

# *The future of capacity remuneration mechanisms in the EU*

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## **1. Introduction**

The regulatory framework for electricity must be analyzed and designed in light of the principles governing the European Union's energy policy, that is, economic efficiency, security of supply and environmental sustainability (de-carbonization). The subject of this paper is capacity remuneration mechanisms. It touches upon those three pillars of the forthcoming energy system: said mechanisms try to guarantee security, in a system dominated by renewables (which are intermittent and need back-up) and in the most efficient way (not distorting markets).

When the processes of liberalization and privatization of the electricity sector began in the last two decades of the twentieth century, promoters of the new regulatory framework thought that the market would always provide signals about where and when to invest. The main investment decisions in this sector are those related to networks (transport and distribution) and those related to new or expanded production units.

The development of liberalization processes led to the conviction that generation and supply must be free activities, subject to free competition between operators. On the contrary, during this liberalization process, the transportation and distribution of electricity have been considered as natural monopolies and, for that reason, they must be subject to economic regulation. However, in a context of decentralization of generation and closed networks, this characterization of networks as natural monopolies is more doubtful, especially for distribution. In any case, the regulation of the networks implies a more or less intense degree of public planning of the construction of the networks, particularly of the transport networks, in order to provide a satisfactory service.

The case of electric generation is special. There is a concern about the 'missing money' problem and its implications for security of supply. This problem arises when the price of electricity in the energy markets does not provide sufficient remuneration to cover the fixed costs of capacity. In this case, investors lack incentives to build new capacity and may want to close capacity. The existence of maximum prices in the markets, fixed

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by the regulator, was the first justifying argument for the introduction of a regulatory incentive for the construction of new generation capacity, the so called capacity remuneration mechanisms (CRM). If the price is not allowed to reflect scarcity situations, then the incentive to build the necessary plants to avoid supply cuts in such scarcity situations disappears. This is the 'missing money' problem: the remuneration from the market price in the short term is insufficient to recover the investment in all the plants needed to satisfy the demand efficiently. The 'missing money' is due to the artificial limitation of the price in situations of shortage (which should be equal to the price that is willing to pay the demand for not being interrupted). This is the debate that has been going on for 30 years: do we need additional remuneration for conventional power plants, in addition to income from the energy market? The debate is whether there is a need to give the generator of electricity additional compensation. There are arguments in favour of the regulatory forecast of an additional payment (e.g. problems of the design of energy markets, such as price caps, which discourage investment) and others against (e.g., additional costs for related consumers, with planning, intervention and excess capacity)<sup>3</sup>.

In purity, the price of the wholesale electricity market, known as the "only energy" market, should be sufficient to provide all the investment signals that the generating company needs. However, for very different circumstances (among which the problem of 'missing money' stands out), sometimes that wholesale price is unable to provide the necessary signal. This means that it may become necessary, in some circumstances, for a regulatory mechanism that either helps to invest in new generation capacity or rewards those other resources (eg storage, demand management) that provide security (reliability) when some other intermittent technologies (such as renewables) fail.

In light of the above, capacity-building mechanisms have been established in some States. The European Union views these mechanisms with suspicion, insofar as it sees them as a real threat to free competition in the market. However, under certain exceptional conditions, provided that the rules on State aid are not violated, the European Commission is prepared to approve some aid schemes in some Member States. The criteria to be used by the Commission are the Guidelines on State aid for environmental protection and energy 2014-2020 (EEAG)<sup>4</sup>. The reform that is being carried out of Regulation 714/2009

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<sup>3</sup> Hancher, L., De Houteclocque, A. y Sadowska, M. (editores), *Capacity Mechanisms in the EU Energy Market. Law, Policy, and Economics*, Oxford University Press, Oxford 2015.

<sup>4</sup> Communication from the Commission, Guidelines on State aid for environmental protection and energy 2014-2020 (2014/C 200/01), OJ C, 28<sup>th</sup> June, 2014.

of the European Parliament and of the Council of 13 July 2009 on conditions for access to the network for cross-border exchanges in electricity, incorporates provisions that will affect what is intended to be done in the Member States<sup>5</sup>.

This paper tries to present briefly which role are playing and will pay capacity remuneration mechanisms in the EU. Capacity mechanisms are measures taken by Member States to ensure that electricity supply can match demand in the medium and long term. Capacity mechanisms are designed to support investment to fill the expected capacity gap and ensure security of supply. Typically, capacity mechanisms offer additional rewards to capacity providers, on top of income obtained by selling electricity on the market, in return for maintaining existing capacity or investing in new capacity needed to guarantee security of electricity supplies. Capacity mechanisms have an impact on competition in the internal electricity market. Many of these mechanisms involve State aid, so they are subject to EU State aid rules. The European Commission has launched a sector inquiry. This will examine the forthcoming provisions of the revised Regulation 714/2009 and will compare the situation in Italy and Spain. The Guidelines on State aid for environmental protection and energy 2014-2020 (EEAG) contain rules to assess capacity mechanisms (Section 3.9 of the EEAG). This is a relatively new field in State aid policy<sup>6</sup>.

## **2. Capacity mechanisms in Italy**

In accordance with Article 108 of the Treaty on the Functioning of the European Union (TFEU), on August 24, 2017 the Italian Authorities notified to the European Commission as a State aid the measure adopted in order to support capacity providers in the electricity market.

After examining the Italian measures in detail, with Decision C (2018) 617 adopted on February 7, 2018, the Commission has defined the “*State Aid Case SA.42011 (2017/N)*” and has approved the Italian capacity mechanisms, declaring the compatibility under the EU State aid Rules of the benefits provided by the Italian government.

During the approval process, there has been a close cooperation between the national authorities and the European Commission. The plan has been reviewed and integrated several times in order to ensure its compatibility with EU State aid Rules and

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<sup>5</sup> Proposal for a Regulation of the European Parliament and of the Council, on the internal market for electricity, COM(2016) 861 final/2 2016/0379 (COD) Brussels, 23.2.2017

<sup>6</sup> Some of the ideas of these introduction are inspired by the work of S. Hesmondalgh, J. Pfeifenberger and D. Robinson, “Resource Adequacy and Renewable Energy in Competitive Wholesale Markets”, The Brattle Group, September 2010.

in particular with article 107 of The TFEU and with the 2014 Guidelines on State Aid for Environmental Protection and Energy<sup>7</sup>.

In the European Commission press release of February 7, 2018, Commissioner Margrethe Vestager, in charge of competition policies, referred that *“capacity mechanisms can help to safeguard security of electricity supply, but they must be designed so as to avoid distortions of competition in energy markets. I am glad that our close cooperation with national authorities has enabled us today to approve well-designed capacity mechanisms in six EU countries. They will foster competition among all potential capacity providers to the benefit of consumers and our European energy market”*.

The Italian mechanisms were approved seven years after the Decision of 2011 of the AEEGSI<sup>8</sup>, the Italian Regulatory Authority for Electricity Gas and Water (as of January 1st, 2018, it became ARERA Regulatory Authority for Energy, Networks and Environment). That Decision defined the criteria and conditions in order to develop a remuneration mechanism for the electricity market, ensuring security of supply.

The focus on electricity supply security was in part determined by the severe blackout that struck the entire system in September 2003. After this unexpected event, and in order to minimize the risk of interruption to electricity, Statute No 290/2003 delegated the Ministry of the Environment to adopt specific decrees. They should be aim to speed up the reprogramming of the use of hydroelectric plants, to streamline the timetable of maintenance activities of production installations and the possible reuse of inactive power plants, and to increase uninterruptible electricity capacity in the country. Following the blackout, the legislature decided to reunify the property of network infrastructure with the management of the grid. A Decree (DPCM) of May 11, 2004 later set the guidelines for the aforementioned process of reunification and imposed the adoption of the Grid Code on the manager of the grid. They provide objective and non-discriminatory technical rules for the access and use of the national transmission grid and related infrastructures, for the interoperability of networks, along with the provision of dispatching services, together with general criteria for the development of the security of the grid and for its maintenance.

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<sup>7</sup> Together with the Italian mechanisms, the Commission has also approved the electricity capacity system of other five important European States: the Market-wide capacity mechanism of Poland, the Strategic Reserve of Belgium, the Capacity Reserve of Germany, the Demand Response Scheme of France and the Interruptibility Scheme of Greece.

<sup>8</sup> Decision ARG/elt/98/11 of July 21, 2011.

In particular, Statute No 379/2003 established the main criteria for a capacity payment system, delegating the adoption of the mechanism to the Italian Energy and Gas Regulatory Authority (AEEGSI).

Article 1, paragraph 2, provides that the system: i) is based on competitive, transparent, non-discriminatory and non-distortive mechanisms, aimed at minimizing the economic impact on consumers; ii) is aimed both at remunerating new plants and infrastructures and at maintaining the efficiency of the existing ones; iii) is based on capacity targets defined by the Transmission System Operator (TSO); and iv) can remunerate consumers that can provide the reserve service.

Moreover, Article 1, paragraph 153 of Statute No 147/2013 provides that the Ministry of Economic Development shall provide the criteria for the definition of a capacity remuneration system. An important role in this process was played by Terna, which is the Italian transmission system operator (TSO) based in Rome.

Following the AEEGSI Decision of 2011<sup>9</sup>, the TSO's proposal of September 20, 2013 /TE/P20130004704 was approved by a ministerial decree of June 30, 2014.

The approval by the European Commission ended a ten-year long regulation process during which the Italian electric System has undergone significant changes, including the revolutionary development of renewable energy.

These changes required the market to fit the objective set by the 2017 National Energy Strategy (SEN), including the full decarbonisation (phase out coal-fire power plants) by the year 2025, and in order to ensure that electricity supply can match demand in the medium and long term with reserve systems for security supply.

With the Final Report of the Sector Inquiry on Capacity Mechanisms<sup>10</sup>, the European Commission has assessed the compatibility under the EU State aid Rules of the capacity mechanisms of eleven European States in a comparative way and has considered the Italian proposal the most appropriate to market needs.

The Italian mechanism is therefore one of the best international practices and is intended to inspire the model of other countries.

The mechanism concerns the entire national market and has been approved for a period of ten years until December 31, 2018, during which Italy will also implement market reforms to address the structural supply risks in the electricity market.

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<sup>9</sup> Decision ARG/elt/98/11 of July 21, 2011.

<sup>10</sup> Commission's report. Final report on the sectoral inquiry on capacity mechanisms, C (2016) 752 final, Brussels, 30.11.2016, SWD (2016) 385 final.

The measure provides that capacity providers can obtain a financial compensation for being available to generate electricity or, in case of demand response operators, to reduce their electricity consumption.

The European Commission has authorized market-wide capacity mechanisms and stated that: *Italy has clearly identified and quantified the security of supply risks, also taking into account possible imports from neighboring countries*".

The Commission has also remarked that "*Italy has demonstrated that a significant amount of capacity risks exiting the market and new investments are unlikely to take place because investors cannot earn a sufficient return from their electricity sales*".

Brussels has recognized that the Italian mechanism is opened to all types of capacity providers, "*including demand response, existing and new capacities, domestic and foreign and the measures will keep costs for consumers in check thanks to the regular, competitive auctions to allocate capacity contracts*".

Under the measure approved by the Commission, Terna is the central buyer of capacity that ensures transparency and provides medium and long term directives in order to lead investment and disinvestment decisions in an efficient way. It also guarantees the maintenance or the construction of new production plants, aiming at the achievement of the established security level. From the viewpoint of the appropriateness of the aid, the Commission concluded that a central-buyer mechanism has the potential to solve a general shortage of capacity, if properly designed.

The security level is identified through a target value of Loss of Load Expectation (LOLE). The LOLE represents the number of hours per year in which, over the long-term, it is statistically expected that supply will not meet demand. Contracts of one year duration can be awarded for existing capacity and fifteen years contracts can be awarded for new capacity. The Italian model provides that the TSO sets the objective of the so-called LOLE. On the basis of LOLE, it is possible to determine generating capacity demand curves for each market area and for each year of the capacity delivery period.

Another key element of the Italian mechanisms approved by the Commission are the auctions in the electricity market. As far as the single buyer of capacity is concerned, the TSO-Terna organizes the auctions and sets the amount of capacity to be auditioned. The Italian capacity mechanism is a volume-based and market-wide mechanism that allows the participation, on a voluntary basis, of all the operators with the necessary requirements.

Existing and new capacity providers, including storage assets and demand response operators, who can provide evidence of existing or new capacity located on the national territory are admitted to the capacity market, as long as: i) they are not subject to dismantling the measures approved by the competent authorities; ii) they have the necessary building permits and have provided a detailed timetable indicating the main milestones of the plant construction and the expected date in which the new plants will be in operation (if new generators); iii) they have provided specific guarantees; iv) they meet specific minimum asset requirements; v) they pledge to give up any other State aid for the amount of capacity that will be contracted in the mechanism during the delivery period; and vi) demand response must meet the qualification requirements for the so-called *Mercato per il servizio di dispacciamento* (MSD)<sup>11</sup>.

The definition of new capacity includes not only capacity that has never participated to the so-called *Mercato del giorno prima* (MGP – day before market) but also installation under renovation of existing plants.

Foreign capacity may participate to the internal market. Italy has submitted that the participation of foreign resources in the mechanism at the same conditions as the Italian ones would require cross-border balancing markets. Only in that case, foreign capacity could react to real-time cross-border price signals. For this reason, Italy commits to negotiate agreements with other relevant TSOs to enable the participation of foreign capacity at the same conditions applied to domestic capacity.

The openness of the mechanism ensures competition between different technologies. This method guarantees that capacity is provided at the lowest cost for consumers and, at the same time, it avoids distortions in the electricity market.

The Italian mechanism also has a special feature to ensure its effectiveness: the so-called “strike price”. As stated by the European Commission, when electricity prices reach a certain level, they trigger an obligation for power plants selected in the auctions to pay back some of the State aid. The power plants can finance this payback obligation from revenues they generate from the sale of electricity. The Italian capacity mechanism therefore not only ensures availability of capacity, but also gives power plants an incentive to use the capacity to offer their electricity on the market when it is needed. The strike price is one of the most important parameters in order to ensure that the

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<sup>11</sup> European Commission Decision SA.42011 Italian capacity mechanism C(2018) 617 final, 57.

participation to the market takes place under sustainable economic conditions, although the operators think that it may limit their profits, discouraging investments.

The Italian capacity mechanism provides that if the production plant is not able to offer energy on the market when needed, it may incur into the payment of penalties. The TSO will take different measures against the capacity provider in case of temporary or permanent breach of the obligations.

Temporary non-fulfilment occurs when the capacity provider is not able to reach 80% of the contracted capacity in a given month over a number of hours at least equal to 25% of the total number of hours in that month. In such a case, TERNA shall suspend the payment of the capacity incentives for the months in which non-fulfilment takes place.

Definitive non-fulfilment occurs when the temporary one lasts for three months. In this case, the capacity provider must reimburse the capacity premiums already received for each month included between the first and the third month of non-fulfilment. TERNA will also reallocate the correspondent contracted capacity in the adjustment auctions or in the secondary market.

The Italian authorities confirmed that the capacity incentives may not be cumulated with other aid measures. In particular, if the generators are subject to any type of investment incentive scheme for the produced energy, they must give up the incentive in order to take part in the capacity market, otherwise they will not be admitted to the auction.

Italy is in a stand-by attitude, waiting for the approval from the Ministry of Economic Development and several market reforms.

Italy is planning to upgrade the domestic transmission network, invest in cross-border transmission capacity, and carry out a number of market reforms that will enable electricity markets to send clearer investment signals. However the European Commission declared that these reforms do not ensure the desired level of supply security in the short term, the capacity mechanism is therefore necessary for the time being.

### **3. Capacity mechanisms in Spain**

Spain introduced capacity payments in 1997, at the same time the electricity sector was liberalised. The system was replaced by a new one in 2007, which was reduced or abolished by Royal Decree-Law no. 9/2013 and by the 2013 Electricity Sector Act. Finally, at the end of 2018 (to enter into force on January 1, 2019) the payments for capacity were extinguished, by decision of the Spanish Government.



Capacity payments included two types of services: the incentive to invest in long-term capacity and the medium-term availability service. The incentive to invest in long-term capacity was aimed at compensating the investment in new capacity, necessary to ensure the coverage of demand in the long term. This mechanism encouraged the availability in favour of the System Operator of certain installed power, accredited through the start-up certificate of the generation facility. As of 2012, this mechanism was revised, until its deletion in 2013. Art. 13 of the 2013 Electricity Sector Act is entitled "economic and financial sustainability of the electrical system". Regulatory powers on the electricity sector are subject to the principle of economic and financial sustainability of the electrical system. The economic and financial sustainability of the electrical system means the capacity to meet all costs of electricity supply. The costs of the electricity system are determined in accordance with the provisions of the 2013 Electricity Act as follows: (...) «d) Remuneration associated with the application of capacity mechanisms, where applicable». In other words, the 2013 Electricity Sector Act states that capacity remuneration mechanisms may exist, but not necessarily.

Regarding the availability service, Ministerial Order TEC/1366/2018, of 20<sup>th</sup> December 2018, establishing the electricity access tariffs for 2019, suppressed the availability service. The Preamble to the Ministerial Order explains it this way. The availability service is regulated in the 2011 Order. The Ministry for Ecological Transition recalled that the legislative package presented by the European Commission on November 30, 2016, entitled "Clean Energy for All Europeans" (including in relation to the electricity sector a complete modification of the law), was pending approval. The new laws will lay down the regulatory framework to advance the achievement of the internal electricity market and to comply with the climate commitments of the Paris Agreement within the framework of the XXI United Nations Conference on Climate Change 2015. This legislative package contemplates a reform of the current capacity mechanisms, to adapt them to EU regulations, whose allocation should be produced through competitive mechanisms, as indicated in the report on the sectoral research on capacity mechanisms, published by the European Commission in November 2016<sup>12</sup>. The Ministry also recalls that the energy system has initiated a process of transition to a new scenario characterized by de-carbonization, the decentralization of generation, the electrification of the economy, the more active participation of consumers and a more sustainable use of

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<sup>12</sup> Commission's report. Final report on the sectoral inquiry on capacity mechanisms, C (2016) 752 final, Brussels, 30.11.2016, SWD (2016) 385 final.

resources. In this scenario, with increasing renewable penetration and the forthcoming approval of the European legislative package, an in-depth analysis of the availability service is prudent, in accordance with the guidelines resulting from the aforementioned European legislative package as well as with the other objectives. These were the reasons given by the Ministry to suppress the availability service.

Electricity generating companies have criticized, logically, the Order of 2018 that suppresses payments for capacity (suppression of the regulation of the power availability service of capacity payments). It is a necessary service, because it is aimed at keeping available the facilities required to ensure the coverage of electricity demand peaks and periods of low renewable production, so that the coverage of the demand is guaranteed at all times. In effect, it is contradictory that the Order appeals to the greater presence of renewables and de-carbonization, since both are circumstances that push to maintain the availability service, rather than to suppress it. It is also contradictory that the Order appeals to the European modifications, since in those modifications a payment system by capacity is allowed, insofar it is compatible with competition. The European Commission recognizes that the price of the energy market, in many cases, is an insufficient signal to guarantee the coverage of the electricity supply.

In the gas sector, it is stressed that, from a competitive point of view, renewables are unbeatable. Sun and wind are the cheapest. However, they do not give security or quality. The only technology that is truly available is the combined cycle (natural gas), which guarantees the regularity and quality of the supply. In a marginalist system of pool price formation, combined cycles do not currently provide any benefit to their owners. On the contrary, they generate large losses (it costs 6 million euros a year to open a combined cycle). They have the obligation to be available all the time and there are many regulated costs. The shareholders are not going to bear that situation. The right to close the plant should be defended, if they are not profitable. If the Government is trying to create new capacity mechanisms, it should have expected to have them ready before abolishing the existing ones. Previously, capacity payments and long-term investment incentives were received. If Spanish society wants security and quality, it must pay for it. In 2010 combined cycles received about 24,000 or 30,000 euros, today they receive nothing. The wholesale market must be reformed. When the coal plants close, the Spanish electricity market will lose a marginal price signal. The Spanish Market walks towards a situation in which the energy will be extra-marginal. The future

park should be similar to the current one. There are 56 combined cycle power plants. According to the gas sector, all are necessary. There are studies that say that 30 more are needed. Whether they are natural gas power stations or other sources of capacity, it seems very likely that additional incomes will be necessary to the energy market, given how this market is organized today<sup>13</sup>.

#### **4. New EU provisions on capacity mechanisms**

There is currently a process to modify Regulation no 714/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the network for cross-border exchanges in electricity<sup>14</sup>. It includes provisions on capacity remuneration mechanisms. The explanatory Memorandum of the reform states that if the coordinated assessment of adequacy reveals that in certain countries or regions capacity mechanisms are required, then it would be necessary to design them in such a way as to cause the least possible disruption in the internal market. Clear and transparent criteria should be determined to minimize the distortion in cross-border trade, promote the use of the demand response and reduce any effects that harm decarbonisation, avoiding isolated national mechanisms in terms of capacity that would create new barriers in the market and undermine competition. The promotor of the reform does not rule out the possibility for Member States to use capacity mechanisms, if they are based on a methodology of evaluation of adequacy through shared resources, prepared by ENTSO-E or ACER with full transparency, and conform to common guidelines for compatibility between national capacity mechanisms and harmonized cross-border cooperation. This option is based on the Commission's Guidelines on state aid for environmental and energy protection 2014-2020, and on sectoral research on capacity mechanisms.

The explanatory Memorandum discards a non-regulatory approach, since the current EU provisions are not sufficiently clear and robust to face the challenges of the European electricity system. For its part, voluntary cooperation cannot achieve sufficient levels of harmonization between Member States or market security. Legislation that addresses issues in a conclusive manner is needed. It is also discarded the option in which, on the basis of an assessments of adequacy of generation at regional or EU level, entire

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<sup>13</sup> A recent issue of *Papeles e Energía*, no 6 (2019) contains several useful discussions about the future of capacity mechanisms in Spain.

<sup>14</sup> Proposal for a Regulation of the European Parliament and of the Council, on the internal market for electricity, COM(2016) 861 final/2 2016/0379 (COD) Brussels, 23.2.2017

regions or even all Member States would be obliged to implement capacity mechanisms. This would be a notorious disproportionate measure.

Chapter IV of the amended regulation establishes new general principles for Member States to deal with the aspect of adequacy of resources in a coordinated manner. It establishes principles and a procedure for the development of a European assessment of the adequacy of resources to better determine the need for capacity mechanisms and, where appropriate, a reliability standard by the Member States. It specifies how and under what conditions capacity mechanisms can be introduced in a manner compatible with the market, including the rules for participation of capacities located in another Member State and for the use of interconnection. It establishes how regional operational centres, national TSOs, ENTSO-E and national regulators through ACER will participate in the development of technical parameters for the participation of capacities located in another Member State, as well as in the operational rules for such participation. ENTSO-E should carry out a robust medium to long-term European resource adequacy assessment to provide an objective basis for the assessment of adequacy concerns. The resource adequacy concern that capacity mechanisms address should be based on the European resource adequacy assessment. That assessment may be complemented by national assessments.

Chapter IV is entitled "Adequacy of resources". In accordance with art. 18, Member States should monitor the adequacy of resources within their territory, based on the European assessment of the adequacy of resources, referred to in art. 19. Art. 20 deals with the reliability standards, art. 21 addresses border participation in capacity mechanisms, art. 22 contains the approval procedure and art. 23 contains the principles for configuring CRMs. To address concerns that persist and cannot be eliminated with the measures provided in art. 18 (elimination of regulatory distortions, pricing in situations of scarcity and development of interconnections, energy storage, demand-side measures and energy efficiency), Member States may introduce capacity mechanisms, provided that they fulfil provisions of the art. 23 and the rules on EU state aid. If a Member State wishes to apply a capacity mechanism, it should consult about the proposed mechanism at least with its neighboring Member States electrically connected. Capacity mechanisms should not create unnecessary market distortions or limit cross-border trade. The amount of capacity committed in the mechanism will not go beyond what is necessary to address the problem. The generation capacity for which a final investment decision has been made after the entry into force of the Regulation can only participate in

a CRM if its emissions are below 550 g CO<sub>2</sub> / kWh. The generation capacity that emits 550 gr of CO<sub>2</sub> / kWh or more cannot be committed in capacity mechanisms five years after the Regulation comes into force. That means that if the coal plant does not meet those standards, it cannot participate in the mechanism. If the European assessment of the adequacy of resources does not detect problems of adequacy of resources, Member States may not apply capacity mechanisms.

## **5. Comparisons and conclusions**

There is an ongoing debate as to whether some kind of capacity remuneration mechanisms must be in place in the electricity market, to avoid the ‘missing money’ problem. Within those ones in favour of having some mechanisms, the debate is about the form, which those mechanisms should adopt.

It is important to stress from the outset in this conclusion, that the European Commission rejects that capacity mechanisms can be a permanent element of the system. The analysis of both the Guidelines on State aid for environmental protection and the content of the 2009 Regulation regarding capacity remuneration can be misleading. To avoid any confusion it is of relevance to underline that CRM are an exception to free market, which should be avoided and only used in extraordinary circumstances and on a temporary basis.

Italy has been negotiating during several years with the European, until a Decision was adopted by the European Commission on the 7<sup>th</sup> February, 2018. Concerns about the security of the system are rooted in the 2003 black-out. On the contrary, Spain has been progressively diminishing the existing capacity payments, until they were abolished at the end of 2018. Energy companies complain about the suppression of the mechanisms, since it leading to an extreme difficult financial situation. The Spanish draft Act on Climate Change and Energy Transition foresees the existence of a capacity remuneration mechanism. When passed, it seems clear that the Spanish Government will be aiming to have a capacity mechanisms, and could inspired by some of the elements of the Italian mechanisms.

The European Commission has authorized for Italy market-wide capacity mechanisms, since it has clearly identified and quantified the security of supply risks, also taking into account possible imports from neighboring countries. A significant amount of capacity risks exiting the market and new investments are unlikely to take place because investors cannot earn a sufficient return from their electricity sales. The Italian mechanism is opened to all types of capacity providers, including demand response,

existing and new capacities, domestic and foreign. Terna is the central buyer of capacity that ensures transparency and provides medium and long term directives in order to lead investment and disinvestment decisions in an efficient way.

In the case of Spain it will be necessary to debate whether they will be mechanisms for all alternatives (new capacity and existing), the duration of capacity payments, the participation of demand and aggregators, and auctions considered (with regard to auctions, capacity mechanisms should not be based only in central auctions, but also in contracts of a bilateral nature). When designing future capacity mechanisms for Spain, both the reform of the 2009 Regulation and the Guidelines must be taken into account, at the light of the experience accumulated by the capacity mechanisms approved by the European Commission. The best alternative for Spain will be the "reliability options", which has been adopted by Italy. This is the best way of not distorting the market but, at the same time, attending security of supply concerns.