the sun is shining, flows elsewhere. Moreover, operators often have an economic incentive to let such inflexible coal and lignite plants run at these moments so that these are available at a later hour, once the sun has set or the wind has died down.

> Europe is in need of a 'common currency' for climate policy that facilitates decarbonisation of the complete European energy economy

Importantly, the effects on electricity prices influence the economics of other power plants across borders, and therefore complicate decarbonisation efforts of various governments. Confronted with such price effects are: hydro capacity in the European Alps, nuclear power plants in Sweden, efficient gas-fired heat and electricity producers in the Netherlands, as well as wind farms in Denmark.

Offshore wind farm Middelgrunden in the Øresund, 3.5 km outside Copenhagen, Denmark.

It complicates the political economy of the energy transition in different countries that have different points of departure and different governance traditions. While in one EU Member State, public guarantees paid by households could be an accepted way of coordinating investments in the energy sector, this may not be true in other Members States where the argument is upheld that "renewables should stand on their own feet". At the same time, low-carbon investment without public guarantees is difficult to achieve if carbon emissions are not priced properly, which is currently the case in the internal energy market.

In order for Europe to demonstrate climate leadership in the coming years, it is of the utmost importance to make sufficient progress with the European decarbonisation agenda. Policy competition amongst EU Member States should not lead to an internal European struggle that works for industries and energy consumers in some Member States, but that is preventing others from organising their transitions. This may be the case when some Member States lack access to the policy toolkit they desperately need, given their particular energy legacies and distinct governance traditions.

Not recognising the successful establishment of the EU internal energy market, and not taking full note of cross-border energy flows, risks that policies and measures in one EU Member State negatively affect climate progress in other Member States and *vice versa*. Moreover, the impact on important energy suppliers and, perhaps tellingly, the impact of this policy competition on non-EU members of the European energy community is largely ignored in the internal deliberations.

Hence, Europe is in need of a 'common currency' for climate policy that facilitates decarbonisation of the complete European energy economy, making use of all the technological potential, institutional capacity, and social capital around. While more is indeed

needed, the idea of pan-European carbon pricing, raised at a time of firm belief in the common EU internal energy market, may have been not such a bad idea after all. If only the price was right.

Noten

[1] Renews, 'Germans notch renewables record (http://renews.biz/109715/germans-notch-renewables-record/)', January 5, 2018.

[2] Reuters, 'German coalition negotiators agree to scrap 2020 climate target: sources' (https://www.reuters.com/article/us-germany-politics/german-coalition-negotiators-agree-to-scrap-2020-climate-target-sources-idUSKBN1EX0OU), January 8, 2018.

[3] European Commission, Climate strategies & targets, 2020 climate & energy package (https://ec.europa.eu/clima/policies/strategies/2020_en).

Author

Pier Stapersma
Senior Researcher at Clingendael International Energy Programme (CIEP) ▸ (http://www.clingendaelenergy.com/about_us/staff/member/pier-stapersma)