

MARKET DESIGN

A position paper from the
European Wind Energy Industry

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EWEA
THE EUROPEAN WIND ENERGY ASSOCIATION

Executive summary

In this paper EWEA puts forward its key priorities for power market design reform. Implementing these elements would help overcome two of the main problems investors are currently facing in the EU power sector: 1) depressed wholesale market price levels; 2) fading EU-coordination of energy policies.

In a well-functioning power market, supply choices - and the corresponding investment decisions - are driven by price signals. A market-driven investment environment is the best means to provide long-term price signals together with the necessary stability needed to trigger investments and lower the cost of capital, while meeting all system needs and increasing the share of wind energy in the power mix.

Providing the right market signals will enable an affordable, secure and decarbonised electricity supply. Importantly, investors should be able to rely on underlying general principles of continuity and stability of the regulatory regime, including the avoidance of any retroactive measures and the grandfathering principle.

These price signals can be created by the following measures:

- Accelerate the electrification of heat and transport sectors in order to increase demand and signal new investments in technologies with lower carbon content. This should be accompanied by ETS reform and a restrained approach to Capacity Remuneration Mechanisms (CRMs);
- Considering CRMs as a last resort option and only after standardised system adequacy analyses. This must be measured against transparent and EU-wide supply adequacy targets.
- Making the energy-only market functional by fostering liquidity and cross-border trading in all market time frames;
- Creating a truly integrated internal energy market by including the commercial provision of ancillary services as a fundamental feature; and
- Fostering the liquidity of long-term markets and developing new financial products to hedge against price and volume risks. This would serve as an additional feature of the energy-only market model based on the principle of voluntariness.

EWEA proposes that the following elements should be included in a plan to reform the electricity market design in the EU.

I. No-regret measures to be carried out as a matter of urgency

- Full achievement of the EU-wide target model including integrated and well-functioning intraday and balancing markets.
- Refocusing liberalisation efforts away from the power supply side solely, in order to include demand side participation and storage in the medium to long term.
- Implementation of the most important grid reinforcements at national, regional and EU-wide level as a necessary precondition of any successful market design reform, based on thorough cost-benefit analyses. Adequate grid infrastructure enables trade, competition and economic growth by maximising the comparative advantages of each market area. Power exchanges over wide geographical areas smoothen out variable output of wind energy and demand variations, reducing the need for balancing energy and therefore strengthening security of supply.

- These infrastructure-related measures include increased TSO cooperation and improved system operation routines, which could be promoted by regulatory measures such as interconnectivity targets. These would be benchmarked against the achievement of a certain percentage of the "projects of common interest", a strengthened ACER, and developing ENTSO-E into a regional and ultimately more European system operator.

II. Fixing the energy-only market model to re-establish price signals

- Carry out an ETS reform which will provide for a high and stable carbon price, thereby creating market exit signals for carbon-intensive and inefficient power plants and functioning as a tool to create longer term investment signals for all abatement options.
- Extend the ambition of the Target Model in the Intraday and Balancing markets. The aim should be to foster liquidity and cross-border integration in these markets, which will deliver efficiency gains in market operations. Price spikes must be allowed in these markets to provide scarcity signals and incentivise the provision of flexibility services.
- Promote price formation in the short-term markets so that they can become a new price reference. Assuming optimised intraday and balancing market design, after 2020 stakeholders will increasingly refer to intraday prices for investment decisions in generation assets, alongside day-ahead market prices.
- A proper market for ancillary or grid support services needs to be fostered alongside the energy-only market. Such a future energy market form would ensure the most cost-effective provision of these services in the energy sector.
- The need for CRMs should be properly assessed and based on thorough regional system adequacy assessment. Importantly, common standards for security of supply and system adequacy should be defined and enshrined in EU legislation. If a capacity shortage is identified, only the most non-distortive choice of CRM, in line with European State aid guidelines for the respective power system in question, should be considered. The choice of CRM should not prevent carbon intensive and inflexible power plants from leaving the market. Moreover, national legislation must not impede the decision of a power plant owner to exit the market.
- Even if all of the above mentioned measures are implemented, the market framework might still not be sufficient to guarantee an adequate return on investment for all generators, including low marginal cost and CAPEX-intensive power generation technologies. In view of specific support schemes progressively diminishing for mature RES technologies, part of the answer could lie in new financial products to hedge against price and volume risks, in which wind power producers could participate on a voluntary basis. However, as this paper outlines necessary short- to mid-term measures only, new solutions need to be addressed as a next step: how can continued investment in low marginal cost and CAPEX-intensive generation capacity be facilitated in the long-term with ever increasing shares of wind energy.

“Energy Markets And Grids Have To Be Fit For Renewables, Not Vice Versa.”

Miguel Arias Cañete - Commissioner for Climate Action and Energy, March 2015.

A. Introduction and scope of the paper

In a well-functioning power market investment decisions in new power generation capacities are driven by price signals. Such a market would be based on the principle of price formation providing scarcity signals, and support both a cost efficient decarbonisation of the economy and a reliable energy supply. Making the wholesale electricity market functional is, therefore, of the utmost importance. The European wind industry represented by EWEA is convinced that creating a market driven investment environment is the best means to provide long-term price signals together with the necessary stability needed to trigger investments, and lower the associated cost of capital, thus ensuring an affordable, secure and decarbonised electricity supply.

Consequently, power markets must be continuously developed to provide incentives to manage the increasing variability of the future power system. At the same time, investors should be able to rely on continuity and stability of the regulatory regime, including the avoidance of any retroactive measures and the grandfathering principle. Ultimately, a market framework that can manage these challenges is a necessity for a sustainable energy transition – both environmentally and economically sustainable.

This paper aims to outline market design reform proposals which would allow for reliable system operation with a high share of variable renewables, as well as establishing market price signals as a core principle for all investments in power generation in the short to mid-term. These proposals are based on the conviction that only European or at least regionally coordinated responses can address the energy policy challenges in the highly interlinked power system of the EU. This paper focuses, therefore, on solutions which are compatible with the objective of achieving a truly integrated Internal Energy Market, and would thereby rectify some of the recent tendencies of energy policies in some EU Member States towards less coordination at EU-level.

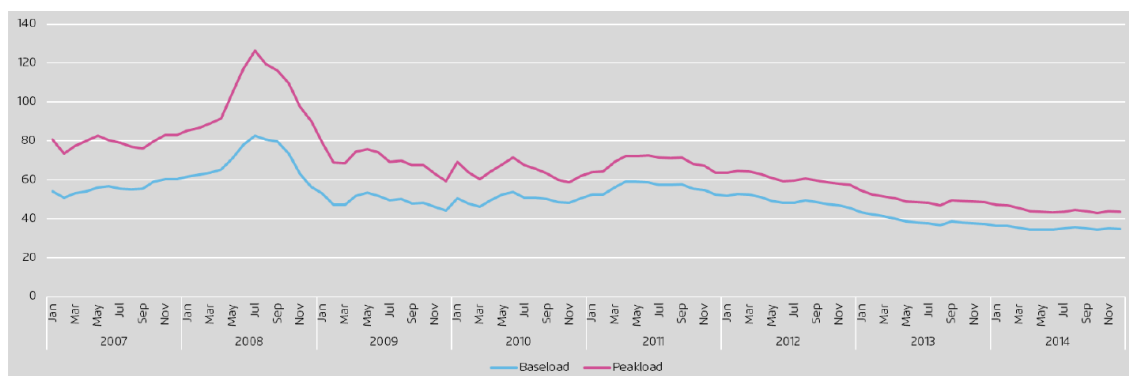
B. Current state of play

The emergence of European electricity markets is a positive outcome of over a decade of successive European Energy Liberalisation Packages. However, various market constraints persist with the entire energy sector relying on nationally focussed, public interventions when taking investment decisions rather than on the market itself. Hardly any power generation technology can justify investments today as these are affected by two key factors, namely 1) depressed wholesale market price levels; and 2) fading EU-coordination of energy policies with a tendency towards renationalisation.

1. Depressed wholesale market price levels

The graph below shows that average power price levels have been falling almost continuously since 2008. On average, power could be purchased on wholesale markets in 2014 for roughly €40/MWh. These depressed wholesale price levels are mainly due to three factors:

Figure 1: Evolution of monthly average wholesale electricity prices across the EU



Source: Agora Energiewende; EEX

1.1 Contraction of power demand

The contraction of power demand in recent years is among other factors a result of the economic crisis, which has had a significant downward effect on power prices¹. The slow economic recovery, which is characterised by limited industrial demand for power, is undermining any price increase scenarios which could be used for building an investment case. This comes in addition to decreasing primary energy consumption and energy efficiency policies². Further electrification of the heating, cooling and transport sectors has not materialised and could potentially have a significant impact on power demand in the mid to long term.

1.2 Overcapacities and potential local adequacy issues

The power sector is facing a major investment dilemma which has led to both continuing overcapacities in the power generation fleet and a few potential, locally constrained adequacy issues. Notably, this dilemma is due to the absence of meaningful long term signals. Without long-term price signals, investors are not willing to divest assets in markets with capacity surpluses, tending to wait until competitors shut down their power plants.

Moreover, high growth expectations before the economic crisis triggered considerable overinvestment in coal and gas power plants in many Member States, together with an undue exclusive focus on the supply side. According to recent generation adequacy analyses, there is around 100 GW of capacity available over peak load³. In addition, as coal prices in Europe fell by 40% since the beginning of 2011 and in the absence of a meaningful carbon price, operators of old coal power plants have been incentivised to continue operation rather than decommission.

At the same time, even new flexible power plants are currently being decommissioned due to low wholesale power prices and insufficient number of annual running hours. This is particularly concerning as the system requires flexibility to integrate more variable output capacity in a cost-efficient manner. New plants provide a valuable flexibility source, among other flexibility sources.

¹ The 2008-09 economic crisis was accompanied by an unparalleled drop in electricity demand. At the end of 2012, the electricity demand in the EU-27 was still 3% lower than in 2008. Back in 2008, analysts were expecting an annual growth rate of 1.5%, see also *CEPS Task Force Report: Reforming the market design of EU electricity markets, 2015*, and *Model-based Analysis of the 2008 EU Policy Package on Climate Change and Renewables*, Capros et al., 2008.

² See also: http://ec.europa.eu/eurostat/statistics-explained/index.php/Energy_saving_statistics

³ Bottlenecks in power generation capacity might occur locally, e.g. in Belgium or in weakly interconnected power systems such as the UK where a new investment cycle is due anyhow. Generally, however, most Member States have a historical oversupply of conventional power generation assets, see also German Green paper (<http://www.bmwi.de/EN/Topics/Energy/Electricity-Market-of-the-Future/green-paper.html>) and the ENTSO-E SOAF 2014 (https://www.entsoe.eu/Documents/SDC%20documents/SOAF/141031_SOAF%202014-2030_.pdf) which depicts over 100GW of remaining firm capacity above peak load in the EU, see page 34.

1.3 Failure of the ETS to provide wholesale market price signals

Ideally, the Emissions Trading System (ETS) has an impact on the merit order of the wholesale power market by pricing the externality of emitting CO₂ per unit of power produced. However, the oversupply of allowances, currently estimated at around 2 billion allowances, is depriving investors of any meaningful carbon price signal. If the ineffective carbon price levels persist, the ETS will fail to give long-term price signals that impact investment decisions or operating price signals and will simply function as a pollution tax at best. If substantially reformed, however, the EU ETS has the potential to be a tool for decarbonisation and to create longer term investment signals for all abatement options including wind power.

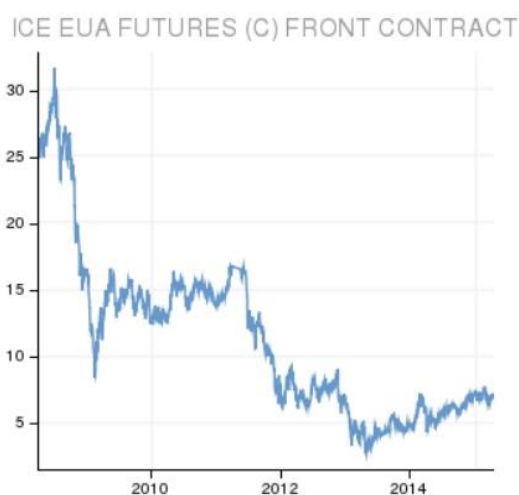


Figure 2: The decline of carbon price levels up to present

Source: Intercontinental exchange, EUA Futures

2. Fading EU-coordination of energy policies

There is an inherent energy policy conflict between “fully respecting the Member States’ freedom to determine their energy mix⁴” and the European energy goals for 2030 and 2050. The limited scope of the EU Energy Union⁵ illustrates the paradox of “28 drivers on a single path”, which can be further evidenced by the following main tendencies.

2.1 Ongoing national developments on CRMs

A plethora of nationally oriented CRMs are being implemented in Member States. In many cases, the CRMs give little consideration to the actual system adequacy problem or possible wholesale price distortions they induce⁶. In some cases CRMs might be justified through providing insurance against local adequacy bottlenecks and delivering price signals. They could also encourage sufficient capacity to stay in the system or attract investments for necessary new capacity to be built. However, if they are not well designed (i.e. respecting the principles of proportionality and appropriateness in terms of overcoming a clearly defined capacity gap⁷), they are likely to shield economically unviable investments. This would hinder market clearance and make the power generation mix unnecessarily expensive.

2.2 An outdated energy liberalisation model with a focus only on the supply side

Despite ongoing energy market integration efforts, a patchwork of energy markets still exists across EU Member States. There is a low level of transposition of the Third Energy Package⁸ and significant delays in the implementation level of the EU-wide Target Model. In parallel, diverging energy policy measures,

⁴ European Council Conclusions, October 2014

⁵ Energy Union Communication: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM:2015:80:FIN>

⁶ See recent DG Competition sector inquiry on 11 Member States’ already implemented or planned CRMs: http://europa.eu/rapid/press-release_IP-15-4891_en.htm

⁷ See European Commission, Guidelines on State aid for environmental protection and energy 2014-2020, as of page 38: http://ec.europa.eu/competition/sectors/energy/legislation_en.html

⁸ See European Commission, annual progress report on the internal energy market for electricity and gas, and the implementation of EU law, 2014: <https://ec.europa.eu/energy/en/topics/markets-and-consumers/single-market-progress-report>

including different taxes, levies and access tariffs, implemented in an uncoordinated manner by Member States, have led to a re-nationalisation of energy policy. This further hampers the completion of the internal energy market. Structural market distortions such as regulated prices, market exit barriers or wholesale price caps remain the rule rather than the exception. Furthermore, energy policy measures focus on the supply side and do not treat power demand in the same way, with all the rights and duties in the energy market that are implied.

2.3 The return to a concession-based energy market model looming

If market design reform is not carried out in an ambitious and swift manner, the principle of the internal energy market and its underlying energy-market model is at stake. In view of low market price levels and ongoing patchy market interventions, this would mean investors will choose regulatory over market risks. The result will most likely be a concession-based investment model, with power exchanges only playing a role to optimise the daily dispatch. Such an outcome would effectively mark the end of any serious ambition in achieving a truly integrated IEM.

C. What can be done

1. No-regret measures

Several no-regret measures around the completion of the IEM can be regarded as being both overdue and also necessary preconditions for creating a more level-playing field in the EU power sector through better functioning and efficient markets. These no-regret measures could by themselves fix some of the problems identified in the current state of play as outlined above.

1.1. Complete the IEM through the EU-wide Target Model

The EU-wide Target Model sets out a roadmap for market integration which should have been achieved by the end of 2014. It should be regarded as an absolute minimum to be implemented and pursued as a matter of urgency. While progress has been achieved on day-ahead market integration, the situation regarding market forms closer to real time is sobering. Well-functioning intraday and balancing markets are crucial for the efficient and cost-effective integration of large amounts of wind energy, as well as for system operation. These features include measures to improve market liquidity, harmonise rules across borders and the interactions between these market forms, including improvements in Network Code implementation and timelines.

1.2. Move from a supply-side oriented to a more balanced approach

A more balanced approach in market design reform means developing a regulatory framework for demand side participation and aggregation of energy intensive industries, prosumers and other small dispersed generators. There is a consensus that demand response and more flexible loads in general are not only an important resource to reduce the need of peak capacity and grid infrastructure investments, but also to enable responsiveness of demand at peak times; therefore, mitigating the increase in volatility of electricity prices that is expected from having large shares of variable renewable power in the mix.

The main incentive is that large consumers may have to shift consumption to respond to high price levels, adjusting their production and electricity consumption schedules accordingly. Some consumers could also absorb more energy than planned for example in times of high wind power production. In order to facilitate the market uptake of demand response, clear rules should be adopted to allow various sources of demand side participation.

1.3. Most important grid reinforcements as a necessary precondition

An adequate grid infrastructure is the backbone of the IEM. It is a prerequisite to securing all the potential cost savings that a common power market could offer, including the smoothing out of variable power production by wind power generation. There is consensus among all stakeholders on the importance and urgency of both improved grid operation and increased transmission capacity.

Transmission capacity is fundamental to ensure that supply and demand are main drivers of price signals rather than congestions. With policy instruments such as the Connecting Europe Facility in place, re-setting the overall interconnectivity target level across the EU provides an opportunity to ensure further political support for this task. A firm benchmark such as achievement of a certain percentage of the "projects of common interest" should be set to measure progress to this end. Grid development should occur based on a thorough cost-benefit-analysis (CBA) methodology, allowing investments to be directed to the most cost-efficient solutions. Special priority should be given to those projects that will significantly increase the current interconnection capacity of weakly interconnected regions such as the Iberian Peninsula.

Extension and reinforcement of electricity grids are the most cost efficient source of flexibility for the power system. The lack of flexibility today causes curtailment of wind power in some systems due to local grid constraints and lack of cross-border interconnection. Similarly, negative prices, while not frequently observed, are a sign of the need of increased flexibility and export capacities⁹. However, in situations of even negative prices, wind power generators should logically be exposed to these market signals and not be dispatched, in line with the State Aid Guidelines of energy and environmental protection¹⁰.

Another important dimension is the optimised use of resources through improved TSO cooperation. Maximum use should be made of tools to optimise the utilisation of the existing infrastructure such as dynamic line rating, rewiring with high-temperature conductors and improved operational strategies facilitated by regional control centres such as CORESO¹¹. Deeper TSO cooperation in system operation should be made compulsory within the framework of the already existing Regional Security Coordination Initiatives (RSCIs), paving the way towards the uptake of regional transmission system operators.

2. Revitalise price dynamics in the energy-only market

No-regret options are key to tapping the full potential of the Internal Energy Market concept. Creating a more level playing field for all power generation technologies to compete is necessary but may not be sufficient to create meaningful price signals for investors in wind energy, or indeed any other power generation technology. To this end, adjustments of the energy-only market model, as well as the market design in general, will be needed. These should include enhancement of the current Target Model and the creation of new revenue streams from markets in system services that will help provide a meaningful investment case for any generator.

2.1. Structural measures to fix the ETS in the short to medium term

Even with an early start of the Market Stability Reserve (MSR) and additional measures to curb oversupply, the surplus is forecasted to remain at around 2 billion allowances at the start of the next trading phase. Therefore, the carbon price will remain rather modest, having no impact on investment decisions and limited potential to tackle overcapacities in general.

In the announced structural reform of the ETS that should follow the adoption of the MSR, the Commission will need to make bold and meaningful proposals to ensure scarcity in the carbon market, remove existing loopholes and phase-out Article 10.c. of the ETS Directive on exemptions for utilities. Only an ambitious overhaul of the system would allow the formation of a carbon price that is more significant than currently forecasted.

2.2. Measures to improve power market operation

Efficiency improvements in market operation that facilitate large volumes of wind energy generation could be brought forward in the near term. The following set of measures would apply a cross-border

⁹ For an overview on negative prices, see also: https://www.epexspot.com/en/company-info/basics_of_the_power_market/negative_prices

¹⁰ See EWEA position paper on priority dispatch: http://www.ewea.org/fileadmin/files/library/publications/position-papers/EWEA_position_on_priority_dispatch.pdf

¹¹ The EU-funded TWENTIES project found proof that 10% more power can be brought online by measuring cable temperature in real time, thereby reducing the need of grid reinforcements: <http://www.twenties-project.eu>

perspective across all market time frames, including balancing markets, and can be regarded as a logical extension of the EU-wide Target Model:

- All TSOs to keep cross-border transmission capacities as close to the physical limits as possible while respecting secure operation limits.
- At intraday level, continuous trading must be swiftly implemented in all bidding zones as set out in the Target Model, and ultimately, a harmonised gate closure time as close to real-time as possible must be set.
- A more ambitious approach on cross-border balancing market arrangements is urgently needed. Integrated balancing markets across coordinated areas, necessary to smooth variability and reduce uncertainty, are foreseen after 2022, according to the Electricity Balancing Network Code. The integration and further development of this market form must be accelerated.
- On forward capacity allocation, instruments are needed to hedge against price differences between bidding zones in the case of congestion.

2.3. Making the energy-only market model fit for future

Four overarching reform measures that should be considered for the energy-only market model in addition to the points highlighted above:

- **Allow for price spikes as a desired market outcome.** It is important that market prices are undistorted and allowed to move freely without caps. Transparent market prices must be in place in all time horizons, i.e. forward, day-ahead, intraday and real time, and also used for settlement of remaining imbalances. This will help to incentivise and reward the provision of flexibility services. Policy makers should be aware that price spikes are needed to trigger the right scarcity signals on both the supply and demand side; investment decisions based on a certain expectation of price spikes will only be made if there is enough trust by investors that politicians will not interfere and introduce price caps.
- **Put an end to price regulation and the discrepancy between wholesale and retail market price levels.** Electricity bills do not reflect the downward trend of current electricity prices. National regulations which keep end-users prices below producers' full cost do not only hamper new entrants, but also accumulate vast tariff deficits on the public budgets. Price dynamics in wholesale and retail markets are not synchronic as state-imposed non-energy components render end-consumers bills rigid. Consequently, prices should be deregulated for end-users and allow consumers to access price signals that reward flexible consumption, e.g. through contracts based on dynamic pricing following the wholesale price levels.
- **Foster liquidity in power markets.** Liquid energy markets help integrate RES in a cost-effective manner, as they are essential for competitive energy pricing. Financial and market supervision regulation has just been adapted to foster energy market functioning and incentivise market entry (MiFID II, REMIT¹² etc.). In this context, the EC should reflect carefully on the consequences for European energy markets when existing rules are implemented or further initiatives are considered. Importantly, the distinction between financial and physical markets as set out in MiFID I¹³ needs to be maintained, as wind power generators can be expected to become increasingly active in financial markets as well.
- **Short-term market signals should become increasingly important and constitute a new price reference next to day-ahead market prices.** Marketing of wind power production shifts trading activities closer to real time. This leads to higher activity in the intraday market, since the forecasted day-ahead volumes will deviate from the actual volumes because of the remaining forecast error margin. Such short-term marketing risks can be managed via specific products referring to an intraday price index in the mid-term, or combining continuous trading with an intraday auction. Assuming that a further-developed intraday and balancing market design results in these market forms being liquid, truly cross-border and fit for wind energy participation, stakeholders will increasingly refer to intraday prices after 2020 for investment decisions in generation assets, alongside day-ahead market prices.

¹² MiFID II: Updated rules in Directive on markets in financial instruments: 2014/65/EC; REMIT: Regulation on wholesale energy market integrity and transparency: 1227/2011.

¹³ Directive on markets in financial instruments: 2004/39/EC

2.4. Parallel to the energy-only market, commercial markets for ancillary services should be fostered

As part of a truly integrated IEM, not only power, but also grid support or ancillary services should be increasingly commoditised to ensure their most cost-efficient provision. Markets for grid support services and flexibility would provide additional non-discriminatory revenue streams to investors and ensure the most cost-effective provision of these services in the energy sector. Furthermore, under current market conditions no value is given to increased plant flexibility. These new market forms are an important building block of the IEM given the lack of timely investment signals coming from energy-only markets. Wind energy participation in ancillary service markets and new products such as ramping margins and cycling incentives can be envisaged¹⁴.

2.5. CRMs as a measure of last resort

Many countries lack a well-defined target level for supply adequacy. This could be very costly for consumers, as continuation of over-capacity is the most likely result, while failure to set an adequate target could lead to involuntary load shedding. The appropriate level of supply adequacy (supply equaling demand in real time without involuntary load shedding) should therefore be deliberated on transparently, and defined as a desired system adequacy level. Such a criterion could be used to assess the potential need for a CRM in case the desired security of supply level is deemed unachievable. The relevant TSO should be tasked with the assessment, supervised by the NRA and the Ministry in charge with the overall methodology and assessment principles to be enshrined in EU legislation.

Such an assessment also implies that existing national CRMs should be scrutinised on an ex-post basis using the same adequacy standards. As many of these national CRMs could have a distortive effect on the functioning of the energy-only market, the following points must be considered, in the subsequent order¹⁵:

- Common standards for security of supply and system adequacy, including a clearly defined supply adequacy target level for all control areas in the EU should be defined and enshrined in EU legislation out as swiftly as possible.
- System adequacy analyses should be performed at a regional level to assess the need of a present or future CRM and consider the amount of firm capacity from variable renewables such as wind energy. Other system adequacy sources such as interconnectors, storage and demand side response should be factored in as well.
- If a relevant capacity problem is not found in the power system being assessed, the decommissioning of conventional power plants should be accepted as an appropriate market response with any further market exit barriers removed.

Importantly, a thorough system adequacy assessment needs to be carried out first based on a commonly accepted methodology – with the ENTSO-E system outlook and adequacy report (SOAF) as potentially a main reference tool¹⁶. Only if a defined adequacy target is not met as an outcome of such a regional assessment, a CRM in line with European legislation¹⁷ could be considered. Any CRM should be a temporary solution until the adequacy gap is overcome. Once all existing CRMs are properly assessed with regards to their need, a governance model for any future CRMs should be considered by the European Commission which would clear the implementation of a CRM under state aid scrutiny, ideally on an ex-ante basis.

2.6. Roll out the market entry of demand-side management

Demand response must be further developed at all levels: industrial, business and household. The key enablers to this end are an environment conducive to aggregation of service providers, and

¹⁴ For further information on wind energy participation in ancillary or grid support services, see results of REServices project: <http://www.reservices-project.eu/>

¹⁵ See also recent DG Competition inquiry on 11 national CRMs: http://europa.eu/rapid/press-release_IP-15-4891_en.htm

¹⁶ See also current ENTSO-E SOAF 2014: https://www.entsoe.eu/Documents/SDC%20documents/SOAF/141031_SOAF%202014-2030_.pdf

¹⁷ According to the principles laid out in the European Commission Guidelines on State aid for environmental protection and energy 2014-2020, as of page 38: http://ec.europa.eu/competition/sectors/energy/legislation_en.html

corresponding market rules that clarify and ideally standardise responsibilities of the market players, while avoiding any form of free-riding. Demand side flexibility of customers (mainly large industrials and partially SMEs) should be treated in the same way as supply-based flexibility sources, with all appropriate rights and duties. This is essential in order to drive a cost-efficient integration of RES-E in the European electricity system.

Overcoming the undue focus on the supply side also contains a technological dimension. Next to industrial DSM, smart grid roll-out is a precondition for households and “prosumers” to participate in individual supply adequacy contracts, and ultimately for the power sector to address the ‘collective good’ dilemma of system adequacy. Enabling consumers to base their decisions during scarcity periods on market price signals will be a major step away from the dominant supply-side focus at present. The economics of demand response, however, will depend strongly on overall consumption and consumers having realistic possibilities to shift demand. Typically, large industrial companies and SMEs are in the best position to deliver their flexibilities to the market fastest.

2.7. Revive power demand through electrification

Synergies across the entire energy sector need to develop in order to maximise cost-efficient solutions for decarbonisation. In the long run, this includes the use of electricity in the heating/cooling and transport sectors, through e.g. heat pumps or electric vehicles, and potentially an increase of electricity storage in these sectors, this would allow balancing variable renewable energies, particularly at the local and regional level. Once conversion and efficiency rates improve, power-to-gas storage might also become a viable option.

To this end, network tariff structures must be cost-reflective and should therefore include a capacity-based element to cover fixed costs. They should be based on the cost-to-serve principle; energy-based network tariffs that include any charge not strictly related to the cost-to-serve principle will hamper demand electrification, as they provide fossil fuels with a competitive advantage with respect to electric energy.

3. Addressing price and volume risks in a revamped energy-only market

Even if all the reform proposals outlined above are implemented, the market framework may still be insufficient to guarantee an adequate return on investments. In the long term, the current short-term electricity market model might not always deliver the desired market outcome, even with increased power demand. As a result, the EU could still face an investment dilemma, especially for low marginal cost and CAPEX-intensive power generation technologies such as wind energy.

It is therefore crucial to further support electricity markets to deliver the desired outcome, providing investors with long term price signals while maximising the benefits of decarbonisation through cost-efficiency and promoting security of supply. This section, therefore, aims to outline further potential policy measures that could help finance new power generation capacity, in particular through new financial products. These would be an additional feature of such a revamped energy-only market model.

3.1. Developing new financial products

To date, only relatively basic financial risks can be hedged in the long run with present derivatives products. With the ever-growing uptake of wind energy, volumes of electricity traded on financial markets will surge, since price volatilities in physical markets will lead to increased risks, resulting in additional demand for financial protection. Accordingly, the development of new market products must match this trend, allowing market participants to hedge against price volatilities, and allowing for the securitisation of revenues. This can be showcased with examples such as the recent EEX “cap future” product¹⁸.

¹⁸ See new EEX „Cap future“ product: <https://www.eex.com/blob/84590/04062091590a44b6afedaeda6ef02708/20150210-working-paper-energy-turnaround-products-data.pdf>

Such new derivatives would both turn flexibility into a tradable commodity with a market-based price, and help wind power generators and all remaining market participants to stabilise their revenue streams rather than making them entirely reliant on extreme scarcity periods. Importantly, these products must facilitate the participation of the demand side and aggregators in order to avoid interrupting the ongoing market clearance of inflexible and polluting power plants.

3.2. The role of long-term contracts for financing new power generation assets

The uptake of price signals can be further supported through long-term contracts, which could help make new investments in wind energy economically sound in the context of decreasing public financial support. However, there are currently three elements that could prevent the liquidity of long-term contracts in the future: risk aversion of counterparties (mainly to the risk of future regulatory changes), scarcity of suitable forward products, and the high cost of guarantees to underpin the contract. Overall, as such contracts have the potential to mitigate volume risk as complementary hedging tools for short term market risks, policy makers should look into ways to remove these barriers to liquidity of long term products.

Additional measures would help increase the volume of capital available for investments in wind power plants, such as the development of public guarantees: project developers would have to pay a fee for these insurances that would cover them against regulatory and counterparty risks.

While these long-term products would be applied on a voluntary basis as seen in already recent B2B contracts, investors should be able to rely on underlying general principles of continuity and stability of the regulatory regime. Importantly, this includes the rule of grandfathering and the avoidance of any retroactive measures. Wind-specific provisions for existing plants such as priority dispatch should continue to be applied in order to retain investors' confidence through ensuring stable frameworks.

3.3. Power market reforms will also entail an institutional dimension

ACER should be equipped with enhanced competences and as well as ENTSO-E, which needs to act as a more regional and ultimately European system operator and market facilitator. A dedicated roadmap towards establishing such a Pan-European system operator should therefore be adopted. Furthermore, institutionalising the TSO-DSO cooperation must be pursued via a new pan-European DSO interface - a long overdue policy initiative. On a more political level, "policy spill-over" scenarios are likely to complement this development bringing energy policy from a shared competence to a more regionally coordinated level with enhanced cooperation among Member States.