

EREF's reply to the European Commission on capacity markets and mechanisms in the energy markets

In answering to the sector inquiry of the EU Commission

Brussels, Summer 2015

In April 2015, the European Commission has launched a state aid sector inquiry into Member States' measures to ensure sufficient electricity supplies (so-called "capacity mechanisms"). The sector inquiry, the first under EU state aid rules, will examine in particular whether capacity mechanisms ensure sufficient electricity supply without distorting competition or trade in the EU's Single Market.

Following a meeting between EREF (Dr Dörte Fouquet and Dirk Hendricks) and the European Commission (Alexandre Verduyn and Christof Schoser) on the 6th of July 2015 to exchange views on capacity markets and mechanisms, EREF forwarded a questionnaire to its members in which they were invited to state their opinion on the future design of the energy market ensuring secure supply, with special emphasis on the necessity of capacity mechanisms, i.e. a capacity market or a capacity reserve.

In general, EREF members have a negative approach on capacity mechanisms since they are not market based and tend to support (again) old and conventional facilities. No participant finds the idea of implementing a capacity market favourable. On the contrary they dismiss this approach as an expensive system which leads - because of its very nature - to massive distortions of the market, helps keeping up the anachronistic (at least indirect) subsidies for nuclear and fossil technology and most likely does not deliver any value for the consumer.

They agree that a capacity market only manages to tackle one of three problems, namely security of supply. The other two problems, lowering emissions and reducing costs to end-consumers, are not addressed.

EREF's position on capacity markets in a nutshell is: No to capacity markets

Capacity markets distort national and potentially also EU-energy markets and hinder the completion of a fully integrated and flexible European energy market, thus diminishing the overall acceptance and also the feasibility of the energy system transformation. They also increase costs and they lock in inflexible and unsustainable generation capacity.

The Commission and the Member States should focus their efforts on reducing the persistent surplus of fossil and nuclear generation capacity in Europe, while continuing to pursue ambitious and stable renewable energy and efficiency policies.

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EREF shares the concerns expressed by the European Commission that the introduction of capacity mechanisms could run counter to the EU's decarbonisation objectives, distort price and investment signals and favour fossil fuels and nuclear to the detriment of renewable energy sources and the use of efficiency policies, interfere with cross-border trade and competition, close national markets, distort the location of generation, and finally increase costs for all Member States.

The real challenge for the European energy system is flexibility and a phase out policy for old incumbent coal and nuclear capacity.

Flexibility can best be ensured through a better use and development of interconnections in Europe, demand side management and storage.

Many Member States currently experience over-capacities, rather than a lack of capacity. They should conduct a national assessment of generation adequacy before considering the introduction of capacity mechanisms. Subsidies for environmentally unfriendly technologies should be phased out.

If Member States are experiencing generation inadequacy and planning to introduce capacity mechanisms, they should show clear evidence that the market functioning is insufficient.

Potential extraordinary capacity mechanisms should then respect a very clear and compulsory set of criteria and be timely limited. The carbon intensity of the resources providing capacity should be factored into the possible design of capacity mechanisms so that delivery of the overall carbon reduction targets is not compromised. The approach adopted to deliver reliability should not lead to unintended adverse consequences for investment in renewable energy.

Studies suggest that setting up a capacity mechanism involves significant regulatory risks and that it would take up to ten years before it operates effectively. This means that the mechanism may not even be able to run smoothly and non-discriminatory before long thus being contradictory to what those mechanism pretend to deliver

Flexibility can be ensured through more effective and less market distorting means

EREF is convinced that power markets with an increasing proportion of variable renewables can deliver the right kind of generation capacity and ensure stable and secure energy supply provided an adequate framework is in place.

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The current energy market is not fit for renewable energy. The rules and regulations governing today's electricity market are largely fit for conventional power generation, but they often exclude or hamper new technologies and solutions leading to a reduction of the efficiency of the overall system. Power is often traded with a long time-perspective, while liquidity in intra-day and balancing markets is still very low. Gate-closure times happen long, before power is actually consumed, and access to markets is sometimes linked to the size of a system or entrance fees that exclude especially smaller players from active participation.

The definition of products in some markets does allow for the exploitation of all potential offers. For example, products on balancing markets are often defined in blocks of 8, 12 or even 24 hours, and contracted months or years in advance. This naturally excludes offerings from variable renewable power generators, but also storage and demand response. A greater granularity of products would improve system efficiency and stability, while allowing for an inclusion of all cost-effective offers. This is the reason why flexibility is needed, not capacity as such.

More effective and less market distorting means than capacity mechanisms are or will be available in the near future to ensure security of supply through increased flexibility.

EREF believes that the further integration of neighbouring balancing markets, i.e. an increased interconnection between regions and/or neighbouring power systems, contributes significantly to ensuring security of supply. The increased interconnection capacity offers the potential for generation and capacity resources to be shared, if needs arise, reducing overall resource requirements and the need for State or regulatory intervention. For this to be effective it will have to be accompanied by real-time energy balancing over wider areas, reducing the effect of extreme weather events and again reducing the overall system requirements. These advantages should (further) be exploited, e.g. by means of Network Codes and enhanced regional cooperation. In view of the decentralised energy system change via increased use of renewables and efficiency, with increased storage and balancing possibilities on a regional and local level our members are also confident that even the need to balance over wider areas will considerably decrease.

The Internal Electricity Market has already brought about important progress towards more flexible and inclusive markets, but it does not yet go far enough to provide a true level playing field for all market participants.

At the same time, the top-down perspective on Europe's energy markets is being challenged by the emergence of more decentralised power generation and the more active engagement of consumers. This includes the increasing importance of so-called prosumers

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who generate part or all of their own electricity, whilst still interacting with the power system. Rules and responsibilities for distribution system operators and new market entrants are often insufficient to reflect the new opportunities and challenges. The uncertainty about the regulatory framework, financial charges, obligations and remuneration currently hamper the full exploitation of new possibilities.

Additionally, important investment signals are missing in the electricity market today. An oversupply of old base-load power generation led to both inflexibility and a dilution of market price signals. The European Emissions Trading Scheme is so far not capable to provide a price signal for the most polluting power plants to retire and make space for important new investments in the market. In this context, Europe's power market is showing artificially low prices, and paradoxically pushes out less polluting and flexible capacity. Only if price signals reflect the full cost of electricity today, and if a variability of prices shows at what times power is cheaply available and when it is short, will Europe develop a power market in which different generators and flexibility options will receive the market signals they need.

Europe still faces Member States unwilling to establish open markets with fair access such as the Commission critically observes especially in the case of Bulgaria¹. Member States not fulfilling the basic principles for an energy market can never be authorised to introduce capacity markets.

It is EREF's believe that the flexibility and generation adequacy issue should not only be considered from the generation side, but also from the demand side. Generally, demand-side management will help match demand and supply so that electricity consumers continue to enjoy comparable levels of system reliability over the next decades at lowest overall cost. Storage of renewable energy and energy efficiency should also be encouraged to provide capacity. If needed, the rules of possible capacity mechanisms should ensure that participation of demand response, demand side management and storage of RES is possible and encouraged (power threshold, response time delay, reliability, etc.).

EREF particularly welcomes the Commission's recognition of consumers possibly willing to be cut off for some time, rather than paying for more capacity.

In Germany, for example, the new *Sec. 14b Energiewirtschaftsgesetz (EnWG)* now enables gas consumers to enter into contracts with the system operators allowing them to be cut off

¹, see e.g. SWD(2013) 352 final, COMMISSION STAFF WORKING DOCUMENT Assessment of the 2013 national reform programme and convergence programme for BULGARIA; Accompanying the document "Recommendation for a Council Recommendation on Bulgaria's 2012 national reform programme and delivering a Council Opinion on Bulgaria's convergence programme for 2012-2016", Brussels, 29.5.2013

for some time, in return for reduced grid tariffs. Their readiness and ability to satisfy their energy needs from other sources, use storage or drive down consumption in the short term needs to be taken into account when assessing capacity needs, and it delivers important additional flexibility. Therefore, from the perspective of the independent RES power producers, improving the European energy system flexibility through the better use and development of interconnections, of demand side management schemes and of storage infrastructure should be a European energy policy priority indeed.

Many Member States already experience overcapacities, but still grant massive subsidies for environmentally unfriendly technologies

EREF would like to point out that there are significant overcapacities in some Member States. It is a natural consequence of the liberalisation of the energy market that they can no longer operate in an economically viable way, as due to the non-internalisation of externalities technologies such as nuclear and coal have never been economically sound. Those capacities are often in the hands of former incumbents and continued subsidy would only further distort the functioning of the energy market and impede all liberalization efforts.

Usually, national electricity markets generate revenues only for the energy provided: these are called "energy-only" markets. Capacity mechanisms are aimed to provide further compensation for installed capacities that are currently not in use but held on stand-by as "back-ups". Depending on political and economic circumstances, these capacity mechanisms can be applied in various ways. In form of a price-based solution, power suppliers are compensated with a fixed amount. A volume-based solution includes a fixed long-term contracting of reserve capacity. Such strategic reserves and capacity payments are instruments within the existing energy-only-market. The implementation of a capacity market - another volume-based approach - implies the introduction of a new market for trading capacity as a good in form of certificates that are for example sold on capacity auctions.

Capacity mechanisms in European countries are unnecessary as the European electricity market is characterised by excess capacity amounting to 100 GW². And other mechanisms proved their contribution to the grid stability such as better interconnections where necessary and demand-side management. Regional deficits are mostly caused by inadequate grid expansion and could therefore not be solved by capacity markets. Most of the big energy utilities only advocate in favour of capacity mechanisms because they receive subsidies for old fossil-fuel or nuclear power plants that otherwise would become

² Bundesministerium für Wirtschaft und Energie, Grünbuch: Ein Strommarkt für die Energiewende, October 2014.

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increasingly unprofitable. Keeping them on the market is slowing down the energy transition.

Nevertheless, capacity mechanisms are on the rise in several European countries. EREF calls on the Commission to subsequently put an end to the uncoordinated development of harmful capacity payments throughout Europe.

The current situation in some Member States (France, Germany, Italy, Portugal/Spain, and United Kingdom) concerning capacity mechanisms was recently mapped as shown:

France

France is a country relying heavily on electric heating and whose power system is therefore very sensitive to variations in temperature: already a one-degree-fall can lead up to extra 2.4 GW of power demand - equal to the capacity of more than two nuclear power plants³.

In order to further secure electricity supply, France followed the UK in introducing a capacity market with a decentralised design in spring 2015⁴. On 1 April, the national grid operator RTE started a capacity mechanism that rewards power producers for keeping sufficient electricity available to prevent blackouts during periods of peak. From 15 October on, electricity suppliers are obliged to hold a certain amount of capacity certificates that are calculated each year and are based on the peak consumption of the customers⁵. To guarantee a constant provision of sufficient power, suppliers have to buy these certificates that are granted by the RTE to the operators and can be traded.

Germany

For a long time there was a big debate in Germany about the introduction of capacity markets. Two types of remuneration mechanisms were intensively discussed: first, the French customer-based approach, in which the amount of capacity needed is defined by the customer's demand for reliable supply; and second, the English central buyer approach, in which State authorities are defining the capacity amount⁶.

Supporters of the general concept are big energy companies like RWE and E.ON as well as the Association of Energy and Water Industries (BDEW), Germany's most influential lobby organisation for the power sector. However, the German Renewable Energy Federation (BEE) strongly rejects capacity markets, arguing that they provide a subsidy for old fossil-fuel power plants that cost a lot for consumers, block the transformation of the energy

³ Reuters, France launches capacity mechanism to insure against blackouts, 24 March 2015.

⁴ Jakob Schlandt, Capacity markets around the world, 28 November 2014.

⁵ Linklaters, Capacity Mechanisms. Reigniting Europe's energy markets, 2014.

⁶ Graphic Platts.com, Germany debates capacity remuneration mechanisms, 2014.

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system and, additionally, do not create new jobs⁷. The government also remains sceptical by saying that capacity mechanisms would "carry the risk of costs spiralling out of control" and are too complex for effective market supervision. A document from the energy ministry and Chancellor Merkel - leaked this year in March - states that the government has already rejected to provide a financial support for fossil-fuel power plants to keep them as back-ups for fluctuating renewable energies through capacity market⁸. However strategic reserves are being put in place.

Italy

In Italy, the combination of decreasing power demand due to the economic crisis and efficiency policies as well as the growth of conventional and renewables capacities lead - like in many other European countries - to energy overcapacities and low wholesale market prices. To provide sufficient energy and prevent potential blackouts, the Italian grid operator Terna prepared a capacity payment model that is similar to the British auction model. This model has been approved on 30 June 2014 and includes the determination of the capacity level to be made available by Terna. The exact amount is dependent on the reserve requirements and the consumption expected for the next year. In the next step, Terna manages specific supply auctions, where power producers can sell option contracts to companies that are covering the estimated back-up capacity. These option contracts of the power producers must guarantee a certain available capacity, so Terna can rely on these plants in case of emergency. The system is divided in three separate parts: the main auction, the complementary auction (for additional capacities) and the adjustment auction (for modifications of long-term positions)⁹. In addition, power producers are allowed to trade the contracts they purchased at the auction.

Spain/Portugal

There are no proper capacity mechanisms in Spain, but two other incentive mechanisms have been introduced by the Government to keep available a certain amount of capacity: first, payments for compensating investments in new capacity; and second, remuneration payments to existing units depending on their installed capacity and their availability¹⁰. This resulted in the establishment of massive subsidies to the coal sector.

⁷ Bundesverband Erneuerbare Energie (BEE), BEE-Stellungnahme zum Diskussionspapier des Bundesministeriums für Wirtschaft und Energie (Grünbuch) – Ein Strommarkt für die Energiewende, 27 February 2015.

⁸ Jakob Schlandt, New power market design without capacity mechanism in ministry plans, 20 March 2015.

⁹ Umberto Penco Salvi, Capacity payment in Italy and the German case, April 2015.

¹⁰ Linklaters, Capacity Mechanisms. Reigniting Europe's energy markets, 2014.

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In 2010, Portugal initially adopted the same scheme¹¹. Due to the economic crisis, the payments in both countries had to be reduced in 2012. At the moment there are discussions about further modifications of the capacity payments scheme or to introduce a real capacity market in the country¹².

United Kingdom

Facing the energy trilemma - decarbonising electricity, keeping prices affordable and ensuring security of supply - the UK lays its focus on the latter¹³. The introduction of a capacity market plays a central role: it is expected to ensure a sufficient power generating capacity to cover the demand as well as to compensate fluctuating renewable energies¹⁴. The centralised design of this capacity market implies that the needed capacity is determined by the government and subsequently sold to companies at a set price provided that they keep a particular amount of electricity available. The price is agreed during a "descending auction", conducted by the government, where the lowest bidder receives the right to sell and deliver the electricity. The first auction concerning the capacity for 2018/19 took place in December 2014 and involved a capacity of 50 GW¹⁵. Furthermore, because of the decrease of capacity margins in the next decade, a supplemental balancing reserve should compensate operators with £19.40 per kW to keep fossil fuel power plants available as "back-ups" for periods of increased demand¹⁶.

¹¹ Graphic: Platts.com, Overview of EU capacity remuneration mechanisms, 2014.

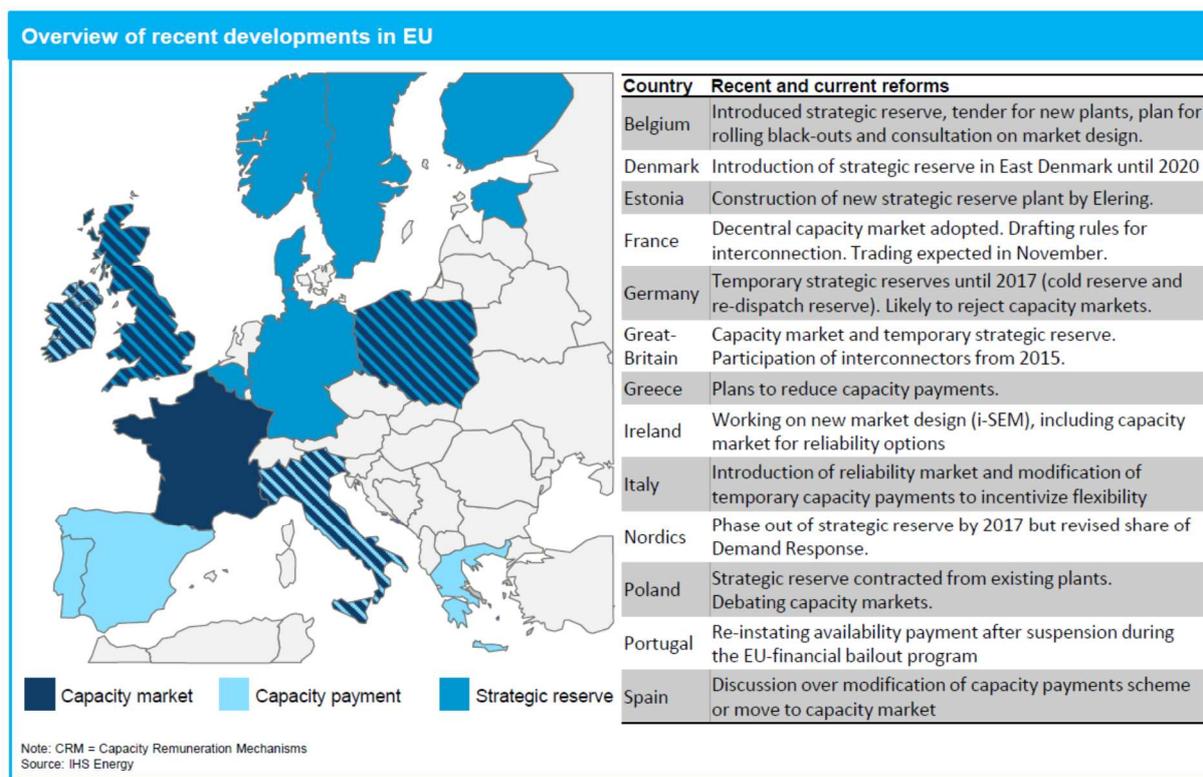
¹² Christian Winzer (IHS Energy), Capacity markets in Europe, March 2015.

¹³ Salmon Burges, Electricity market reformed: the Capacity Market explained, 4 February 2014.

¹⁴ Mat Hope, Capacity market secures some new gas while providing stay of execution to old coal, 19 December 2014.

¹⁵ Graphic: Platts.com, Overview of EU capacity remuneration mechanisms, 2014.

¹⁶ Caldecott/McDaniels Stranded generation assets: Implications for European capacity mechanisms, energy markets and climate policy, January 2014.



EREF strongly recommends - for the above mentioned reasons - that EU Member States should refrain from establishing capacity payments or systems especially in a moment where Europe displays a 100 GW over-capacity.

A cautious approach to capacity mechanisms in case of an emergency

On the other hand the EREF-Member's debate showed that some of the participants identified the very limited need for a capacity *reserve* in times of phasing out coal and nuclear facilities while focusing on the Member States cooperation to coordinate a European single market. The better the markets – being well provided with overcapacity - are connected, the better all consumers can profit from a secure energy supply. Energy markets that have been further developed to enable the use of their flexibility potentials will be able to balance supplies and send important price signals. It can also be expected that the market naturally develops solutions based on demand and supply. For example, supply options could provide for the necessary security of supply and protection from price spikes for consumers, whilst giving extra revenue to suppliers of flexibility. The possibilities of such solutions and pricing mechanisms should be further explored first, in order to achieve a balanced and favourable investment climate in Europe's energy markets.

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Capacity markets pose the risk of additional system costs and a lock-in of inflexible and carbon-intensive generation capacity, reducing appetite to invest in newer more efficient generation capacity and grid upgrades.

In the rare circumstances where a lack of generation adequacy requires some Member States to make an approach towards capacity systems, a full and transparent generation adequacy assessment – taking grid expansion measures and regional cooperation into account – needs to be conducted. The adopted measures must be temporary, market based, and the Member State in which the measure is implemented should not restrict the cross-border trade of electricity in times of scarcity. The solution should develop a new contract- and pricing structure to enable long term investments for market players. Only the strategic capacity reserve outside the energy market can possibly meet those requirements provided it is not designed badly.

But still the Commission`s and Member States` primary concern should be to focus their efforts on reducing the persistent surplus of generation capacity in Europe, while continuing to pursue ambitious and stable renewable energy policies.

Please see the following Annex for more details on the EREF-member`s contribution to the questionnaire.

Annex

Contributed members` statements to the questionnaire on capacity markets

I. Austria ([Kleinwasserkraft Österreich](#) / Austrian Small Hydropower Association)

1. What is your opinion on capacity mechanisms? Do you think capacity mechanisms are necessary in order to ensure security of supply?

a) The EU is on the way to a carbon-free electricity market, and many Member States are about to phase out nuclear capacity. The market share of renewable energy (RES) is increasing and nuclear and fossil electricity supply is diminishing. That implies that the amount of full load hours is decreasing and the profitability of fossil and nuclear facilities is going down.

Only under this conditions the idea of an additional “capacity market” or capacity mechanism (even not market based and more centrally planned) came up. The idea of an additional capacity mechanism is that it shall compensate the losses due to the energy transition in the EU (at least to some extend). Therefore the capacity mechanism should not be implemented. It would either reduce the speed of this energy transition or increase the necessity for stronger and longer financial support for RES and energy efficiency (EE).

b) No it is not. In principle, mature power markets deliver enough incentives for holding available sufficient capacities for guaranteeing supply security as they are already doing so in the balancing markets for short term positive and negative electricity and capacities. If there is a need for mid and long term capacity by electricity consumers such market should not be avoided. This signal has to come from the consumer, the demand side and not from the State. There is no market failure existing in this field of security of supply – not even in the UK for Hinkley Point C. Especially prices and the amount of mid and long term capacities should not be set by the State or any official authority.

Until now an energy only market was able to provide enough capacity reserves. Because of huge subsidies for the nuclear and fossil based industry the EU has enormous over capacities in the electricity market. So at least as long this fossil and nuclear over capacities are not reduced there should be no political initiatives for establishing new capacity mechanism.

2. Do you believe that capacity mechanisms can lead to distortion of competition between market participants? If so, which measures should be taken in order to prevent that situation?

a) Yes we do, but it is not a believe it is a fact that further political support mechanism for fossil and nuclear capacities are even increasing the existing massive market distortions in favour of nuclear and fossil energy providers. As the Ecofys study (by order of and paid by the European Commission) and a recent IMF-study show, nuclear and fossil energy are heavily subsidised. RES support regimes are not fully compensating for this market distortion and are reduced due to political interventions by the European Commission influenced by the special interests of fossil and nuclear energy companies. Especially for old and existing CO₂-free and non-nuclear energy forms like small hydro power this could lead to reduced capacities and supply. A capacity mechanism designed for nuclear and fossil based energy forms would strongly increase the existing market distortions.

b) Capacity mechanism should not be implemented by the State, the EU or other official institutions. If there is enough demand and a private based, financed and initiated stock exchange for capacities this should not be hindered.

The European Commission itself is distorting the energy markets and hindering resource optimal allocations by free markets. The recent state aid guidelines for energy and environment want to reduce financial support for RESel if there are negative prices for more than 6 hours in a row on the EEX or other market places. The European Commission wants to limit strong fluctuating electricity prices. From an economic point of view this is inefficient and inconsequent.

Inefficient because it hinders the market to change supply and demand curves needed for a new equilibrium. Very high and very low even very negative electricity prices are a strong incentive to install capacities e.g. large and small pump hydro storage on the one hand and give a strong price signal to flexible demand side management. This would increase security of supply much better and efficiently than any new capacity mechanism.

Inconsequent because internalisation of external costs on the polluters side is not stopped if there could occur 6 hours of negative electricity prices. The EU-ETS does not have such regulations. CO₂-free installations are profiting 8,760 hours a year completely independent of high or low energy prices. Why should the financial support mechanism for RES compensating - for not internalised external costs – be interrupted or reduced. The ecological benefits are independent of strong fluctuating electricity prices. Negative electricity prices should fully effect the installations that are not flexible enough like nuclear and fossil (big coal). Reducing the financial support for RESel during negative price periods

and at the same time support fossil and nuclear capacities would reduce the energy transition or increase the need for more financial support for RESEl during normal electricity price periods.

3. Which circumstances do you consider to be crucial in order to ensure functioning capacity market? Please consider the procedure of awarding of capacity mechanisms, eligibility criteria for participation, non-discrimination etc.

First of all there should be a need by electricity consumers for establishing a capacity market. All electricity suppliers even very small one should be able to participate. E.g. small hydro (<10MW) is already participating in the balancing market.

The capacity market should be divided to the grid levels or at least take into account the grid capacities needed to deliver a certain capacity. Missing power supply or oversupply at low voltage grid levels should be compensated first on this level and secondly be "import" or "export" from/to higher grid levels. A decentralised renewable energy system should not create payments where decentralised consumers and suppliers of electricity in low grid levels are cross-subsidising suppliers and consumers at high grid levels.

4. What is your opinion on contractual obligations? Please consider especially availability / delivery at times of system stress, period of availability, duration, and remuneration.

This has to be a result of market forces. Only demand by electricity consumers should create capacity contracts. The State should not be involved. The same is true for pricing/remuneration.

5. Please describe the capacity mechanism if applicable or plans for introduction of capacity mechanism in your country. Please consider the necessity regarding security of supply, describe and assess the conditions and procedure of awarding and contractual obligations etc.

An Austrian balancing market to some extent linked to the German balancing market is working. Strategic behaviour of big oligopolies is currently avoiding negative energy prices to hinder new market entrance. Security of supply is given but new especially small entities do have not full market access.

6. Do you believe that capacity mechanisms deliver value for consumers? How can final consumer be affected by capacity mechanism in your country?

Short term balancing markets and dynamic pricing are the basis for smart electricity systems. The advantage is lower electricity prices for consumers who are able to make demand side management.

II. Austria ([Interessengemeinschaft Windkraft Österreich](#) / Austrian Wind Energy Association)

1. What is your opinion on capacity mechanisms? Do you think capacity mechanisms are necessary in order to ensure security of supply?

No. Currently there is a massive overcapacity in Europe. Market coupling has to be intensified and renewable storage opportunities have to be used without boundaries. If capacities are needed the focus should lie on the right incentives to increase flexibility instead of artificially set market conditions. Capacity markets are just prolonging European market dysfunction through overcapacities of wrong technologies, limited transmission capacities and direct and indirect subsidies to fossil/nuclear technologies. In future it might be necessary to talk about capacity markets; nevertheless it should not be the main focus of the current work.

2. Do you believe that capacity mechanisms can lead to distortion of competition between market participants? If so, which measures should be taken in order to prevent that situation?

Capacity mechanisms will lead to distortions in any case. Extremely limited strategic reserves (if we can call them capacity reserve) might be a solution but just for phasing out unnecessary fossil or nuclear capacity. If implemented they will perpetuate the current asymmetric situation of renewables

3. Which circumstances do you consider to be crucial in order to ensure functioning capacity market? Please consider the procedure of awarding of capacity mechanisms, eligibility criteria for participation, non-discrimination etc.

Capacity markets are just necessary to ensure a flawless transition of a fossil or nuclear based electricity system to a renewable dominated system. Thus it is crucial to ensure the privileged and priority access of renewables, massive reduction of must-run capacities and

the penalisation of inflexible technologies which lead to grid and market distortions. This can be achieved by CO₂ taxes or levies, minimum flexibility requirements for participation and clear and transparent communication of a phase out period when fossil/nuclear capacities will have to exit the markets.

4. Please describe the capacity mechanism if applicable or plans for introduction of capacity mechanism in your country. Please consider the necessity regarding security of supply, describe and assess the conditions and procedure of awarding and contractual obligations etc.

No capacity mechanisms planned. No capacity mechanisms are needed due to high capacities of hydropower plants in Austria and high overcapacities of fossil load in Germany.

5. Do you believe that capacity mechanisms deliver value for consumers? How can final consumer be affected by capacity mechanism in your country?

Capacity mechanisms won't deliver added value for customers. Security of supply is not a valid argument looking at the statistics. Security can be achieved through higher cooperation between countries and lower fossil dominance in Europe. Looking at gas, uranium and coal markets Europe is highly dependent of imports, thus security of supply can only be a 100% independent and renewable supply. High overcapacities show that a transition period with the clear objective of a 100% renewable market needs no capacity market but might need strategic reserves. Parallel to a phase out period renewables and storage will increase their stake in securing system stability.

III. Germany ([Bundesverband Erneuerbare Energien e.V. \(BEE\)](#) / German Renewable Energy Federation)

1. What is your opinion on capacity mechanisms? Do you think capacity mechanisms are necessary in order to ensure security of supply?

In principle, in mature power markets deliver enough incentives for holding available sufficient capacities for guaranteeing supply security. Only exceptionally, e.g. in case of closing down significant capacities for a politically decided nuclear phase-out or in case of a shutdown at short notice due to technical problems (like in Belgium, recently) it may be necessary to enhance supply security by means of a capacity reserve as an additional safeguard.

In terms of capacity mechanisms, it is important to strictly differentiate between capacity reserves, which are outside the market, and capacity markets with capacities provided within the market.

Electricity markets have significantly developed in the last few years, including strengthening of short gate closure segments. EEX and EpexSpot and others have recently demonstrated the adaptability of power exchanges. The White Paper published by the German Ministry for Economy and Energy outlines a multitude of options for further optimising power markets (including balancing markets). Optimising power markets should be a near time priority and it is a no regret option. The more market actors can rely on the absence of market distortions due to capacity markets, the stronger the impact can be. Further development includes stronger European cooperation. The more Member States coordinate their markets, the higher supply security will be in each Member State. Consequently, further development of the Internal Energy Market (IEM) should be prioritised of national and potential European capacity mechanisms, particularly if these mechanisms (like capacity markets do) will distort and weaken the IEM.

If – despite the potentials of further developed power markets – doubts about supply security cannot completely be removed, establishing a capacity reserve could be considered. It should be designed in a way which does not distort the market.

2. Do you believe that capacity mechanisms can lead to distortion of competition between market participants? If so, which measures should be taken in order to prevent that situation?

Again, differentiation is necessary. Capacity markets would disturb competition, whereas capacity reserves outside the market and in accordance with the markets would not cause relevant distortions.

Capacity markets would change market actors' behaviour, triggered by the additional refinancing stream provided. By nature, capacity markets tend to maintain or to newly create over-capacities. Retail market prices would thus be pushed down, creating market entrance barriers for those who would benefit less from the capacity markets. This would include Renewables, because incremental costs would increase. These overcapacities would lock-in the old system and therefore prevent the structural changes of the energy system, which are so important for climate protection.

In addition, capacity markets also have strong cross border impacts. They increase the competitiveness of the power producers in the country which introduces capacity markets compared to those which do not. As a result, capacities will be relocated towards countries with capacity markets. This market distortion could only be prevented, if countries with capacity markets were obliged to open them for foreign capacities. Discrimination would have to be definitely excluded, which consequently implies that comprehensive cross-border interconnection needs to be available.

The impact would be completely different with Capacity reserves, which do not interfere with the market. The reserve will only be used, when the market did not deliver, including maximum use of interconnectors. Contracting additional reserves abroad would not provide additional supply security, because these reserves could not be used in critical situations.

3. Which circumstances do you consider to be crucial in order to ensure functioning capacity market? Please consider the procedure of awarding of capacity mechanisms, eligibility criteria for participation, non-discrimination etc.

Functioning capacity markets should interfere with power markets as little as possible. They should be contracted after competitive cross-border auctions. Overcapacities should be avoided as much as possible. In addition, a broad technology mix is necessary. The capacities should be as flexible as possible so that they support flexibility needs instead of countering them. It should be prohibited to include base-load power plants. Including Demand-Side-Management and storage capacities should certainly be possible and not be discriminated against, as this is the case in the UK. Too long gate closure times reduce DSM for industry use. Gate closure times which are solely designed for power plant capacities constitute a clear distortion of competition. Coordination and exchange between Member States is important.

Before introducing capacity markets, their necessity should be assessed in a comprehensive and transparent procedure. The assessment should include whether all possible developments of electricity markets have been exhausted or how their functioning could be optimized.

Monitoring of supply security should be included on a mandatory basis. It should be conducted with a European perspective and thus exceed autarchy considerations.

4. What is your opinion on contractual obligations? Please consider especially availability / delivery at times of system stress, period of availability, duration, and remuneration.

This depends on the concrete implementation. And again, differentiation is necessary between capacity market and capacity reserve. The duration of contracts for existing power plants should only be a few years. Otherwise this would only be a golden handshake for the remaining lifetime. For new installations the period should be longer, which would also reduce annual costs.

Short term availability must actually be secured, which empirically is and was not the case for all existing capacity markets.

5. Please describe the capacity mechanism if applicable or plans for introduction of capacity mechanism in your country. Please consider the necessity regarding security of supply, describe and assess the conditions and procedure of awarding and contractual obligations etc.

The Ministry for Economy and Energy has recently presented a White Paper including plans for introducing a capacity reserve, to which we refer here. The White Paper will shortly be translated into English. The White Paper includes comprehensive and convincing arguments against the introduction of a capacity market.

6. Do you believe that capacity mechanisms deliver value for consumers? How can final consumer be affected by capacity mechanism in your country?

Ideally, capacity mechanisms lead to a higher degree of supply security. This implies the actual functioning of the mechanisms. It is well known that in the US there have been problems of supply security in some areas, despite the introduction of capacity markets. Evidently, the functioning of capacity markets cannot be taken for granted. This is why the Ministry for Economy – in a White Paper published last autumn – was still assuming that in case of introducing capacity markets (which the White Paper now renounces from) and additional capacity reserve would be necessary.

As further developed electricity markets should already guarantee supply security, the question of adequacy and proportionality needs to be addressed. Several studies commissioned by the Ministry for Economy and Energy and the former Environment Ministry demonstrate, the costs of supply security are higher in case of capacity mechanism

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compared to further developing the electricity market. The studies also concluded that capacity markets (compared with capacity reserves) result in significantly higher additional costs. In the worst case capacity markets lead to overcapacities, which do not function in stress situations.

Generally speaking, capacity markets risk taking wrong regulatory decisions. If too many capacities are contracted, market distortion and costs are inappropriately high. If too little capacities are contracted, supply security cannot be granted.

The White Paper shows how the costs of a capacity reserve can be borne by those who are causing them. The costs of availability of capacities are included in grid fees; the costs for using them are included in the balancing power price. Using the reserve reduces the costs of availability, because these costs will be balanced against the costs of using the reserve.

IV. Poland ([Polska Izba Gospodarcza Energetyki Odnawialnej i Rozproszonej \(PIGEO\)](#) / Polish Economic Chamber of Renewable and Distributed Energy)

1. What is your opinion on capacity mechanisms? Do you think capacity mechanisms are necessary in order to ensure security of supply?

Existent level of development of renewables, enabling possibilities of DSM, as well as new potential in modelling of energy demand (e.g. dynamic tariff, Internet of Things) and existing huge resources in large scale energy systems prove that there is no need to introduce capacity mechanisms.

2. Do you believe that capacity mechanisms can lead to distortion of competition between market participants? If so, which measures should be taken in order to prevent that situation?

Capacity market can lead to distortion of competition (it is an outdated mechanism, taking us back to times when energy generation systems had a monopoly, and two-component price for capacity and for energy limited competition). In order to avoid the distortion, it does not make sense to go back, solutions promoting competitiveness (e.g. dynamic tariff) should be applied instead.

3. Which circumstances do you consider to be crucial in order to ensure functioning capacity market? Please consider the procedure of awarding of capacity mechanisms, eligibility criteria for participation, non-discrimination etc.

If capacity market is to be applied, it should focus first of all to DSM/DSR. Subsequently it should apply to existing (and only existing) generating capacities, for their up-grading. Horizon of contracts should not be longer than 5 years.

4. What is your opinion on contractual obligations? Please consider especially availability / delivery at times of system stress, period of availability, duration, and remuneration.

Competition already forces reduction of prices in the Polish balancing market, which proves that capacity mechanism is not needed.

5. Please describe the capacity mechanism if applicable or plans for introduction of capacity mechanism in your country. Please consider the necessity regarding security of supply, describe and assess the conditions and procedure of awarding and contractual obligations etc.

Operator of transmission system in Poland implements already DSM/DSR contracts, however on rather symbolic scale – total capacity <100M. It also applies contracts for so called “cold capacity reserve” (although its cost is very high), at the moment however there are not many contracts yet and the scale is not significant. Large scale facilities demand to introduce capacity market and push the government to work on that, however there no concrete proposals.

PGE, the biggest facility in Poland designated (in the Polish Energy Policy) for implementation of nuclear power system, requests the differential contracts for capacity installed in the nuclear power plants following the UK example, there is an on-going discussion on that issue.

6. Do you believe that capacity mechanisms deliver value for consumers? How can final consumer be affected by capacity mechanism in your country?

Consumers would not benefit from the capacity market. On the contrary, capacity market will hinder RES development as well as DSM/DSR contracts. Capacity market is only in the interest of large-scale facilities.

V. United Kingdom ([UK Renewable Energy Association \(REA\)](#))

1. What is your opinion on capacity mechanisms? Do you think capacity mechanisms are necessary in order to ensure security of supply?

Capacity mechanisms (CM)s are “seen” as essential in several countries in order to ‘keep the lights on’ and avoid blackouts, including in the UK. However there are considerable drawbacks to such mechanisms that risk locking us in to the old ways of generating energy at high carbon intensity.

Although we face an energy ‘trilemma’ of challenges which must be addressed, the UK approach only addresses one aspect of this (namely energy security), while doing nothing to address the need to lower emissions and reduce costs to end-consumers.

The Capacity Market in the UK fails to adequately support new technologies such as energy storage and Demand Side Response/Management (DSR) which are crucial to the low carbon transition.

2. Do you believe that capacity mechanisms can lead to distortion of competition between market participants? If so, which measures should be taken in order to prevent that situation?

If the rules are overly complex, and require large amounts of credit cover, CMs can definitely benefit incumbents and larger players over SMEs and new market entrants. This could be addressed at least in part by ensuring the mechanisms are kept as straight forward and simple as possible and enabling new technologies and business models to participate.

3. Which circumstances do you consider to be crucial in order to ensure a functioning capacity market? Please consider the procedure of awarding of capacity mechanisms, eligibility criteria for participation, non-discrimination etc.

Simplicity and transparency are vital and a level playing field should be offered to all participants. Depending on the model adopted, in a competitive auction market sufficient supply, or those willing to create the supply is essential – without this a market cannot function.

Simplicity and transparency is arguably lacking in the UK’s Capacity Market – see information here for further details on the UK scheme.

4. What is your opinion on contractual obligations? Please consider especially availability / delivery at times of system stress, period of availability, duration, and remuneration.

Contractual obligations are important and need careful design. For example, although the UK CM is not yet operational therefore we do not have practical experience of the impacts yet, it has so far not adequately incentivised energy storage or DSR as the penalties for non-delivery are inappropriate.

Consideration should be given to sliding scales of payments based on speed of availability and other benefits to the grid network (e.g. frequency response from energy storage technologies).

Length of contract is also important for new technologies such as storage in order to gain financing. The US 'Pay for Performance' measure is often seen as supportive of storage technologies for example as it provides extra payments for quicker responses and longer term contracts. For example this mechanism recognises the benefits of storage being able to respond within seconds to calls for capacity, compared to conventional capacity (ranging from several minutes to several hours).

5. Please describe the capacity mechanism if applicable or plans for introduction of capacity mechanism in your country. Please consider the necessity regarding security of supply, describe and assess the conditions and procedure of awarding and contractual obligations etc.

UK CM: Open to any generator not receiving renewables support, several categories including new-build plant, refurbishing plant and DSR/storage.

Generators receiving the support must supply power to the grid on request, which could be 4 hours or longer before the supplies must be delivered.

The rate paid is set in a 'Dutch auction', which runs four years in advance of the required delivery of power. There are two categories in the auction: price-maker and price-taker. Certain plants (e.g. new plants) can receive a higher level of support for a longer term than price takers. The level of capacity to procure is calculated in advance and subject to a price cap. Many generators are also subject to credit requirements needing to be posted (currently £5,000/MW).

Bids must be from 'units' of 2MW and above, but multiple sites can bundle together to form one 'unit'.

Capacity must be verifiable and tested prior to delivery.

There are penalties for non-delivery (though these are capped in any one year).

6. Do you believe that capacity mechanisms deliver value for consumers? How can final consumer be affected by capacity mechanism in your country?

This is debatable at best. CMs risk locking consumers into the previous out dated modes of delivering energy at a high carbon cost. Unlike recent renewables incentives (e.g. the UK's Contracts for Difference- 'CfDs') there is often no or very little in the way of consumer safeguards in place and new technologies and storage are not effectively encouraged.

The energy trilemma is only addressed in one form unlike most renewable incentives and this therefore represents poor value for money. This is because a fixed subsidy is offered regardless of generator returns from wholesale prices (opening the possibility of excessive returns), with absolutely no consideration given to the carbon intensity of the capacity. There are doubts as to how successful they are, and the interplay with interconnectors is also a much under-considered issue – if we fund interconnectors and CMs are we effectively paying twice for the same service?