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**REPORT FROM THE COMMISSION**

**Interim Report of the Sector Inquiry on Capacity Mechanisms**

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### Interim Report of the Sector Inquiry on Capacity Mechanisms

#### 1. Introduction

On 29 April 2015 the Commission launched a sector inquiry into the financial support that EU Member States grant to electricity producers and consumers to safeguard security of electricity supply (capacity mechanisms). It has concerns that capacity mechanisms may unduly favour particular producers or technologies and that they may create obstacles to trade in electricity across borders.<sup>1</sup>

To test those concerns, the Commission has gathered a large amount of information on existing and planned capacity mechanisms over the past ten months. It has investigated why Member States implement capacity mechanisms, how these mechanisms are designed and what their effects are on competition and trade in the internal electricity market.

The Commission will draw on the information collected in the inquiry when assessing whether capacity mechanisms comply with EU State aid rules.<sup>2</sup> The inquiry will also contribute to the Commission's Energy Union strategy, in particular by supporting the development of a legislative proposal for a new electricity market design in the EU.

This **interim report** and the **annexed Staff Working Document** set out the Commission's preliminary findings and tentative conclusions from the inquiry.

The Commission invites the EU Member States, stakeholders in the electricity sector and the general public to **submit comments** on the interim report and the annexed Staff Working Document within the next 12 weeks.

The Commission will publish a final report on the sector inquiry later this year.

#### 2. The Commission's policy in the area of electricity market design

Europe's electricity sector is experiencing a period of unprecedented transition. Liberalisation and decarbonisation policies have profoundly changed the way electricity is generated, traded and consumed in the European Union. Vertically integrated companies that controlled every segment of the value chain have now been unbundled and competition has developed in both the generation and the supply segment of the internal energy market. Renewable energy

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<sup>1</sup> [http://europa.eu/rapid/press-release\\_IP-15-4891\\_en.htm](http://europa.eu/rapid/press-release_IP-15-4891_en.htm)

<sup>2</sup> Guidelines on State aid for environmental protection and energy 2014-2020 (EEAG) (OJ C 200 of 28.06.2014, p. 1).

sources have grown rapidly. 26% of the EU's power is generated from renewables and 10% of total electricity is now sourced from intermittent sources, such as wind and solar.<sup>3</sup>

In many Member States, these developments have been accompanied by increased concerns about security of supply. Member States are concerned that the electricity market will not produce the investment signals needed to ensure an electricity generation mix that is able to meet demand at all times. Renewables with low running costs have curbed the profitability of conventional generators and reduced incentives to maintain existing power plants or invest in new ones.

Some Member States have reacted by taking measures designed to support investment in the additional capacity that they deem necessary to ensure an acceptable level of security of supply. These capacity mechanisms pay providers of existing and/or new capacity for making it available.

When introduced prematurely, without proper problem identification or in an uncoordinated manner, there is a risk that capacity mechanisms distort cross-border electricity trade and competition. For example, they may reward new investments only in certain types of generation or exclude demand response. They may also encourage investment within national borders when it would be more efficient to reinforce interconnection and import electricity when needed.

The Commission has voiced its concerns about the security of electricity supply in the framework of the Energy Union,<sup>4</sup> and it announced plans to propose legislation on electricity market design and security of electricity supply. The legislative proposal would establish a range of acceptable risk levels for supply interruptions and an objective, EU-wide, fact-based security of supply assessment addressing the situation in Member States. To obtain stakeholders' views on these ideas, the Commission has launched two public consultations<sup>5</sup>. The sector inquiry into capacity mechanisms is a complementary part of this wider initiative.

### **3. The Sector Inquiry into Capacity Mechanisms**

The Commission can carry out inquiries into particular sectors if it suspects that competition is affected by action taken by private undertakings or public authorities. This sector inquiry is the first ever in the area of State aid.<sup>6</sup>

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<sup>3</sup> European Commission, 'Renewable energy progress report,' 15 June 2015, COM(2015)293

<sup>4</sup> Communication from the Commission, 'A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy', 25 February 2015, COM(2015)80

<sup>5</sup> COM(2015)340 final.

[https://ec.europa.eu/energy/sites/ener/files/documents/DG%20ENER\\_ConultationPaperSoSelectricity14July.pdf](https://ec.europa.eu/energy/sites/ener/files/documents/DG%20ENER_ConultationPaperSoSelectricity14July.pdf)

<sup>6</sup> Since the revision of the State Aid Procedural Regulation in 2013 the Commission can conduct sector inquiries where state aid measures may distort competition in several Member States or where existing state aid measures are no longer compatible with the internal energy market.

The Commission launched the inquiry due to concerns that existing or planned support schemes for electricity capacity risk distorting competition and undermining the internal energy market.

The information gathered in the sector inquiry will enable the Commission to understand better:

- whether, and to what extent, it is necessary that Member States grant State aid to ensure security of electricity supply;
- what types of capacity mechanisms are most suitable to ensure security of electricity supply, and under which conditions capacity mechanisms risk distorting competition between capacity providers<sup>7</sup> and cross-border trade;
- how capacity mechanisms can complement the internal energy market rather than undermine its functioning; and
- how compliance with State aid rules can be ensured when Member States design and implement capacity mechanisms.

To that end, the Commission has, as a first step, examined the reasons behind the introduction of capacity mechanisms and their design features. It has examined a number of existing mechanisms as well as a number of mechanisms that Member States plan to put in place. The Commission has looked at those mechanisms in the wider market context including in particular the growing share of renewable energy.

In this interim report, the Commission presents its preliminary findings and tentative conclusions from the information collected. The Commission invites comments on the findings and conclusions, as a basis for a final report to be published later this year.

This interim report does not provide an assessment of whether the existing or planned capacity mechanisms in the Member States comply with EU State aid rules. The Guidelines on State aid for environmental protection and energy 2014-2020 ('EEAG') include specific rules for assessing capacity mechanisms. The Commission has already applied these rules to capacity mechanisms notified by the United Kingdom and France.<sup>8</sup> As in those cases, the Commission will assess the compatibility of capacity mechanisms with State aid rules in the context of State aid procedures.

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<sup>7</sup> For instance between power generators and demand response operators

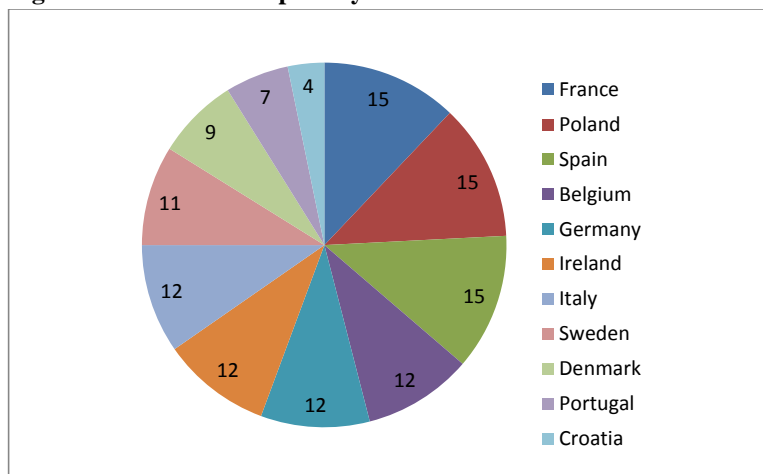
<sup>8</sup> For the British capacity market decision see Commission decision C (2014) 5083 final of 23.7.2014 in Case SA.35980 (2014/N-2) – United Kingdom - Electricity market reform – Capacity market. The public version of the decision is available at: [http://ec.europa.eu/competition/state\\_aid/cases/253240/253240\\_1579271\\_165\\_2.pdf](http://ec.europa.eu/competition/state_aid/cases/253240/253240_1579271_165_2.pdf). The Commission opened formal investigations into the French country-wide capacity mechanism (SA.39621) and the tender for a gas-fired power plant in Brittany (SA.40454) on 13 November 2015. See: [http://europa.eu/rapid/press-release\\_IP-15-6077\\_en.htm](http://europa.eu/rapid/press-release_IP-15-6077_en.htm). The public versions of these decisions (in French) are available for the country-wide capacity mechanism at: [http://ec.europa.eu/competition/state\\_aid/cases/261326/261326\\_1711140\\_20\\_2.pdf](http://ec.europa.eu/competition/state_aid/cases/261326/261326_1711140_20_2.pdf) and for the tender for a gas-fired power plant in Brittany at: [http://ec.europa.eu/competition/state\\_aid/cases/261325/261325\\_1711139\\_35\\_3.pdf](http://ec.europa.eu/competition/state_aid/cases/261325/261325_1711139_35_3.pdf).

#### 4. Process

The inquiry covers eleven Member States: Belgium, Croatia, Denmark, France, Germany, Ireland, Italy, Poland, Portugal, Spain and Sweden. The Commission selected those Member States on the basis of three considerations: (i) the existence of a capacity mechanism or plans to introduce a mechanism, (ii) the need to cover different models of capacity mechanisms existing or planned in the EU; and (iii) the likely impact of the existing or planned capacity mechanism on competition and cross-border trade.

To prepare this interim report the Commission sent detailed questionnaires to over 200 public bodies, energy regulators, network operators and market participants commercially active in the eleven Member States covered in the inquiry. The Commission received 124 replies in relation to the Member States covered by the inquiry.

**Figure 1: overview of replies by Member State**



Source: European Commission

The Commission also organised three workshops with Member States on questions related to capacity mechanisms, for instance on adequacy assessments, design features and cross-border participation in capacity mechanisms.<sup>9</sup> Bilateral meetings were held with European bodies and associations, including the Agency for the Cooperation of Energy Regulators (ACER), the European Network of Transmission System Operators for Electricity (ENTSO-E), the International Energy Agency (IEA) and associations of electricity producers, consumers, storage operators and demand-response providers. The Commission has also made use of public sources of information as well as specialist literature and publications on the topic.

<sup>9</sup> [http://ec.europa.eu/competition/sectors/energy/state\\_aid\\_to\\_secure\\_electricity\\_supply\\_en.html](http://ec.europa.eu/competition/sectors/energy/state_aid_to_secure_electricity_supply_en.html)

## **5. Structure of the annexed Staff Working Document**

The attached Staff Working Document presents in more detail the inquiry's findings on the current practice of Member States when contemplating, adopting and operating a capacity mechanism. On this basis, a number of tentative conclusions are drawn.

The first two chapters of the Staff Working Document define the scope of the work and describe the context in which the issue of capacity mechanisms has arisen. Chapter 2 presents an overview of the state of the European electricity market, with an emphasis on the eleven Member States covered by the inquiry. It explains why many Member States are concerned about the continued capability of their electricity system to meet demand at all times and are therefore using or considering to introduce capacity mechanisms. It then assesses what drives investments in generation capacity and describes the market and regulatory failures that impact investment decisions in the electricity market. The Chapter also identifies a number of market and regulatory reforms that can help improve the functioning of the internal electricity market and therewith reduce the need for capacity mechanisms. Finally, it recognises that there are residual market and regulatory failures which may persist well into future.

Subsequent chapters examine the ability of capacity mechanisms to address these residual market and regulatory failures. Chapter 3 divides capacity mechanisms into different types and, based on that taxonomy, categorises the capacity mechanisms covered by the sector inquiry. Chapter 4 explains how Member States assess their generation adequacy<sup>10</sup> and the role of reliability standards<sup>11</sup> in that assessment. Chapter 5 presents the design features of the capacity mechanisms covered by the inquiry, looking into questions such as: who can participate in the scheme, how does the selection take place and what are the rights and obligations of participants in the scheme. On the basis of those findings, Chapter 6 draws tentative conclusions regarding the suitability of each type of capacity mechanism to ensure security of electricity supply as well as their impacts on the market.

## **6. Preliminary findings and tentative conclusions**

### ***6.1. The context in which generation adequacy concerns arise***

Capacity mechanisms are not a recent invention. Between 1990 and 2001 the electricity market in England and Wales included a capacity payment as a separate element to the electricity price. Ireland, Italy and Spain have made capacity payments to electricity generators for many years and in Sweden strategic reserves have existed since 2003.

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<sup>10</sup> 'Generation adequacy' means a level of generated capacity which is deemed to be adequate to meet demand levels in the Member State in any given period (based on the use of a conventional statistical indicator).

<sup>11</sup> The term 'reliability standard' in the context of the sector inquiry refers to a level of generation adequacy that is deemed acceptable and which may form the basis for interventions.

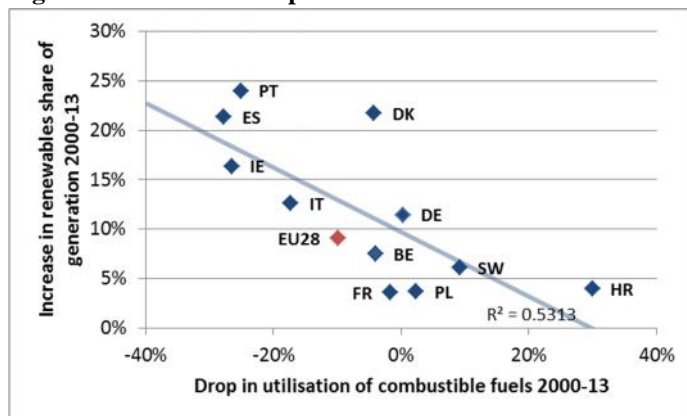
Nevertheless, in recent years an increased interest in capacity mechanisms has led to the planning and introduction of a large number of new schemes.

The reasons for Member States' renewed interest in capacity mechanisms can be found in the development of the electricity sector. As demonstrated in Chapter 2 of the Staff Working Document, generation capacity in the EU has increased over the past years. This increase is mainly due to the growth of electricity generation from renewable energy sources ('RES'). At the same time, electricity demand has decreased. The decrease is partly due to the economic crisis in the EU since 2008, partly due to energy savings resulting from energy efficiency measures.

Increasing generation capacity and decreasing demand have led to increasing gaps between peak demand and generation capacity, which points to overcapacity. This has in turn led to decreasing electricity wholesale prices since 2011. In Germany for instance year-ahead wholesale prices are currently at a 14-year low.

The new renewable energy generation capacity usually has lower running costs than conventional coal- and gas-fired power plants. As a result the conventional power plants do not produce as often as they did in the past, especially in markets with a high renewable energy share. Figure 2 shows a clear correlation between the renewable energy share in the market and the extent to which fossil fuel generation is used: the more renewable energy, the lower the running hours of conventional power plants.

**Figure 2: Renewables impact utilisation rates of conventional power plants**



Source: European Commission based on Eurostat data

Whilst the current situation in EU electricity markets is characterised by a high level of security of supply, also compared to other parts of the world, many Member States are concerned that these developments will impact the adequacy of their electricity mix in the future. Many unprofitable power plants plan to mothball or to close. In recent years this has

become an issue especially for gas-fired power plants that have generally become more expensive to run compared to lignite or coal. Moreover, some Member States such as the UK, Poland and Croatia have an ageing fleet of coal-fired power plants, many of which they expect will close in the coming years. These developments risk undermining security of supply because conventional power plants are needed, to a certain extent, as back-up for intermittent renewables generation from wind and solar.

There is also a mismatch between the location of new renewable energy installations and consumption centres. An example is Germany where most renewable energy is generated in the North, while many of the conventional and nuclear power plants that may close in the short or medium term are in the South where important demand centres are located. The development of the grid does not keep pace with these changing supply/demand patterns. Even more important, electricity prices do not send the right signals for matching local supply and demand, because Germany is a single bidding zone with means that the price of electricity on the wholesale market is the same across its territory.

In principle, wholesale electricity markets (the 'energy-only' market) should be able to provide the price signals necessary to trigger the necessary investments. Today's electricity markets are however characterised by a number of market and regulatory failures which affect wholesale market price signals, such as low price caps, which means that prices cannot rise to reflect scarcity and thus the true value of electricity, the lack of short term markets that allow for broad participation, or the lack of active participation of demand response operators.

In this context, there is a risk that Member States implement capacity mechanisms instead of tackling such market design failures directly. It is fundamental that Member States improve the functioning of their markets and address the underlying causes that created their adequacy concerns in the first place. This is likely to require Member States to ensure appropriate price signals – particularly at times of scarcity – since these prices provide the incentives for demand response, flexible generation capacity, and for imports and exports within the internal electricity market.

There are however some residual market and regulatory failures which are difficult to remedy or take a long time to address properly. It is for example difficult to develop liquid and competitive short term markets that can work to the benefit of security of supply. Demand participation requires that consumers have the equipment (e.g. smart meters), the real-time information and the contracts that allow them to react to price increases and to adapt their electricity consumption accordingly. Finally, it takes years to build the transmission lines necessary to remove network constraints.

For these reasons, many Member States have introduced or are planning to introduce capacity mechanisms. These mechanisms fundamentally change electricity markets because generators and other capacity providers are no longer paid only for the electricity they generated but also for their availability.

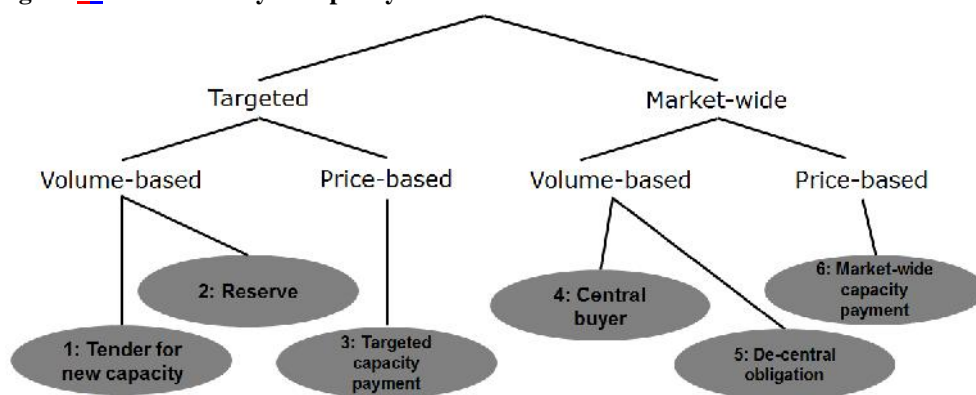


Capacity mechanisms may cause a number of competition concerns. A patchwork of mechanisms across the EU risks affecting cross border trade and distorting investment signals in favour of countries with more 'generous' capacity mechanisms. Nationally determined generation adequacy targets risk resulting in the over-procurement of capacities unless full account is taken of imports. Capacity mechanisms may strengthen market power if they, for instance, do not enable new or alternative providers to enter the market. Capacity mechanisms are also likely to lead to over-compensation of the capacity providers – often to the benefit of incumbents – if they are badly designed and non-competitive. All of these issues can undermine the functioning of the internal energy market and increase energy costs for consumers.

### 6.2. Capacity mechanisms encountered in the eleven Member States

The Member States covered by the inquiry apply a wide array of capacity mechanisms. The Staff Working Document in the annex to this interim report categorises them into six types: (i) tenders for new capacity; (ii) strategic reserves; (iii) targeted capacity payments; (iv) central buyer models; (v) decentralised obligations; and (vi) market-wide capacity payments.<sup>12</sup> These types of capacity mechanisms can be grouped into two broad categories: targeted mechanisms and market-wide mechanisms. Within these two categories, it is possible to distinguish volume-based mechanisms and price-based mechanisms.

Figure 223: A taxonomy of capacity mechanisms



Source: European Commission

<sup>12</sup> See the Staff Working Document, Chapter 3.1 for a more detailed explanation of the taxonomy.

In total, the inquiry identified 28 existing or planned capacity mechanisms in the 11 Member States (see [Table 1](#)). The most common form of capacity mechanism is a strategic reserve. Strategic reserves include power plants or other capacity that are not participating on the wholesale market, but that are kept apart only to be called upon by the network operator in emergency situations.

So-called 'interruptibility schemes' in which industrial customers can be asked by the network operator to reduce their demand in scarcity situations are included in this definition as they also provide capacity that is only activated at the network operator's request. Strategic reserves exist in eight Member States, with Germany and Poland operating both an interruptibility scheme and another form of strategic reserve. Spain currently has the highest number of capacity mechanisms (four).

**Table 1: Capacity mechanisms in the sector inquiry**

Tender for new capacity	Strategic reserve	Targeted capacity payment
Belgium **	Belgium	Italy
France	Denmark **	Poland
Ireland **	Germany ***	Portugal ***
	Poland	Spain ***
	Sweden	
	Germany (Interruptibility Scheme)	
	Ireland (Interruptibility Scheme)	
	Italy (Interruptibility Scheme) ***	
	Poland (Interruptibility Scheme)	
	Portugal (Interruptibility Scheme)	
	Spain (Interruptibility Scheme)	
Central buyer	De-central obligation	Market-wide cap. payment
Ireland *	France *	Ireland
Italy *		

\* Planned Mechanism (or being implemented)  
 \*\* Past Mechanism (or never implemented)  
 \*\*\* Multiple capacity mechanisms of the same type

Source: European Commission based on replies to sector inquiry

### 6.3. Adequacy assessments and reliability standards

The sector inquiry has shown that public authorities generally expect reliability problems in the future even though today such problems occur only very rarely.

To determine whether these concerns require the introduction of a capacity mechanism, Member States first need to carry out an assessment of the adequacy situation. The inquiry demonstrates that Member States carry out such an assessment with an increasing degree of sophistication. The methodologies are however rarely comparable across Member States. This reinforces the national focus of most mechanisms and prevents a common view on the

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adequacy situation and thus points to the possible need for (common) action at EU or regional level.

To determine the desired level of security of supply, Member States can define 'reliability standards' which enable them to make a trade-off between the benefits of reliability and the cost of providing it. However, it is another finding of the inquiry that not all Member States define reliability standards. In the absence of any reliability standard there is no benchmark against which to measure whether a capacity mechanism is required. The interim findings moreover suggest that even where reliability standard exists, it is often not based on the actual willingness of consumers to tolerate power cuts ('value of lost load' or 'VOLL'). There is also little evidence to suggest that Member States that have a capacity mechanism in place properly link the amount of capacity they need (and grant State aid to procure) to the desired level of reliability as determined in their reliability standard.

The absence of common methods to define generation adequacy and reliability standards makes it difficult to assess the necessity of the existing and planned capacity mechanisms and makes cross-border coordination difficult as Member States have a different perception of the actual problem. This in turn makes it difficult to assess the potential contribution of interconnectors to fill in the identified capacity need.

There therefore appears to be a strong case for more alignment of the methods used to define generation adequacy and reliability standards. This is likely to be an essential element in the Commission's forthcoming market design initiative. As regional and European-wide methodologies mature and become more reliable, they should also increasingly be used as a basis for assessing the necessity of introducing capacity mechanisms, notably under EU State aid rules.

#### ***6.4. Design features of capacity mechanisms***

Once Member States have assessed their generation adequacy situation and concluded that there is a need to support generation capacity, they face a range of choices to design a suitable capacity mechanism to address the problem identified. The Staff Working Document presents the most important of those design choices in three categories:

- a) *Eligibility*: who can participate in the capacity mechanism? Is the mechanism open to different types of capacity providers, new capacities, demand response, electricity storage and/or capacity providers located in other Member States?
- b) *Allocation*: how does the process to select the supported capacity providers work, and how is the level of capacity remuneration determined?
- c) *Product design*: what is required from capacity providers supported by the mechanism, and what happens if they do not meet their obligations?

#### 6.4.1. Eligibility

Well-designed eligibility criteria are important to ensure an optimal selection of capacity providers to address the identified security of supply problem. The preliminary findings however indicate that most existing capacity mechanisms are open only to a limited number of capacity providers. In some cases certain capacity providers are explicitly excluded from participating or the group of potential participants explicitly limiting to certain providers. In other cases, Member States set requirements that have the same effect, implicitly reducing the type or number of eligible capacity providers. Examples are size requirements, environmental standards, technical performance requirements, availability requirements (de-rating), the lead time of the mechanism, i.e. the time between the award of the capacity contract and the start of the availability obligation, and the contract length offered to capacity providers. In a substantial number of capacity mechanisms the lead time is less than one year, which makes it difficult for capacity providers to develop capacity offers requiring a longer planning and implementation time, in particular to build new power plants. Short lead times therefore tend to exclude, implicitly, new generation capacity and, to a lesser extent, new demand response providers.

The sector inquiry specifically looked at the eligibility conditions of different types of generation technologies, demand response operators, storage providers and new and existing capacities. Locational eligibility requirements have also been investigated. A clear majority of the existing and planned capacity mechanisms exclude certain generation technologies. While almost all Member States support demand response by means of some form of capacity remuneration, it does not always compete on equal footing with other capacity providers.

With respect to the inclusion of new and existing capacities, the sector inquiry has shown that the focus of Member States is often either entirely on attracting new capacity or on avoiding the closure of existing capacity, rather than both. The capacity mechanisms covered by the inquiry are in general open to capacity irrespective of its location within the Member State although separate rules often apply to islands.

The sector inquiry also revealed that selective mechanisms risk leading to the development of additional mechanisms so as to compensate capacity sources that were initially left out. A good example of this 'snowball effect' is the fragmented landscape of capacity payment mechanisms in Spain. In 1997 Spanish power plants started receiving targeted capacity remuneration. This however did not appear sufficient to address the generation adequacy problems, since in 2007 the scheme was complemented by an interruptibility scheme and later still, in 2010, by a preferential dispatch scheme for indigenous sources (coal).

The inquiry furthermore shows that overly selective capacity mechanisms risk over-compensating their participants because the competitive pressure in the allocation process with only a limited participation is weaker. The capacity providers therefore have an incentive

to bid at a higher level than the funding they actually require to provide the availability service. This is illustrated by the results of the British capacity auction, which show that the exclusion of any of the eligible types of capacity providers from the auction would have resulted in a higher capacity price.

At the same time, the sector inquiry shows a growing tendency towards mechanisms that are open to a wider group of potential capacity providers. In 2014, the United Kingdom for example introduced Great Britain's market-wide central buyer mechanism and in 2015 France proposed a market-wide de-central capacity mechanism. The participation of various capacity providers is more likely to avoid over-compensation and to prevent distortions between different capacity providers within a Member State and in cross-border trade.

#### 6.4.2. Cross-border participation in capacity mechanisms

The inquiry revealed that whilst some countries do take into account the contribution that imports from other Member States and third countries make to their security in stress situations, very few of the eleven Member States in the inquiry allow capacity providers in other Member States (foreign capacity) to participate in their capacity mechanisms. This situation may however be changing since an increasing number of Member States are working to allow such participation. For example, the UK included interconnectors (cross-border transmission lines) in the 2015 capacity auction, and France and Ireland are developing plans to enable cross-border participation in their mechanisms.

Taking imports into account when operating capacity mechanisms is essential to prevent the costly over-procurement of capacities that would arise if each Member State used a capacity mechanism to ensure self-sufficiency. Opening up capacity mechanism across borders is also required to remove the distortions to investment signals in favour of countries with more generous capacity mechanisms that would otherwise arise and benefit incumbents. The participation of foreign capacity in capacity mechanisms would, at the same time, help to ensure appropriate incentives for continued investment in interconnection.

It is technically challenging to include foreign capacity in capacity mechanisms, but the Commission has engaged in a dialogue with Member States and market participants how to do this in practice. On the basis of those discussions, **the Commission has developed a proposal which is attached as a second annex to this interim report.** This proposal is based on a competitive process to allocate capacity payments to the foreign capacity providers and interconnectors that provide imports to the capacity mechanism zone. The Commission welcomes comments on that proposal in the context of the public consultation on this interim report.

### 6.4.3. Allocation process

If well-designed, an allocation process selects the most cost-effective option amongst the eligible capacity providers and establishes a price for capacity that avoids overcompensation. The inquiry has identified a wide variety of approaches to allocation. The most important distinction is between administrative and competitive allocation processes. In an administrative allocation process all eligible capacity providers are selected without competition and the remuneration of capacity is set in advance by the Member State authorities or negotiated bilaterally between the Member State and the capacity provider. Conversely, in a competitive allocation process, eligible capacity providers participate in a bidding process and the capacity remuneration is the result of this process. Administrative and competitive processes are equally common in the 11 Member States covered by the inquiry, but competitive bidding processes feature increasingly in mechanisms introduced in recent years. The UK holds capacity auctions since 2014. France is in the process of creating a market for the trading of capacity certificates. Moreover, Ireland and Italy are moving away from a system where they set administratively capacity payments and are planning to allocate capacity products through auctions.

The sector inquiry demonstrates that administrative allocation processes are unlikely to reveal the true value of capacity and are therefore unlikely to be cost-effective. In Spain, for example, the price for an interruptibility service almost halved after a competitive auction was introduced. In contrast, competitive allocation processes are in principle better at revealing the real value of capacity, but experience shows that this holds true only if the design of the allocation process and the market structure enable effective competition in the process. An allocation process that does not reveal the real value of capacity is also unlikely to send the proper signals for investments. If the capacity remuneration is too high, the capacity mechanism keeps unnecessary capacity in the market or even brings forward new capacity in situations of overcapacity. On the other hand, if the remuneration is too low, existing plants will nonetheless leave the market or investment for new capacity will not come forward.

The design of the allocation process in a capacity mechanism can also affect competition in the electricity market. For instance, the inquiry found that capacity mechanisms which are decentralised (i.e. where the individual suppliers have the responsibility to estimate and procure the required capacity), such as the mechanism being developed in France, may act as a barrier to market entry since new entrants are less able to estimate their future capacity needs than established companies with a large and stable customer base.

### 6.4.4. Capacity product

All capacity mechanisms include certain obligations that capacity providers must fulfil in return for receiving remuneration. These range from a relatively basic obligation to build and operate a power station, through obligations linked to fulfilling instructions from the network

operator (e.g. turn on and generate electricity), to more complex obligations (e.g. reliability options requiring financial paybacks when a strike price is exceeded by a reference price).

There is also a wide range of different answers to the question what happens if capacity providers fail to meet their obligations (penalties). Some mechanisms simply exclude capacity providers from receiving future payments if they fail to meet their obligations, but most require capacity providers to return the payments earned or to pay an additional penalty.

The inquiry found that where obligations are limited, and penalties for non-compliance are low, there is insufficient incentive for plants to be reliable. In Spain for example, the investment incentive scheme introduced in 1997 remunerates electricity power plants regardless of their actual reliability. Due to overcapacity in Spain, the reliability of the participating plants has however not been fully tested in practice.

The inquiry also revealed a tension between an effective penalty regime in a capacity mechanism and undesirable impacts on market functioning. Policy makers might consider capacity mechanism penalties as a replacement for electricity scarcity prices. Both provide signals for generation or demand reduction in scarcity situations. However, only electricity prices – not capacity mechanism penalties – provide a signal for imports within the internal market. Therefore, Member States should take care to ensure that electricity price signals are not replaced by capacity mechanisms.

A further finding is that mechanisms which include demand response usually include different obligations for demand response providers than for generators. Some differentiation in obligations and penalties between generation and demand response may be justifiable, at least in the short term, to enable the development of demand response.

#### ***6.5. Assessment of the various types of capacity mechanisms***

Based on the above findings, the Commission draws the following tentative conclusions regarding the suitability capacity mechanisms to ensure security of electricity supply and their impact on the functioning of the EU internal energy market.

- ) Harmonized methods to determine generation adequacy levels and to set reliability standards would contribute to objectivising the need for and size of interventions as well as ensure better cross-border comparability.
- ) The six different types of capacity mechanisms (see the taxonomy above) are not equally well suited to address capacity problems. The optimal choice of mechanism depends on the nature of the generation adequacy problem it is meant to address (market-wide or local; long-term or transitional) and on the structure (degree of concentration) in electricity market of the Member State.

- ) Of the six different types of capacity mechanisms, two (i.e. price based mechanisms offering market-wide or targeted capacity payments) risk over-compensating capacity providers because they rely on administrative price setting rather than competitive allocation procedures.
- ) The four remaining types of capacity mechanisms are less likely to lead to overcompensation and may address particular generation adequacy concerns. The choice of the most suitable model depends on the precise adequacy problem to be solved in the Member State:
- Tenders for new capacity and strategic reserves may be appropriate to address a transitional capacity problem. A tender allows new investment, while a strategic reserve is typically used to prevent existing plants from closing. None of the two models solve underlying market failures, but they can bridge a capacity gap until market reforms are made to enable the electricity market to provide sufficient investment incentives, or until a more appropriate longer-term capacity mechanism is introduced. Such models should therefore be accompanied by a credible plan for the future.
  - Central buyer mechanisms and de-central obligation mechanisms are potentially appropriate options to address a longer term and more general missing money problem, depending on the level of competition in the underlying market. These two types of capacity mechanisms are, more than other types of capacity mechanisms, able to attract new capacities and allow direct competition between generation and demand response, thus creating stronger competition for the capacity remuneration and revealing the real economic value of capacity.
- ) In all cases, capacity mechanisms must be carefully designed with specific attention to transparent and open rules of participation and a capacity product that do not undermine the functioning of the electricity market. In particular, electricity prices should provide a signal of scarcity so that electricity is imported from other Member States at the right times.

The Commission invites, in the context of the public consultation, comments on these tentative conclusions. The Commission aims to draw firmer conclusions in its final report. That will give Member States and market participants greater clarity on how the Commission will apply EU State aid rules when assessing capacity mechanisms in the future.

## **7. Conclusions**

With this interim report and the annexed Staff Working Document the Commission presents its preliminary findings and tentative conclusions on the sector inquiry into capacity



mechanisms to the sector and to Member States for consultation. The Commission will actively engage with stakeholders in the months to come with a view to presenting a final report later this year. The final report is intended to inform the Commission both in its assessment of capacity mechanisms notified for State aid assessment as well as in developing legislative proposals for a revised electricity market design.