

THE WINTER PACKAGE: ARE ITS OBJECTIVES ALWAYS CONSISTENT?

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On 30 November 2016, the European Commission published a proposal for a reform of energy markets titled "Clean Energy for all Europeans", better known as the "Winter Package". Its aim is to speed up the integration of electricity markets in Europe and to further encourage the use of renewables and the pursuit of energy efficiency, while at the same time placing European consumers at the heart of this project. This Policy Brief sheds light on the Commission's proposal – which runs to no less than 5000 pages – by examining its three major innovations and looking in depth at issues that remain unresolved in terms of pricing.

- ◆ **Putting the consumer at the centre of the policy.** In concrete terms, consumers must be able to participate more fully in the functioning of the electricity market, both as self-producers and as contributors to demand-side responses.
- ◆ **Strengthening the governance of grids and markets.** National capacity markets must be open to other Member States and to all technologies. The only exception is coal-fired power plants, the most polluting technology, which should be totally eliminated from the capacity markets in the long term.
- ◆ **Improving the integration of renewables.** The project puts an end to the priority of access to grids that has benefited renewables so far and recommends the eventual removal of production support mechanisms.
- ◆ **The issue of electricity pricing** appears to be inescapable given increasing inputs of decentralized renewable electricity that are destabilising the standard principle of electricity pricing at marginal cost. Alternatives – pricing at average cost or on the basis of capacity – will need to be explored.
- ◆ **The central role of the carbon price** and the implications of its insufficiently high level, which penalizes the competitiveness of low-carbon energies, are hidden. The reform of support mechanisms for renewables is no substitute for an ambitious carbon pricing policy.

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The Winter Package: are its objectives always consistent?

“Clean Energy for All Europeans”, better known as the “Winter Package”, released on 30 November 2016 is in line with the three Directives that have come into force since 1996 and various texts published in 2015 and 2016, including the Climate and Energy Package. Its overall aim is to speed up the integration of electricity markets in Europe by introducing more solidarity-based governance rules, pursuing the integration of renewable energies and energy efficiency efforts, and enabling consumers to participate more effectively in the market and to enjoy greater rights.

European consumers must be able to access ‘clean, secure and affordable’ energy. However, the ambitions of the document – over 1000 pages with 4000 pages of annexes – are modest with regard to the establishment of a high carbon price. Moreover, certain questions, such as the impact of a high proportion of renewables on the functioning of “merit order”, are not raised. The recommendations of the Winter Package (WP) are expected to be adopted in 2017 and to come into force in the period 2020-21. But the objectives sought are not always clear and sometimes raise questions of consistency.

With regard to the most significant quantitative targets, the WP by and large endorses those set out in the 2030 energy and climate package, namely to attain a 27% renewables ratio in the EU energy mix by 2030, to improve energy efficiency by 30% and to reduce greenhouse gas emissions by 40% compared to 1990. But the commitments concern the European Union as a whole and the Member States no longer have binding targets. Although the Commission can issue comments or warnings, each Member State is free to choose how it will achieve the common goals.

1. European consumers central to the programme

The WP recommends that more attention be paid to consumers. In becoming major potential producers of renewable electricity, consumers must be able to participate more fully in the functioning of the market, both as self-producers and contributors to demand-side responses. The development of smart meters, smart grids and enhanced storage capacity will enable consumers to participate more directly in the balance between supply and demand. The WP states that consumers have the right to produce, store, consume and sell self-generated electricity either individually or through an aggregator. In addition, grid usage tariffs must reflect the costs of injecting or withdrawing electricity. However, net metering¹ is not permitted, a restriction that makes sense, because kWh costs and grid costs are likely to be very different depending on the time and place of injection and withdrawal.

Consumer rights must also be better preserved, in particular by providing information on suppliers’ pricing offers so as facilitate the switching of suppliers – currently viewed as insufficient by the Commission – and by offering more systematic “dynamic” pricing that better reflects wholesale market prices in real time. It proposes that consumers should be able to change a supplier within three weeks and free of charge. At the same time, the WP calls for the eventual abolition of regulated tariffs – for example, the “blue” tariff still in force in France –, with the

¹ With net metering, there is strict quantitative compensation between kWh withdrawn and kWh injected, without taking into account the place and period of withdrawal and injection.

exception of social tariffs. It should be noted that the abolition of social tariffs has been advocated for more than three years by ACER², the European energy regulator. But even in this area, the WP recommends that other mechanisms, such as the “energy cheque”, be used in the future, with social tariffs to disappear within five years of the coming into force of the new directive. Note that if the prices paid by the final consumer are required to more closely reflect market conditions and grid costs, it would encourage the introduction of differentiated access prices depending on the time and place of withdrawal, a situation that in the long term seems likely to spell the end of the spatial equalization of tariffs practised in France.

2. Better governance with regard to grids and markets

The development of transnational interconnections, better harmonization of standards and an enhanced role for ACER should help to reduce border congestion and facilitate better convergence of wholesale prices. The WP introduces an obligation for Member States to develop energy-climate plans covering the period 2021-30 by 2019, followed by an updating of these plans by 2024.

Electricity prices in wholesale markets, which have fallen sharply in recent years, no longer allow a price signal to be sent for new investment in power generation. Capacity mechanisms need therefore to be rapidly set up to avoid the mothballing or closure of power stations that may become needed for security of supply. ENTSO-E (European Network of Transmission System Operators for Electricity) is responsible for determining needs in this area, although this prerogative is being challenged by Member States that consider it should be their responsibility. Such objections do not, however, prevent ENTSO-E from verifying the consistency of national plans at the European level and stating its opinions. Responsibility for security of supply rests with Member States and the calculation of capacity requirements can therefore only be determined at national level.

With regard to these capacity mechanisms that are being set up, whether through a reserve as in Germany or through markets in many other countries including France³, the Commission mandates that the resulting capacity payments are not used as a hidden subsidy for the benefit of operators of high-carbon fuelled plants. By proposing a CO₂ performance criterion of 550g of CO₂ per kWh for new installations initially and then for all installations five years after the entry into force of the WP, the Commission hopes to send a signal for the future. But this will have little impact in the short term on the existing power plants, and coal-fired power plants in operation will therefore be able in principle to continue participating in the capacity mechanism. In this respect, there is a lack of consistency between the objective of supply security and the objective of reducing greenhouse gas emissions.

² See “ACER Annual Activity Report for the year 2014”, ACER, May 2015.

³ See “Mécanisme de capacité. Rapport d’accompagnement et proposition de règles”, RTE, April 2014.

CO₂ emission factors for electricity power plants in Europe (gCO₂/kWh)

	Gross standard emission factors (primary gCO ₂ /kWh)	Thermal efficiency (min/max)	Net emission factors (gCO ₂ /kWh)
Lignite coal	364	35% - 45%	1040 - 810
Anthracite coal	340	35% - 45%	970 - 760
Natural gas	202	40% - 60%	510 - 340

Source: Climate Economics Chair, based on IPCC data

Capacity mechanisms, with the exception of strategic reserves, must be open, as soon as an interconnection exists, to participation by capacity providers located in another Member State. All capacity mechanisms must henceforth pass the test of the discipline of state subsidies and the rules concerning such aid have been standardized. Nor do Member States have the right to prevent domestic capacities from participating in a foreign capacity mechanism. This requirement could lead to a better convergence of capacity mechanisms between Member States, since the Commission finds unacceptable the current situation in which there are so many different capacity mechanisms for ensuring the security of supply. It should be added that the remuneration of capacities must be determined on the basis of competition mechanisms and not directly by the public authorities. The capacity mechanism should be open to any type of capacity: demand-side as well as renewables. However, it is questionable whether renewable energies should benefit from the capacity mechanism when they already receive support in the form of supplementary remuneration. Would there not be a double dividend for renewable energy?

Greater cooperation between European grid managers is also required, both in transport and distribution, with grid codes to be unified under the authority of ACER. In particular this involves responding to emergency situations and increasing mutual assistance. Note also that decisions at the board of regulators level will be taken by a simple majority and no longer by a two-thirds majority. The Commission is evidently seeking to transfer some of the regulatory powers from the national to the European level.

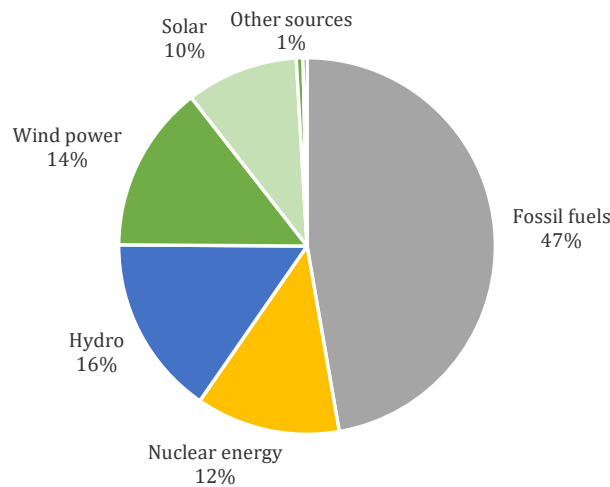
As regards the day-ahead and intraday markets, the ceiling on wholesale prices (price-caps generally set at 3000 euros/MWh) must disappear unless they are set at the value of lost load, which should be close to the cost of failure, which is generally higher than 10 000 euros/MWh. The floor prices on the wholesale markets (currently set at -500 euros/MWh) will also be abolished unless they are set at -2000 euros/MWh or below. It is also intended that price differences should be settled every fifteen minutes from 2025. These measures reinforce the attraction of a capacity market.

CRE, the French regulator, shares the view that “resources, whether production, storage or demand-side responses, should be able to participate in markets under conditions of fair competition”⁴. All this lies within a logic of greater market flexibility, particularly on the electricity demand side. However, CRE seems to doubt that the current institutional framework will allow citizens and local actors to become genuinely involved in these markets, especially since certain provisions of the “third package” have not yet been implemented. It points out that cooperation among national regulators within ACER was a key factor for success, in other words that the balance of power between national regulators and ACER should not be altered too quickly. For many Member States it is important to proceed “in stages”, with effective linkage between the

⁴ See “Réactions de la CRE au paquet énergie propre”. CRE Position paper, January 2017.

various local, national, regional and European levels of governance, and to respect the principle of subsidiarity.

Share of renewables in installed electricity capacity in 2015 in the EU 28



Source: Climate Economics Chair, based on Eurostat data

3. Timorous ambitions for the penetration of renewables?

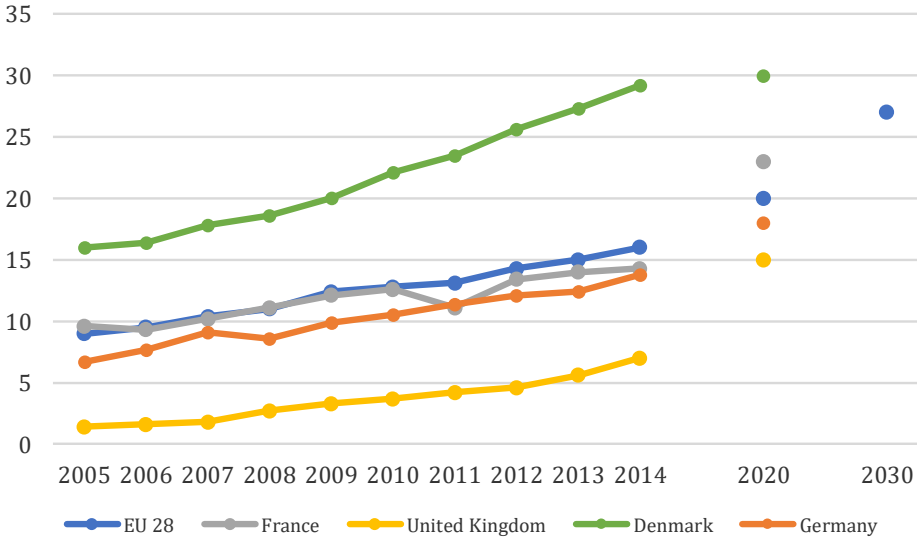
The target of 27% renewables in the EU's final energy consumption by 2030 has for many observers seemed modest compared to the past trend, even if the Commission officially wants to make the European Union the world's leading area for the deployment of renewables. Going from 20% in 2020 to 27% in 2030, however, represents a lesser effort than hitherto incurred. The WP also plans to eliminate priority access to the grid for renewables, with the exception of installations of less than 500 kW, which may continue to benefit from support such as feed-in tariffs or the pay-in premium, with the second of these being preferred, and with the exception also of the least mature technologies, such as biomass. In addition the 500 kW threshold will be lowered to 250 kW in 2026, unless in the meantime the renewable capacity benefitting from dispatching priority amounts to 15% of the total installed capacity. In this case, the criterion automatically switches to 250 kW.

These measures are obviously not retroactive and apply only to new installations. Note too that these subsidies are no longer warranted if renewables have attained their competitiveness threshold, and in any case renewables would be preferred in terms of merit order since their marginal cost (variable cost) is very low or even zero. On the other hand, they will no longer have priority in relation to dispatching by the grid operator. In practice, the WP encourages the use of calls for tender and recommends "technological neutrality", which amounts to favouring a "lowest bidder" logic. Is the cheapest offer always the best from the collective standpoint? Some observers dispute this view and would prefer the use of technology-specific invitations to tender in order to maintain a certain diversity and complementarity of technologies. They also fear that the end of this access priority will penalize certain technologies.

A Member State may, however, ask the Commission to allow it to maintain injection priority for unauthorized installations if the abandonment of this priority is likely to jeopardize the equilibrium of the grid or to prevent the country from meeting its targets in terms of renewables. The Commission considers that innovation must be accelerated with regard to clean energy, a

stance that requires aid for research and development. There is, moreover, virtually no mention of nuclear power in the WP, which is hardly surprising since the Commission does not view it as a “clean technology”, even though it is “low carbon”.

Share of renewables in gross final energy consumption and 2020 and 2030 targets



Source: Climate Economics Chair, based on Eurostat data

4. Increased energy efficiency

Up until now the European Commission has set the same energy consumption target for 2020 as for 1990. The WP, however, introduces a new target: to increase energy efficiency from 27% to 30% by 2030. There is also an energy saving target of 1.5% per year between 2021 and 2030 (i.e. a total of 15%), expressed in relation to the total volume of energy sales. Though ambitious, this target is not unfeasible if major efforts are made regarding buildings and transport. Buildings account for 40% of the EU’s total energy consumption, and 75% of them suffer from low energy efficiency. The new directive on the energy performance of buildings included in the WP should help speed up the pace of renovation. In conjunction with the European Investment Bank and in collaboration with Member States, the Commission proposes that a fund of around ten billion euros should be set up to accelerate energy savings and penetration of renewables in the building sector: the “Intelligent Finance for Intelligent Buildings” programme. Similarly, the rapid growth of electric vehicles is expected to reduce energy consumption in the transport sector, which still accounts for 30% of all energy consumed, though considerable effort is still required in terms of battery technology and recharging facilities. The large-scale development of smart grids and communicating meters is therefore a priority. Digitization (“the internet of things”) is viewed as an effective way to increase energy efficiency in all sectors.

5. How does carbon come into the picture?

The Commission reminds us that the European emissions trading scheme (EU ETS) is still a key aspect of the programme to reduce CO₂ emissions. It argues that the withdrawal of a proportion of allowances will lead to a rise in the price per tonne of CO₂, which is currently very low (about 5 euros/tCO₂). But without high carbon prices, fossil fuels are not penalized and the competitiveness of renewables is delayed. The recent (2017) French decision to finance the

additional cost of renewables by fossil fuels – part of the domestic tax on consumption of energy products (TICPE), which itself includes a carbon tax component – is a step in the right direction since it involves financing renewables through carbon-based energy. Yet one of the main obstacles to higher carbon prices lies in the existing interactions with national energy policy instruments, first and foremost the development of renewables, which are not sufficiently coordinated at European level. In this respect, the WP is disappointing, since the Commission considers that the revision of renewable energy support schemes, which in future will have to rely more on market mechanisms, will be sufficient to limit the negative impacts of these interactions on the price of carbon.

While the plan to reform the EU ETS, which is subject to separate reform, is likely to strengthen the price signal for carbon in the medium term, the proposed mechanism for adjusting the supply of allowances seems inappropriate in view of the problems raised by interactions with national policies. The proposal for a stability reserve recently passed by the European Parliament aims to adjust the supply of allowances automatically on the basis of quantitative criteria that do not incorporate market fundamentals. In order to restore the effectiveness of the EU ETS and to re-establish a sufficiently high and predictable carbon price, the criterion for intervention by the reserve need to be defined in terms of price thresholds, not quantities. Doing so would entail restricting carbon price changes to a corridor whose lower and upper boundaries would be a price floor and a price ceiling. An alternative route might be to manage more responsively the allowances supply in order to control the effect of interactions with national policies, for example by adjusting the allowances ceiling according to injections of renewable electricity⁵.

As a follow-up to the ratification of the Paris Agreement by EU Member States, the Commission proposes introducing new rules for measuring and reporting on progress made in the implementation of European commitments. The WP also proposes that Member States should synchronize the revision of their energy-climate plans with the five-year review cycle of commitments as provided for in the Paris agreement.

6. Unresolved questions

Among the issues warranting more attention and likely to become pressing in the near future, reform of electricity pricing is probably the most sensitive. The logic of “merit order” used in the wholesale electricity markets involves calling on generating plants in the order of their increasing variable cost (marginal cost). Thus when a coal-fired power plant is marginal (in the case of low demand), it recovers its own variable costs. When demand increases and an additional power plant is needed, the variable cost (largely the fuel cost) is higher and the equilibrium price rises and allows the coal-fired power plant to recover a “mark-up” covering part of its fixed costs. A gas plant, on the other hand, recovers only its variable costs, but it will be able to recover its fixed costs when an additional plant with a higher variable cost is called on to meet higher demand.

The large-scale injection of photovoltaic and wind renewables raises a specific question. These “variable” or “intermittent” renewable power plants benefit from zero or near zero variable costs, which means that even without legally defined priority access they would be called on before any nuclear, coal or gas plants, whose variable costs are higher. But renewable plants are not needed

⁵ See “How should the EU ETS be reformed following the Paris agreement and Brexit?” Climate Economics Chair, Policy Brief No. 2016-01, July 2016.

on the grid long enough (only 20-40% of the time depending on the case) to recover their fixed costs. In addition, for solar in particular, they are not called on during the busiest periods of the year, especially during the evening, when market prices are highest. Substantial and economically viable development of storage capacity (by means of batteries or pumping stations) would allow them to inject electricity during the most remunerative periods. But this is far from the case today, which is why these plants are remunerated off-market through feed-in tariffs or feed-in premiums.

What will happen when the share of renewables in the power mix becomes very high, if at the same time guaranteed purchase prices and income supplements are ended? Most of the time wholesale market prices will be very low and producers will be unable to recover their fixed costs. Ultimately, with 100% renewables at zero marginal cost, the market price will no longer make sense. There is then a risk of power plants shutting down (and consequent blackouts or at any rate a likelihood of a surge in spot prices at peak hours), so that plants still in operation can recover their investment. But governments do not trust an “energy only” market that would result in very high prices at certain times. It is for this reason that wholesale prices are “capped” in terms both of a ceiling and a floor (a measure that according to the WP should be brought to an end). Certainly the existence of a capacity mechanism helps attenuate high prices, but it does not cover everything. It is for this reason that we believe the current logic of electricity pricing needs to be completely reviewed. Pricing based on marginal cost should be replaced by pricing based on average costs or even on wattage alone, whereby consumers would pay for a guaranteed power and call on that power as required. All policies encouraging peak hour demand-side would be doomed under such a system. It is now important to think about on the pricing reforms that need to be implemented as long as the problem of large-scale electricity storage remains unresolved.

A similar problem arises with the pricing of access to networks, especially the distribution grid, with the development of photovoltaic self-consumption. Today, grid access tolls are partly based on the power level (wattage) contracted and partly on the amount of energy (kWh) used. The “power” and “energy” shares vary considerably from country to country. On average in Europe the power share is around 30% and the energy share around 70%. In Spain the power share is nearly 80%, whereas it is only 30% in France. Thus in France consumers pay the supplier when they use electricity, since the energy share amounts 70%. At a given contracted power level on the grid, French photovoltaic self-consumers will contribute to the financing of the grid only to the extent that they need to take electricity from it, as when their solar installation is not in operation. Other consumers, who have not opted for a solar installation, bear the costs, thereby generating cross subsidies. These photovoltaic self-consumer households are in effect “free riders”. This “last house” syndrome means that the household which has not opted for a solar installation pays for all the others. Nevertheless self-consumers (self-producers) have to finance connection to the grid and pay fixed costs, but remain exempt from the CSPE (Contribution to the public electricity service) – or its equivalent – for the self-consumed part of their production. Here too, it would be necessary to increase the “power” proportion of the access tariff and therefore to review pricing.

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European climate-energy policy: key dates

1996: First Directive on the internal electricity market.

2003: Second electricity directive.

2005: Start of the European Emissions Trading System (EU ETS)

2008: Adoption of the 2020 energy-climate package (20% renewable energy, 20% more energy efficiency, 20% less greenhouse gas emissions compared to 1990).

2009: Third electricity directive.

2011: Roadmap 2050, setting sector targets for emissions reductions up to 2050

2014: Announcement of the 2030 energy-climate package (27% renewable energy, 27% more energy efficiency and 40% less greenhouse gas emissions compared to 1990).

2015: Signing of the Paris Agreement (COP-21)