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Contribution to the consultation on generation adequacy, capacity mechanisms and the internal market in electricity

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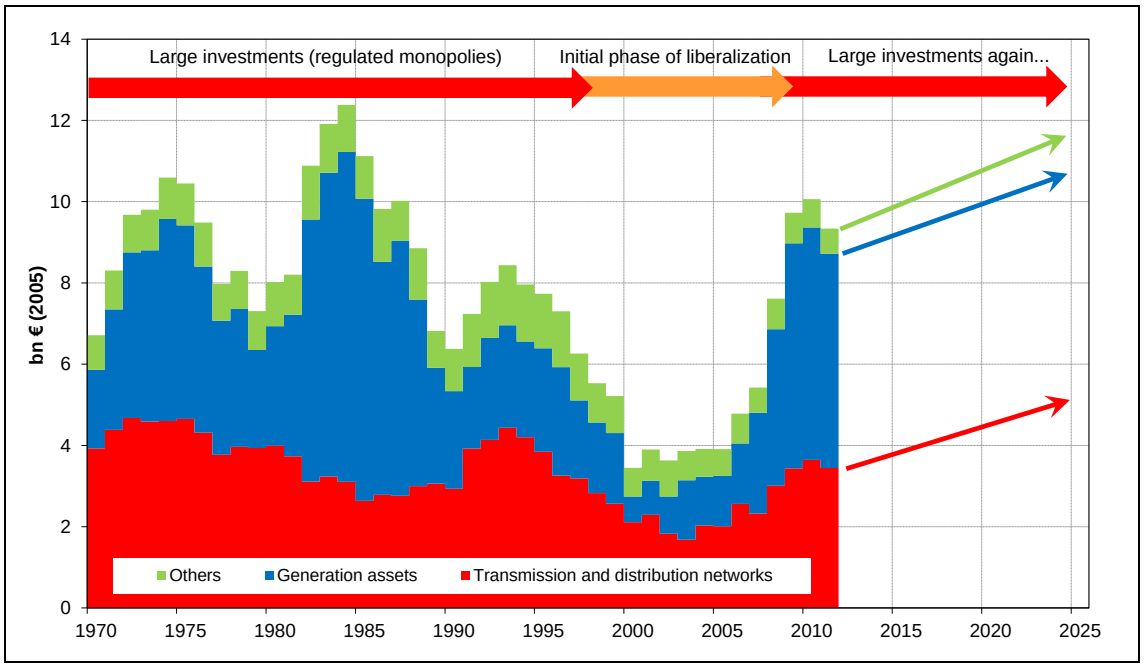
1 Introduction

The power supply system in most parts of Europe is facing a broad range of challenges. On the one hand, there is the technical restructuring of the system in favour of renewable energies or other low-carbon power generation options, and on the other hand, there are changes in the structure of the deregulated electricity market in most of the regional markets in Europe.

- Firstly, these structural changes arise from the need, for the first time since the beginning of deregulation in 1996, to make major investments in conventional power plants and infrastructure. The investment trends in the German power sector indicated by Figure 1 underlines that a period of record low investments after the liberalization of the electricity market is coming to an end.

Figure 1 Investments by German utilities in constant prices, 1970-2011



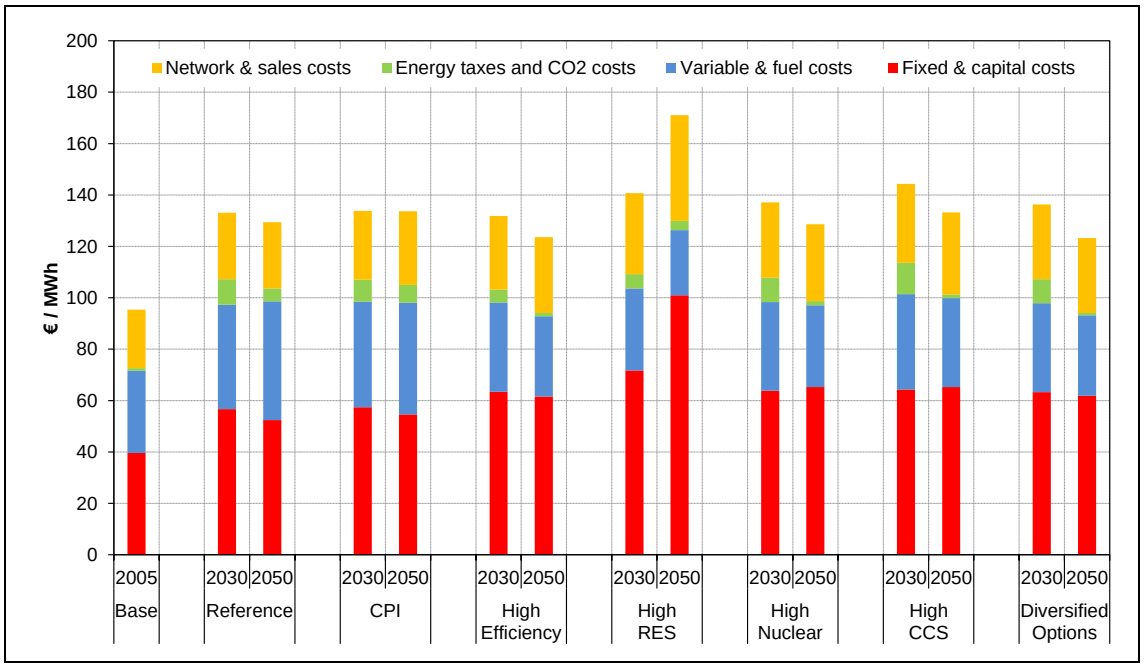
Source: VDEW, BDEW, calculations by Öko-Institut

- Secondly, the emerging investment cycle for power plants has to be entirely financed by the electricity market. Revenue streams from other policy frameworks such as the free allocation of emission allowances under the European Union Emissions Trading Scheme (EU ETS), which played a major role in investment decisions at the end of the last decade, are no longer available.
- Thirdly, the recent market structures are a result of the “brownfield” liberalization of the European power market. In most of the European regions the liberalization started from a situation characterised by significant surplus capacities, a capital-intensive capital stock and plants with (very) low short-term marginal

costs and low contribution margins in a market in which prices are solely based on short-term marginal costs of the marginal production units.

- Fourthly, these intrinsic challenges are exaggerated by the huge increase in the volume of electricity generated from renewable energies as part of Europe's ambitious climate and energy policy goals. This adds additional generation sources with low short-term marginal costs to the systems on the one hand and creates, at least for the variable renewable energy sources, the need for backup capacities on the other hand.
- Fifthly, the current crisis in the EU Emissions Trading Scheme (extremely low prices for emissions certificates) has brought the additional contribution margins and revenue streams for clean generation options to almost zero.
- Sixthly, the price of conventional power plants has increased significantly (approx. 70%) over the last decade as well as the size of revenue streams and contributions margins for re-financing new investments.

Figure 2 Total power system costs for different scenarios from the European Energy Roadmap 2050



Source: European Commission, Matthes (2012)

Figure 2 demonstrates the size of the challenges ahead. Major investments in generation and network infrastructures have to be made and the capital intensity of the power system will significantly increase in the framework of the EU's decarbonisation policies. Building the economic case for the necessary investments in a liberalized and increasingly integrated European market and ensuring a level of reliability of the system in a market which emerged from a very different starting point is one of the key challenges for Europe.

2 Investments in the internal energy market

(1) Do you consider that the current market prices prevent investments in needed generation capacity?

The (wholesale) market price is not the appropriate metric for assessing the economic basis for the necessary investments. The key parameter for refinancing of investments is the contribution margin, e.g. the difference between electricity sales and the variable operational costs (fuel, emission allowances). Contribution margins are extremely low in continental European power markets as a result of fuel price ratios, very low CO_2 prices and a very flat merit order curve, resulting from the structure of power generation investments which were undertaken in the framework of cost-plus regulation before the electricity market was liberalized.

The recent analysis shows very clearly that the existing and foreseeable contributions margins will not be sufficient to build a solid basis for investment in new power plants, even for plants with a rather low capital intensity. The increase of plant costs in recent decades significantly exacerbates this intrinsic problem. Furthermore, the recent contribution margins do not cover even the fixed operational costs (staff, maintenance, etc.) for significant parts of the fleet (older coal-fired power plants, nearly all gas-fired plants except cogeneration plants). Before 2013 this lack of contribution margins was overcompensated by the free allocation of emissions allowances which created large revenue streams in a market in which price formation included the pass-through of opportunity costs of freely allocated allowances. When the third trading period of the EU ETS began in 2013, this revenue stream was stopped (for a number of good reasons).

On the other hand, the flexibility for new investments over time is only limited, given the decommissioning of nuclear power plants in some Member States based on their national policies and the decommissioning of conventional power plants with high emissions of conventional pollutants in the framework of the respective European legislation.

Without a doubt there is a certain combination of prices in the energy, emission and power plant technology markets which could create sufficient contribution margins, even within the framework of existing market structures. The key problem is, however, that these market conditions (very high, scarcity-driven mark-ups on electricity prices, very high coal prices, very low gas prices, very high CO_2 prices, low investment costs) are not materializing – either currently or in the foreseeable future. Against this background, the lack of sufficient contribution margins in the power sector could materialize as a significant reliability problem – already in the short term.

The economic framework could, however, change over time. The EU ETS must be fixed in a rather short period of time for it to be able to play a significant role in the emerging investment cycle in the power sector and an intensified competition in the gas market will improve the investment climate. Against this background the necessary capacity mechanisms should be designed in such a way that they have the full poten-

tial to react as flexibly as possible to changes in the economic framework of the power sector.

(2) Do you consider that support (e.g. direct financial support, priority dispatch or special network fees) for specific energy sources (renewables, coal, nuclear) undermines investments needed to ensure generation adequacy? If yes, how and to what extent?

Financial support and/or priority dispatch for generation options which are of key importance for the transition towards a low-carbon energy system are a consequence of the fact that the historically developed (energy-only) electricity market, especially if externalities are not or not sufficiently internalized, cannot deliver the economic basis for these investments.

Power generation options which were added to the system based on complementary revenue streams and/or have priority dispatch result in lower contribution margins and lower the revenue streams for investments which have to recover their costs exclusively from the liberalized market. However, the respective complementary policies accelerate an intrinsic problem of the energy-only market by a few years. This can be clearly seen from other countries with liberalized markets in which such complementary policies were not implemented but comparable problems of insufficient contribution margins from the energy-only market arose.

Against this background, policy-makers are facing a double challenge. On the one hand the market design must be adjusted to bring about an enabling framework for the investments which maintain a high level of reliability. On the other hand it must be designed in such a way that the technologies needed for the transition to a low-carbon energy system can be implemented in the framework of suitable market structures.

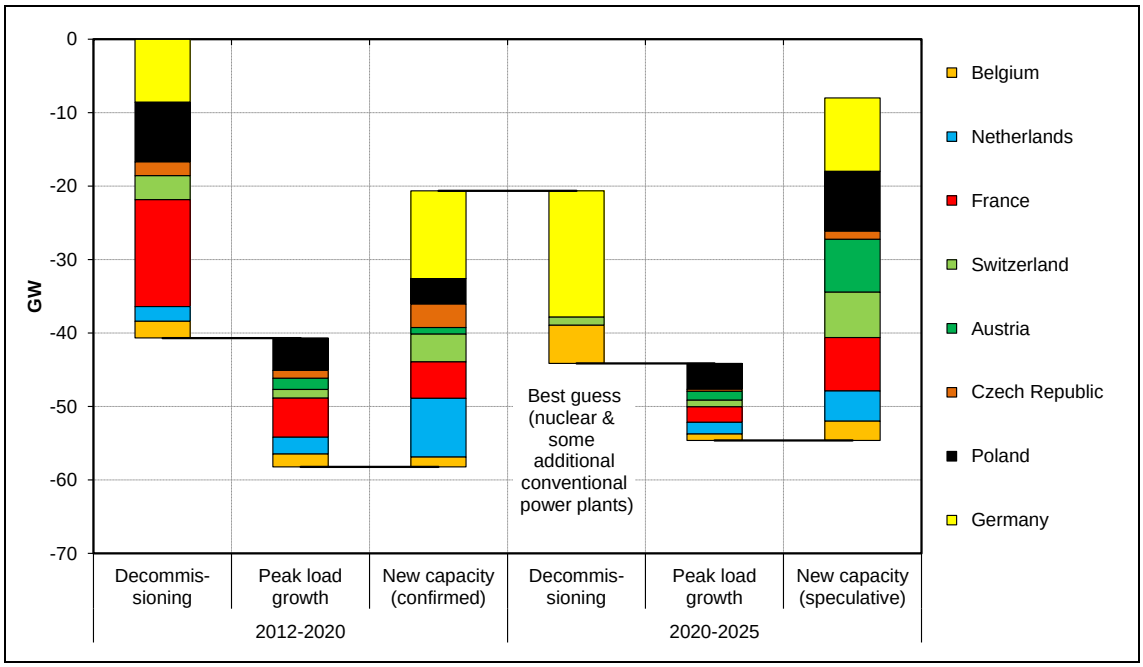
(3) Do you consider that work on the establishment of cross-border day ahead, intraday and balancing markets will contribute to ensuring security of supply? Within what timeframe do you see this happening?

Market features like cross-border day-ahead, intraday and balancing markets are a means for raising cross-border efficiency gains from the existing capital stocks. Hence all efforts to strengthen the integration of day-ahead, intraday and balancing markets can improve the reliability of the system within the existing capital stock.

However, there are two significant facts which limit the role of these market improvements with regard to security of supply:

- Besides the respective regulatory arrangements cross-border and even in-country infrastructures must be significantly upgraded to increase the full range of potential efficiency and reliability gains. All efforts should be undertaken to implement these upgrades; however, this will require significant time.
- The size of the challenge reaches a level at which the existing capital stock will not be able to meet the reliability requirements, even in a situation with no infrastructure constraints. Figure 3 shows the results of a detailed analysis of the data provided by Entso-E's Scenario Outlook and Adequacy Forecast 2012-2030 and assessed it against data on power plants under construction or projects with a high probability of implementation, political plans and announcements on plant closures and economic assessments on future investments. If no peak load growth were assumed, the aggregated capacity balance for the countries shown would be more or less equivalent to the status quo in 2020. If a peak load growth materialized as per Entso-E's estimates, the aggregate capacity in 2020 would be 18 GW lower than in 2012. If the projected plant closures in Germany (nuclear and coal), Belgium (nuclear only) and France (nuclear only) from 2020 to 2025 are taken into account, the total capacity could be 27 GW (without consideration of peak load growth) or 55 GW (with projected peak load growth) lower than in 2012. For the projected commissioning of new generation units in Entso-E's analysis with a total capacity of 47 GW from 2020 to 2025 (10 GW gas-fired power plants in Germany alone), a sufficient economic basis cannot be observed at the moment.

Figure 3 Power generation capacity trends for selected continental European countries, 2012-2025



Source: Entso-E (2012), Platts Database, BNetzA, calculations by Öko-Institut

Therefore a significantly deepened cross-border integration of the markets should be accelerated as an important measure to safeguard the reliability of the power system. However, even raising the full potential of the existing capital stock will be not sufficient to ensure a high level of reliability; peak load management as well as new generation units will be indispensable in this regard. For both measures new (market) arrangements must be found to create a robust economic basis.

Especially with a view to the respective time frames enhancing market integration and creating new market arrangements can and should not be seen as sequential but as parallel efforts.

(4) What additional steps, if any, should be taken at European level to ensure that internal market rules fully contribute to ensuring generation adequacy and security of supply?

The internal market in its recent structure and though not yet fully completed will not be able to ensure generation adequacy and security of supply. An approach of three parallel tracks should be taken at the European level:

- the market integration should be strengthened by full implementation of the third package and the full implementation of the internal market;
- the infrastructures should be upgraded to remove cross-border bottlenecks for electricity transmission;
- analytical capacities should be expanded to assess generation adequacy and system reliability based on appropriate and transparent methodologies and data; and
- an enabling framework for market arrangements should be created, e.g. capacity markets which provide sufficient revenue streams for the necessary investments, reflect the structures of the different regional markets (which will continue to exist for a certain period of time), avoiding major distortions between the different Member states, encouraging regional cooperation and supporting convergence of capacity mechanisms in its different dimensions.

(5) What additional steps could Member States take to support the effectiveness of the internal market in delivering generation adequacy?

Member States should also take a multi-track approach to ensure generation adequacy by:

- implementing the internal market provisions fully;
- managing appropriately and removing internal infrastructure bottlenecks;
- carrying out appropriate generation adequacy and reliability assessments based on transparent methodologies and data;
- cooperating with neighbouring countries to reflect appropriately the impacts of cross-border market integration;
- creating an enabling framework for the necessary new investments, maintaining the operation of the existing fleet if necessary and appropriate; and
- cooperating at least on crucial elements of the new market arrangement within the framework of regional markets.

(6) How should public authorities reflect the preferences of consumers in relation to security of supply? How can they reflect preferences for lower standards on the part of some consumers?

If security of supply and reliability of the system is anticipated as a public good, lower standards on the part of some consumers are neither an appropriate approach for dealing with this issue nor will it be possible to implement them without major transaction costs. However, this is not to argue that demand side or load management activities in a clear framework could not play a major role in increasing the reliability and the flexibility of the system.

3 Assessing generation adequacy

(7)	*Do you consider that there is a need for review of how generation adequacy assessments are carried out in the internal market? In particular, is there a need for more in depth generation adequacy reviews at:* (a) *National level* *(b) Regional Level* *(c) European Level*

There is a need to review the approaches to assess generation adequacy at all three levels. Key issues are as follows:

- the reviews should provide better information not only on aggregate adequacy assessments but also on its components such as:
  - peak load demand trends;
  - decommissioning of plants based on regulatory requirements;
  - decommissioning of plants as a result of economics;
  - commissioning of new plants and the economic reliability of the respective assumptions;
  - development of network and storage infrastructures; and
  - the existing and the potential role of cross-border supplies;
- the reviews should provide more sensitivity analysis, especially in economic terms;
- the reviews should focus more strongly on regional bottlenecks;
- the reviews should take into account the interactions between security of supply and system reliability in the natural gas and the electricity system;
- the reviews should be founded on appropriate approaches for how to deal with generation based on renewable, especially variable energy sources in the framework of system and generation adequacy assessments;
- the reviews should provide more insights on the role of more active load and demand side management;
- the reviews should be extremely transparent with regard to assumptions, methodologies and results, and should be subject to public consultation in each phase (the approach for the network development plaid down in the third package is an interesting blueprint for this).

(8) Looking forward, is the generation adequacy outlook produced by ENTSO-E sufficiently detailed? In particular,

(a) Is there a need for a regional or European assessment of the availability of flexible capacity?

(b) Are there other areas where this generation adequacy assessment should be made more detailed?

The adequacy outlook produced by Entso-E made huge progress in terms of detail and transparency. Nevertheless, the following seems to be necessary:

- more detailed analysis of (variable) renewable energy sources, including the regional patterns;
- more detailed analysis of the available flexible generation capacity;
- more detailed analysis of the availability more flexible demand response;

With regard to more detailed generation adequacy assessments the following points are of special importance:

- peak load demand trends;
- decommissioning of plants based on regulatory requirements;
- decommissioning of plants as a result of economics;
- commissioning of new plants and the economic reliability of the respective assumptions;
- development of network and storage infrastructures; and
- the existing and the potential role of cross-border supplies;

Last but not least, more sensitivity analysis, especially in economic terms, should also be part of the adequacy assessments:

(9) Do you consider the Electricity Security of Supply Directive to be adequate? If it should be revised, on which points?

Directive 2005/89/EC does not cover the full range of necessary assessments, especially at the level of regional markets. More importantly, it does not provide a mandatory framework for more harmonized activities of the Member States, which are essential if there are to be appropriate and reliable assessments and activities within the regional markets.

(10) Would you support the introduction of mandatory risk assessments or generation adequacy plans at national and regional level similar to those required under the Gas Security of Supply Regulation?

The introduction of mandatory risk assessments or generation adequacy plans at national and regional level could certainly be an important step towards achieving a new quality of adequacy assessments. However, we refer also to our comments on questions no. 7 and 8 which go beyond the requirements of Regulation No 994/2010.

(11) Should generation adequacy standards be harmonised across the EU? What should be that standard or how could it be developed taking into account potentially diverging preference regarding security of supply?

Harmonized generation adequacy standards urgently need to be developed across the EU, at least for the regional markets. The lack of harmonized standards is a key bottleneck in terms of appropriate cross-border analysis and activities.

4 Mechanisms to address generation adequacy concerns

(12) Do you consider that capacity mechanisms should be introduced only if and when steps to improve market functioning are clearly insufficient?

The emerging steps to improve the existing market functions will definitely not be sufficient as the only track to reach an appropriate level of generation adequacy. In general cross-border day ahead, intraday and balancing markets work appropriately to dispatch existing power plants on an hourly basis and thus raise efficiency gains from the existing fleet. However, even well-functioning dispatch markets will not deliver robust price signals which could enable cost recovery of investments in the framework of the foreseeable market conditions.

Capacity remuneration mechanisms will be urgently needed. The only remaining question is what gap in generation capacities or demand response must be filled. This is more an issue of parameterization of the capacity mechanisms than a question of the general need for such mechanisms.

Furthermore, the setup of appropriate capacity mechanisms will be a key step towards an integration of (variable) renewable and other low-carbon energy sources, also with regard to the necessary storage installations.

(13) Under what circumstances would you consider market functioning to be insufficient:

(a) to ensure that new flexible resources are delivered?

(b) to ensure sufficient capacity is available to meet demand on the system at times of highest system stress?

The existing energy-only market (which is not per se ‘the market’) is sufficient to deliver efficient supply but definitely not to deliver reliability in the system. The empirical evidence on if and how the existing energy-only market could be sufficient to deliver the necessary level of flexibility is still rather low. However, some theoretical analysis indicates that the energy-only market will probably not be sufficient to deliver the necessary range of flexibility options, especially in the framework of very ambitious decarbonisation targets.

For a system with sufficiently high reserve margins the market will never or extremely rarely create a demand for the full capacity. From a purely theoretical perspective the market could ensure, under certain circumstances, the supply for a level of demand which occurs on a regular basis. For higher, rarer demands, the investment risks will be

significantly higher and will not deliver a sufficient economic framework for larger investments with significant lead times as these are typical for the power sector.

The respective reserve capacity will not be complemented by a (regular) endogenous demand and thus cannot be delivered by the energy-only market. This intrinsic situation will be exacerbated if the share of (variable) renewable energy sources in the system increases.

(14) In relation to strategic reserves:

(a) Do you consider that the introduction of a strategic reserve can support the transition from a fossil fuel based electricity system or during a nuclear phase out?

The strategic reserve is a capacity mechanism for supply systems with long lifetimes, low dynamics (typically mainly hydro- or nuclear based) and rare peak load situations which exceed the regular capacities. The strategic reserve, as a capacity mechanism which does not allow the respective capacities to operate in the energy-only or system services markets, is not an appropriate mechanism for dealing with the challenges of very dynamic electricity supply systems, e.g. systems with high demand growth or systems with strong needs for capacity substitution or modernization, strong needs for increased flexibility or strong needs to unlock and activate the full potential of demand response.

(b) What risks, if any, to effective competition and the functioning of the internal market do you consider being associated with the introduction of strategic reserves?

The strategic reserve will not solve the fundamental problems of the market. In markets with high dynamics it must be seen as a ‘wait-and-see’ option which postpones necessary action, accumulates risks, and prohibits gradual phase-in and learning curves. It could even weaken the energy-only market if significant capacities are accumulated within the strategic reserve and their entry into the energy-only market could not or no longer be prevented by political or legal reasons.

(15) In relation to capacity markets and/or payments:

(a) Which models of capacity market and/or payments do you consider to be most and least distortionary and most compatible with the effective competition and the functioning of the internal market, and why?

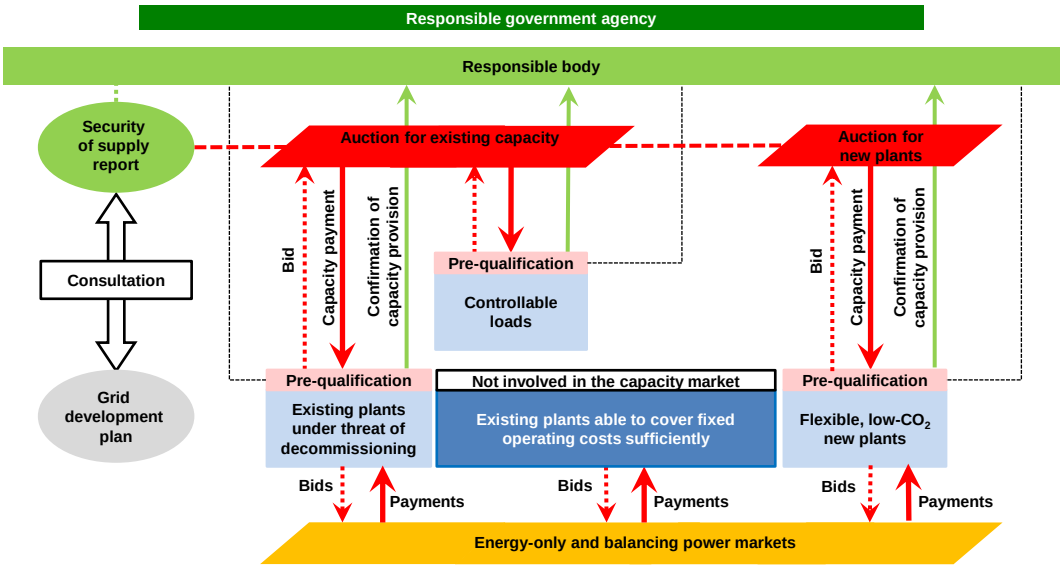
(b) Which models of capacity market and /or payments do you consider to be most compatible with ensuring flexibility in a low carbon electricity system?

(c) Are there any models of capacity mechanism the introduction of which would be irreversible, or reversible only with great difficulty?

(16) Which models of capacity mechanisms do you consider to have the have the least impact on costs for final consumers?

Capacity remuneration mechanisms should be market-based, i.e. based on quantities than administered prices. It should deliver reliability but should also maintain the transition towards a low-carbon energy system, minimize the cost burden to the consumer and be compatible with the internal market.

Figure 4 Overview of the procedures and functions of the 'Focused Capacity Market'



Source: Öko-Institut, LBD et al. (2012)

Together with LBD Beratungsgesellschaft and Raue LLP we have developed the concept of a "Focused Capacity Market" (Figure 4) which is an appropriate way for achieving the flexible phase-in of capacity markets in the framework mentioned above. By segmenting and focusing the market it allows major infra-marginal rents (i.e. costs for

the consumers) to be avoided, the risk assessments for different options of supply and demand to be reflected, including the demand side and triggering flexibility options in the new-built segment.

(17) To what extent do you consider capacity mechanisms could build on balancing market regimes to encourage flexibility in all its forms?

Although many elements of balancing market regimes will also be mirrored by capacity markets, balancing market regimes will not be able to bring about a sufficient basis to create robust grounds for investments, given the specific features (and needs) of the balancing markets (no lead-times, short delivery periods, high volatility etc.). However, flexibility will be triggered by all three market segments, the energy-only, the balancing as well as the capacity mechanisms. None of these three is sufficient on its own, yet none of them is dispensable.

(18) Should the Commission set out to provide the blueprint for an EU-wide capacity mechanism?

An EU-wide capacity mechanism, although preferable in principle, should not be seen as the first priority at the moment:

- given the urgency of action and the existing legal and institutional arrangements;
- given the structures of the individual countries, which are to some extent different, and/or regional markets within the EU; and
- given the need for learning.

Harmonization and/or convergence of capacity mechanisms/markets, or at least of key elements of capacity mechanisms/markets in the regional markets, should be made a key priority at the moment.

5 Framework for assessing capacity mechanisms

(19) Do you consider that the European Commission should develop detailed criteria to assess the compatibility of capacity mechanisms with the internal energy market?

(20) Do you consider the detailed criteria set out above to be appropriate?

(a) Should any criteria be added to this list?

(b) Which, if any, criteria should be given most weight?

Firstly, it should be noted that the list of criteria uses the terms “normal operation” or “normal market rules”. It should be pointed out that these terms refer to characteristics of a market which was set up in a specific historic situation (significant surplus capacities as a result of a long period of cost-plus regulation in many Member States) and based on an existing capital stock with certain specifics (relatively low short-term marginal costs). The international comparison of markets with a longer history of liberalization which do not include a capacity element are the exception and the “normal” market design is one in which a capacity market is a complement to the energy-only market which dominates the recent European market design. If the energy-only market shall be addressed by the respective provision as the major mechanism for optimization of plant operations and a key mechanism to remunerate flexibility, a clear reference to the energy-only market should be made.

(1) The necessity for a capacity mechanisms should be clearly established in the context of:

a. The potential of the identified needs being met in the normal operation of the internal energy market, in particular:

- *increased interconnection and in particular the completion of identified projects of Common interest.*
- *steps to encourage effective competition by addressing the position of dominant undertakings.*

b. Alternative, less distortionary measures which could be taken, for example steps to improve energy efficiency or reduce electricity demand.

Comment: Without a doubt energy efficiency measures are of special importance in the transition of the power system. However, energy efficiency measures are not less “distortive” than other comparable options. The decrease of peak load has the same effect (“distortion”) on the market as an additional peak load unit. The following suggestion could be more consistent:

b. Options like energy efficiency improvements or reduced electricity demand as well as flexible demand response should be specifically reflected.

c. Removing barriers to the effective participation of demand in the electricity market.

Comment: The following suggestion could make the criterion more precise and bring it closer to its intended purpose:

c. Removing barriers to the effective participation of demand response measures in the electricity market.

Furthermore, it seems to be necessary to reflect the implications of cross-border supply appropriately:

d. Reflecting cross-border trade of electricity which could either soften or intensify the challenges for system reliability.

e. Showing the necessary coordination efforts between the Member States at least within the regional markets.

(2) The effectiveness of the capacity mechanism addressing the identified market failure should be demonstrated and that it is additional to what would have occurred under normal market rules.

Comment: The following suggestion could make the criterion more precise:

(2) The effectiveness of the capacity mechanism addressing the identified market failure(s) should be demonstrated. It should also be demonstrated that it is additional to what would have occurred under existing market rules and the foreseeable and sufficiently robust trends of the economic framework for the electricity market.

(3) The duration of the application of the capacity mechanism should be clearly limited and clearly specified,

a. the impact on the market of the introduction of capacity mechanisms should not make it difficult to reverse that decision in the future.

b. the necessity of retaining reinstating a capacity mechanism should be subject to review.

Comment: The requirement of a specific duration period could exclude mechanisms which are effective and efficient and is neither necessary nor appropriate. To ensure

the necessary flexibility and potential for improvements, including a closer integration over time, the following suggestion seems to be more appropriate:

(3) The implementation of the capacity mechanism should include comprehensive monitoring and reviews as well as clearly defined points for potential revisions,

a. the impact on the market of the introduction of capacity mechanisms should not make it difficult to adjust or reverse that decision in the future,

b. the necessity of retaining or reinstating a capacity mechanism should be subject to review,

c. the capacity mechanism should be designed in such a way that the protection of investment confidence under a capacity mechanism is ensured.

(4) Any capacity mechanism should be open to electricity undertakings operating in other Member States, to the extent they are able to make the electricity available in markets to which the capacity mechanism is established.

Comment: The following suggestion could make the criterion more consistent:

(4) Any capacity mechanism should be open to electricity undertakings operating in other Member States, to the extent that they are able to make the electricity available in markets in which the capacity mechanism is established and at the time which the mechanism requires it. Furthermore, it should not create barriers or additional bottlenecks to cross-border trade or competition in the internal market.

(5) Any capacity mechanism should not act as a barrier to cross border trade or competition in the internal market by

a. artificially altering trade flows or the location of production, in particular by:

- *restricting the ability of electricity undertakings in the Member State to sell their electricity to customers elsewhere in the internal market, (i.e. capacity physically located in a Member State should not be reserved for that Member State).*
- *distorting the commercial behaviour of generators in the day ahead and intraday markets.*
- *distorting investment signals in the internal market leading to inefficient locational choices.*
- *distorting investment signals in the internal market leading to the displacement of new investment from one Member State to another.*

b. distorting dynamic incentives/crowding out;

- *The incentive on consumers or generators to respond to high prices at periods of scarce capacity should not be diminished.*
- *The mechanism should not undermine incentives on the electricity market to deploy new techniques for demand reduction or electricity storage and generation.*

c. creating market power or exclusionary practices;

- *The mechanism should not strengthen or maintain the market power of incumbent firms.*
- *The mechanism should not act to maintain inefficient market structures or undertakings, acting to deter new entry.*

Comment: It will be extremely difficult to check capacity mechanisms against criterion 5 because each change against the (economically unsustainable) status quo would result in a violation of this criterion. The criterion should focus instead on the intention, significant distortions and effective incentives or price signals. The following suggestion could be more appropriate:

(5) Any capacity mechanism should not act as a barrier to cross-border trade or competition in the internal market by:

a. intentionally and significantly altering trade flows or the location of production, in particular by:

- **restricting significantly the ability of electricity undertakings in the Member State to sell its electricity to customers elsewhere in the internal market, (i.e. capacity physically located in a Member State should not be reserved for that Member State).**
- **distorting significantly the commercial behaviour of generators in the day ahead and intraday markets.**
- **distorting significantly investment signals in the internal market leading to inefficient locational choices.**
- **distorting significantly investment signals in the internal market leading to the displacement of new investment from one Member State to another.**

b. distorting dynamic incentives/crowding out;

- **The effective incentive on consumers or generators to respond to high prices at periods of scarce capacity should not be diminished.**
- **The mechanism should not undermine effective incentives on the electricity market to deploy new techniques for demand reduction or electricity storage and generation.**

c. creating market power or exclusionary practices;

- **The mechanism should not strengthen or maintain the market power of incumbent firms.**
- **The mechanism should not act to maintain inefficient market structures or undertakings, acting to deter new entry.**

(6) To be non-discriminatory a capacity mechanisms should

a. be allocated after an open competitive bidding process.

b. allow demand response and energy efficiency solutions to bid into capacity markets on an equal basis to generation.

Comment: This is a key criterion for an effective and efficient capacity mechanism. However, some important issues should added:

(6) To be non-discriminatory a capacity mechanisms should:

a. be allocated after an transparent, open and competitive bidding process.

b. allow demand response and energy efficiency and storage solutions to bid into capacity markets on an equal basis to generation.

(7) Not be confined to any particular generation technology, i.e. being tech. neutral (insofar as the mechanism is directed towards security of supply concerns – this may not apply if other objectives are also being pursued).

Comment: This criterion needs greater precision. The following suggestion could be an alternative:

(7) Not be confined to any particular generation technology, i.e. being technology-neutral. However, the capacity mechanism could specify technology-neutral requirements like certain flexibility parameters, emission intensity, etc. if these requirements are sufficiently specified and justified by clearly defined objectives.

(8) Capacity mechanism should be at least cost:

a. The direct costs imposed on suppliers or others electricity undertakings must be kept to the minimum necessary.

b. Persons providing capacity under the obligation must not be overcompensated.

c. Any selection process in the mechanism should be conducted in a transparent, open and non-discriminatory way which is market based.

d. The duration of any compensation to generators under the mechanism should be clearly justified.

Comment: This criterion needs a more comprehensive approach. Paragraph (b) would unnecessarily exclude tendering procedures with uniform pricing. The following suggestion could be an alternative:

(8) The capacity mechanism should be at least cost:

a. The total costs resulting from the capacity mechanism, including the costs for capacity remuneration as well as the price effects in the energy-only and the balancing markets, for suppliers or other electricity undertakings must be kept to the minimum necessary.

c. Any selection process in the mechanism should be conducted in a transparent, open and non-discriminatory way which is market-based.

d. The duration of any compensation provided to generators under the mechanism should be clearly justified.

(9) Costs associated with capacity mechanisms should be allocated to the beneficiaries of secure energy supply with different classes of consumers being treated in a non-discriminatory way.

Furthermore, an additional criterion should be added for the longer-term aspects:

(10) The capacity mechanism should be designed in such a way that an overall market design is developed which allows the market integration of renewable energy sources, including variable renewable energy sources, and the necessary storage facilities.

The different criteria should be weighted for emerging generation of capacity markets/mechanisms, e.g. a phase with a strong focus on flexibility and learning, according to the following list of priorities:

1. Priority 1: criteria 1, 2, 6, 7, 8, 10.
2. Priority 2: criteria 3, 4, 5, 9.

6 References

6.1 Literature

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Platts: World Electric Power Plant Database (06/2012)