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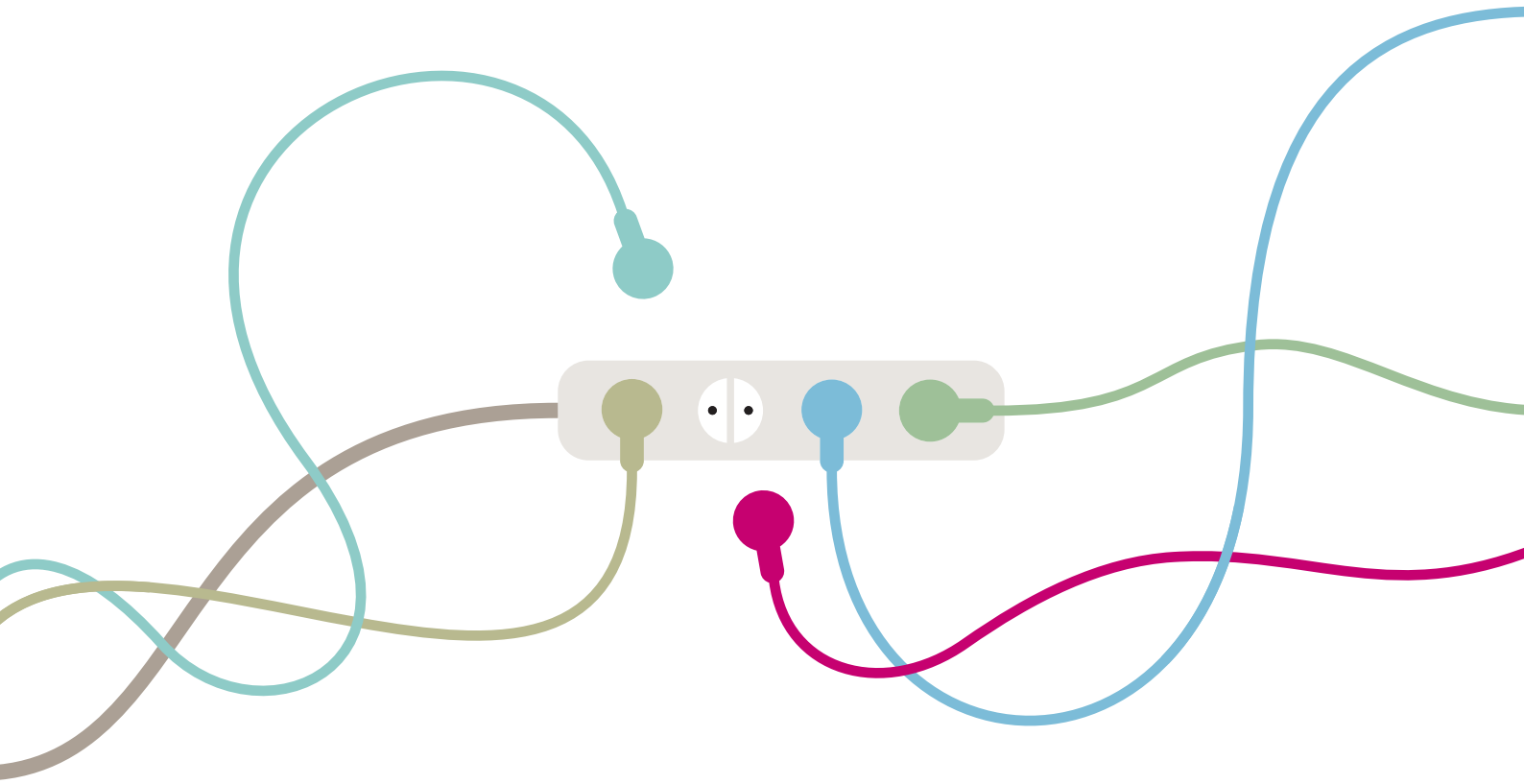

Capacity mechanisms.
Reigniting Europe's energy markets

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Executive summary

The electricity sector in the European Union has been facing a perfect storm.

Factors from within the sector, combined with wider market forces, have created the first real threat to the viability of the conventional generation sector in 30 years, with gas-fired plants particularly badly hit. These power plants are critical to ensuring security of electricity supply, not least to mitigate the intermittent nature of much newer renewable generation. With the capital cost of the renewables revolution to pay for and general economic austerity, there is little political room for retail prices to rise in response.

The result has been to force European generators onto the defensive at the very point at which they are needed to support further investment. At the same time, access to external finance remains constrained for some.

With the market and its prime players under pressure, there has been a sense of mounting concern as the mothballing and decommissioning of existing plant spreads and new investment projects are stalled, while the EU's hard-won climate change gains are eroded by the return of coal.

As a result, countries across the EU are engaging in significant intervention in post-liberalised power markets, fundamentally changing the way generation is rewarded to recognise the value of capacity rather than output.

Many Member States have been working hard to design schemes that will both be effective to ensure generation adequacy and complement (or indeed reinforce) competition in the generation market, with ever greater detail emerging. The European Commission has set out its own thinking in recent Guidelines, and will be showing its hand on schemes this summer.

Implementation is critically sensitive and, in such a complex regulated field, the devil is in the detail. If intervention is not successful, market fragmentation and higher costs may result. The competitiveness of the European energy market could be affected, with significant implications for European economies.

The whole topic matters a great deal to all stakeholders in the EU electricity sector. The debate about the wisdom of paying for capacity and not just energy produced raises wider issues about the structure of the energy market in the EU, the retention of competition and the prospects for further integration in the future.

2014 is the right time to assess progress. No market transformation happens overnight; this one has been building over a few years. But this point in 2014 looks pivotal; it may be possible for the first time to see the light at the end of the tunnel.

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About the report

Combining the regulatory expertise of Linklaters' energy sector and competition specialists with research and analysis by energy market design and competition consultants FTI-CL Energy, "Capacity mechanisms. Reigniting Europe's energy markets" discusses the threats to the viability of the conventional generation sector in Europe, the growing trend towards capacity mechanisms in EU Member States and the response of the European Commission. The report sets the debate in the wider context and highlights why stakeholders should care. This report will be of interest to all those involved in the European energy sector.

For an electronic version of this report, go to:
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What went wrong?

Summary

Many of Europe's conventional generation assets have become uneconomic. How has this happened?

The causes lie in a powerful mix of drivers – leading to a perfect storm. Factors internal to the operation of the power market (the rise of renewables, collapsing carbon prices) have combined with external events (the flood of cheap coal from the US, the global economic downturn).

Leaving aside the potentially wasted investment, the paradox is that these plants are still needed operationally to ensure security of supply and to mitigate intermittency of renewables: the market is not supporting the assets that we need.

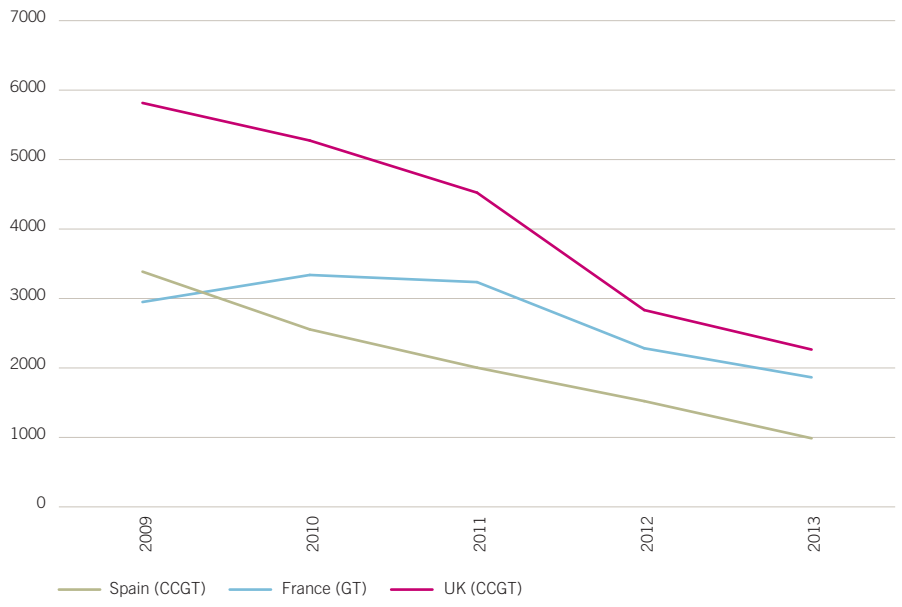
New investment has stalled and the players normally relied on to supply it are carrying the weight of previous unrecovered investments.

The response of many EU Member States has been to consider capacity mechanisms as a solution, but on a country-by-country rather than pan-EU basis.

There has been much debate about whether the lights can stay on in Europe without major reform of the electricity market. Technically excellent plants are being mothballed as uneconomic or sold at a fraction of their built cost, and plans for new plants are being stalled. Meanwhile, capacity margins are shrinking. The reasons are various and complex.

One reason is that policies to support low carbon generation have been an outstanding success[1], displacing generation from thermal sources. As renewables often have no or very low fuel costs, power markets are generally structured so that these must be despatched first and, as such, they push thermal plants further down the despatch queue. These policies, combined with the effect of the economic crisis on power demand[2], have dramatically reduced load levels for thermal plants. Between 2008 and 2013, the average utilisation rate of thermal plants dropped from 50% to 37%.

Figure 1: The fall in utilisation rate for gas-fired power plants in Europe



Analysis: FTI-CL Energy

Sources: RTE, REE, ENTSO-E, DUKES[3]

Over the past year, about 24 GW have been partially or totally mothballed and 7 GW decommissioned altogether.

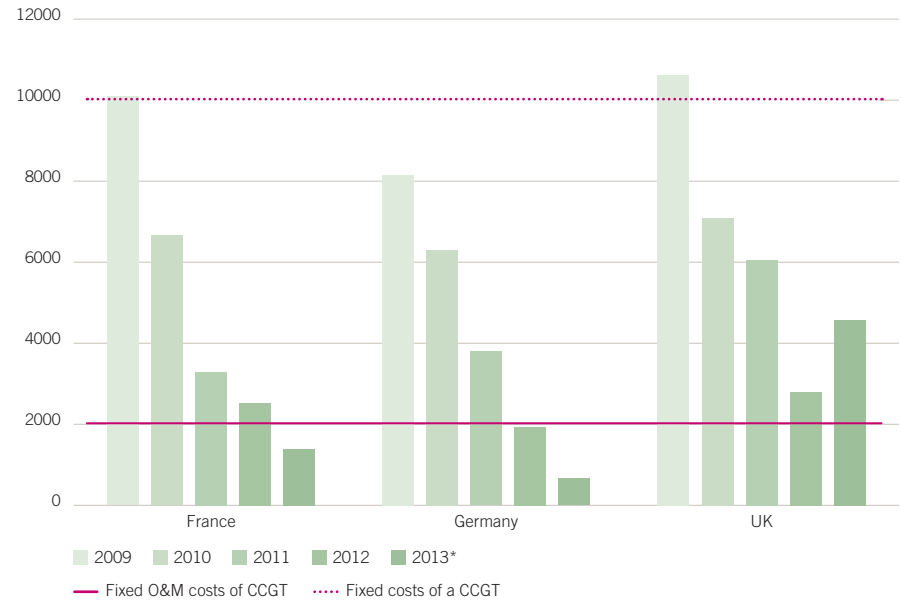
Meanwhile, wholesale power prices in Central-Western Europe[4] sank to about €40/MWh in 2013, far lower than the long run total costs of even the cheaper technologies. Prices reflect the short run marginal cost of production. The fact that they do not allow investment recovery for all power plants is normal in a transitional period of overcapacity, but the worry is that this represents a structural change that will be sustained without some form of market intervention.

The situation is particularly acute for combined cycle gas turbine (CCGT) generation. The shale gas revolution in the United States has led to abundant coal surpluses, which are keeping coal prices low compared to gas. Carbon prices have collapsed to less than €4 per ton: only a few years ago, long run prices of €30 per ton were being forecast. For these reasons, gas-fired generation has become considerably more expensive than coal-fired generation; indeed new coal plants are being built, a retrogressive development for policy-makers concerned about climate change. The effect has been a severe downturn in revenue for CCGTs in the last few years.

As a result, a large part of the thermal fleet in Europe remains under pressure. Generators have been announcing plant retirements in significant numbers. Over the past year, about 24 GW have been partially or totally mothballed and 7 GW decommissioned altogether; the Czech utility, CEZ, has estimated that about 51 GW in total is currently mothballed.[5]

This trend will be amplified by more restrictive emission standards that apply from 2015. Experts have estimated that a third of the 330 GW of thermal plants in operation in the EU could be retired or mothballed in the next few years.[6]

Figure 2: Decrease in revenue for CCGTs (in €/MW/month)

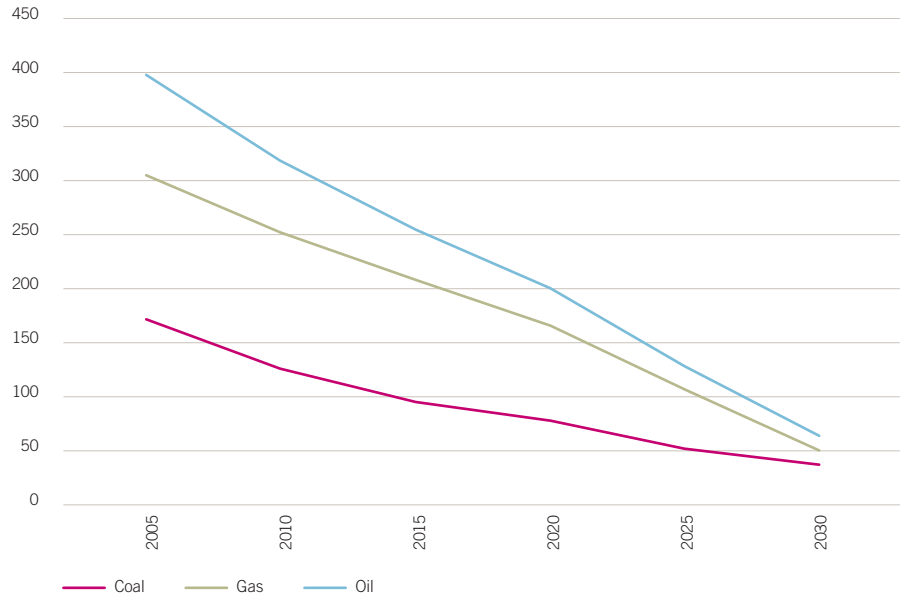


Analysis: FTI-CL Energy – Revenues calculated from wholesale spot prices excluding estimated short-run marginal costs. Excludes combined heat and power revenues and revenues from ancillary services. Figures for Germany for 2013 are based on 11 months.
Sources: EPEX, APX, IHS CERA

1. Installed renewable generation in Europe (excluding hydro) more than doubled between 2009 and 2013, reaching 435 TWh in 2013.
2. Electricity demand slightly decreased in 2013 (by 0.5% compared to 2012) and is still at about 150 TWh – i.e. about 4% – below the peak reached in 2008.
3. UK 2013 utilisation rate estimated based on January-October data.
4. Average day-ahead spot price in 2013 was around €38/MWh in Germany, €43/MWh in France, €44/MWh in Spain. UK and Italian prices remained higher (above €60/MWh).
5. http://www.cez.cz/edee/content/file/pro-media-2013/10-rijen/leaflet_ceos_08-10-2013.pdf.
6. See IHS CERA Multi-client study: Keeping Europe's Lights on: Design and Impact of Capacity mechanisms, August 2013.

The European Network of Transmission System Operators for Electricity (ENTSO-E) expects that system margins in many countries could be as low as 0-10% by 2020. This is a risk that simply cannot be ignored.

Figure 3: Estimated capacity of currently operating plants, according to life expectancy



Source: JRC report on future fossil fuel generation in Europe

The implications of large numbers of thermal power plants being removed from the system are magnified by the intermittent nature of some major forms of renewable generation technology. Wind and solar plants do not produce power consistently and gas-fired plants, in particular, are considered an essential part of the energy mix to resolve periods of system stress.

Nor is it true that all of the EU is in oversupply today; the UK, for example, was seeking (even before these latest headwinds) to create the conditions for additional investment. Capacity elsewhere in Europe can only be accessed with additional interconnection that, even if regulators were to approve funding, is unlikely to be built at the necessary scale before constraints start to bite.

The result is the potential for an uncomfortable squeeze on security of supply. Scenarios are difficult to model, but the European Network of Transmission System Operators for Electricity (ENTSO-E) expects[7] that system margins in many countries could be as low as 0-10% by 2020, even where energy efficiency measures apply. This is a risk that simply cannot be ignored.

7. ENTSO-E Scenario Outlook & Adequacy Forecast 2013-2020.

The financial impact on the EU's big generators has been, and threatens to continue to be, profound.

The financial impact on the EU's big generators has been, and threatens to continue to be, profound. These players have invested significant sums in the development of the conventional power fleet, and many gas plants were only in the early stages of capital cost recovery when the storm broke. Numerous examples exist of high quality modern plants being sold in the market at prices below the capital expenditure recently incurred on their construction. The result is considerable balance sheet pressure while, since the financial crisis, rating agencies have become increasingly hawkish on off-balance sheet structures. Wider effects of the global financial crisis have also restricted access to capital for some owners.

A transformational change in the business model of the power utilities seems inevitable. That these are also the entities shouldering the biggest expectations in terms of much-needed investment in the EU's energy infrastructure and adaptation to new market conditions only compounds the problem.

Faced with a dysfunctional market and an adverse impact upon the national champions who would normally be relied upon to help resolve things, a number of Member States have taken steps, or are planning steps, to introduce some form of supplementary capacity mechanism into their domestic energy markets. The key common thread is the perception that current market and regulatory arrangements are unlikely to lead to an orderly and cost effective rebalancing, and that ensuring reliable supply therefore requires some level of state intervention. "Capacity mechanisms can be a lifeline for European gas-fired assets and, as such, are seen by Member States as of strategic importance for security of energy supply in the medium term," comments *Arnaud Coibion, Partner, Linklaters (Brussels)*.

"In Italy, some operators have already decided to exit the market and dismantle their gas-fired plants, while other industrial players are pressing for reforms to improve the attractiveness of conventional capacity."

Tessa Lee
Counsel, Linklaters (Milan)

"The German 'Energiewende' has highlighted the importance and complexity of energy security of supply. The discussion about capacity markets is an attempt at a response. It must be taken seriously."

Kai Uwe Pritzsche
Partner, Linklaters (Berlin)

Why the market hasn't worked

Summary

"Security of supply" can mean many things, but here we mean generation capacity adequacy and balancing and flexibility adequacy.

The "peak load pricing theory" maintains that a properly functioning electricity market will send out price signals that are adequate to encourage generation to come on or stay on the system at appropriate levels.

However, recent experience shows that markets may not work this way because regulatory and market obstacles blunt those signals.

A growing consensus points towards the need for regulatory intervention, both to correct the effect of the recent storm and to address the longer-term structural issues through an increased focus on the value of capacity.

What is security of (electricity) supply?

Security of electricity supply means different things in different contexts. A reliable supply comprises several elements operating effectively at the same time:

Fuel adequacy: Power generation is the conversion of an alternative source of energy (gas, wind, uranium) to electrical power. A key driver of security of electricity supply is the availability of sufficient resources.

Generation capacity adequacy: The capacity of a generation portfolio must be large enough to meet maximum (or "peak") load, taking into account unavailability of plants from time to time. Capacity adequacy is a medium-to long-term issue, requiring investment planning, matching generation capacity with forecast growth in demand.

Balancing and flexibility adequacy: The balance between generation and demand must be managed on a continuous basis, as the ability to store electricity is limited. Some forms of renewable generation are intermittent in that they do not run all the time (wind, solar). Generation capacity therefore needs to be flexible enough to fill the gaps at night or when the wind doesn't blow. As the wind and solar sectors expand, the issue becomes more pressing.

Network adequacy: Electricity generated must be transported from power plant to consumer through transmission and distribution networks. Transmission System Operators (TSOs) and Distribution System Operators (DSOs) must coordinate network investment with the development of generation and demand.

The first and last of these elements are real questions in themselves and raise a number of challenges. However, we refer to security of electricity supply in this paper as meaning generation capacity adequacy and the need for real-time generation flexibility.

> It is difficult for a generator to base a major capital investment on the premise of charging super-high prices in certain periods of supply scarcity – however much justified by the economics. Apart from the operational risks, in the current political climate the reputational risks are significant.

Jeremy Gewirtz
Partner, Linklaters (London)

Why energy-only markets are no longer enough

To date, most power markets in Europe have been "energy-only" markets. Generators are paid solely on the basis of the volume of power that they produce. There is little remuneration (if any) for being available to step in on request during peak hours, when the system is tight or when intermittent sources of power aren't producing. In markets of this type, it is assumed that capacity adequacy will be maintained because electricity prices will rise if market players anticipate an impending shortage of capacity, and will invest accordingly. This is the "peak load pricing theory".

Several factors combine to mean that it isn't that simple. Firstly, the limited ability to store electricity, demand and supply uncertainty, inelastic demand and the steepness of the supply curve at its high end all contribute to high price volatility when reserve margins are low.

Secondly, while temporarily high (or very high) prices might be legitimately required to support investment in a low load factor context, they may also be politically unacceptable. Across the EU, energy affordability, and its impact on global competitiveness, is highly sensitive and politicised. High power prices may therefore be suppressed through direct or indirect wholesale or retail price caps, or even simply through the reluctance to create the perception of over-charging. This, in turn, creates a revenue deficiency for new plants when compared with a free market scenario – the so-called "missing money" issue.

As *Jeremy Gewirtz, Partner, Linklaters (London)* notes: "It is difficult for a generator to base a major capital investment on the premise of charging super-high prices in certain periods of supply scarcity – however much justified by the economics. Apart from the operational risks, in the current political climate the reputational risks are significant."

Even without the compounding effects of cheap US coal and carbon market failure, an energy-only market may therefore no longer be best designed to deliver the kind of investment in flexible conventional generation that is wanted in a modern, low carbon, mixed generation portfolio.

This is important because there are otherwise good reasons to hesitate before intervening in the market: policy and regulatory uncertainty tends to undermine investment. "Regulatory risk has moved up the risk register a lot in recent years, on the back of some significant interventions by policy makers," notes *John Pickett, Partner, Linklaters (London)*. "Topical examples include changes to the EU carbon market and retrospective reform of renewables incentives." To investors contemplating significant capital commitments over the long term, regulatory uncertainty is anathema. As a general rule, policy solutions are better aimed at external factors than at the market itself.

However, in this instance, some level of state intervention looks unavoidable and is probably appropriate. In many cases, the response of EU Member States has been to introduce (or consider introducing) a mechanism that rewards the creation and maintenance of capacity and not just output.

In the next section, we look at what some major EU countries are doing in this regard, and why.

Capacity mechanisms: different drivers, different choices, different outcomes

Summary

The different characteristics of Member States energy markets are such that there is no single fix to the problem that capacity mechanisms are intended to address.

The result has been a range of different solutions, all within the umbrella of capacity mechanisms but with widely varying features.

This level of disparity between initiatives poses a threat to the achievement of a pan-European energy market, operating along uniform lines.

Different drivers...

While the broader background to consideration of capacity mechanisms may be common across the EU, there are also significant differences in the circumstances of individual Member States that are influencing the designs of their capacity mechanisms. In some countries, the issue is to secure more investment, as many plants are expected to retire in the coming years (e.g. the UK, Belgium). By contrast, in the south of Europe (e.g. Italy, Spain), there is currently plenty of capacity and the issue is to ensure that not too many are retired. In Germany, the security of supply issue is local and very much linked to constraints on the network, as there is a deficit of production in the south of the country. Other variables include the extent to which generation intermittency matters and the volume of renewables to be accommodated.

As *Fabien Roques, Senior Vice-President, FTI-CL Energy (Paris)*, notes: "Despite progress with the EU energy market integration, differences and local specificities remain across countries, both in terms of market design and generation mix, such that European countries face different issues and challenges regarding security of supply. The variety of capacity mechanisms, both in place and envisaged, reflects these differences."

Table 1 looks at the different scenarios in five major Member States.

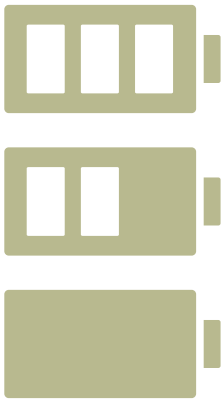
Table 1: National drivers for the implementation of capacity mechanisms

	France	Germany	UK	Spain	Italy
Local market features	Electrical heating Highly temperature-dependant consumption	Nuclear phase-out High renewable energy sources (RES) development Grid constraints	Ageing coal and nuclear power plants Limited interconnection High RES growth	Demand decrease High RES development Limited interconnection Quasi-obligatory pool	Internal zones and grid constraints Historically, capacity deficit High RES growth Central despatch
Key issues	Very high peak demand (+25% in 10 years) 'Missing money' for peak plants Low profitability for new CCGT	Nuclear replacement Need for flexibility Low profitability for thermal plants Capacity needs in the south	Strong impact of Large Combustion Plant Directive (LCPD) and Industrial Emissions Directive (IED) Major investments needed in the coming years	Overcapacity and low profitability for CCGT Need generation back-up due to RES penetration	Limited coordination of generation and network investment Need for flexibility
Main objectives	Adequacy Not strengthening market power Development of DSR	Keep capacity and deliver investment in the south Ensure availability of back-up generation	Adequacy New investment and avoiding shut-downs Development of DSR	Limit price spikes/price volatility Incentivise availability and flexibility Avoid massive shutdowns	Adequacy Competition

Source: FTI-CL Energy

> Despite progress with the EU energy market integration, differences and local specificities remain across countries, both in terms of market design and generation mix, such that European countries face different issues and challenges regarding security of supply. The variety of capacity mechanisms, both in place and envisaged, reflects these differences.

Fabien Roques
Senior Vice-President, FTI-CL Energy (Paris)



Different choices...

The menu of mechanisms to ensure capacity adequacy and flexibility is wide. The main choices are noted here, but variations and hybrid models are also possible.

- **Strategic reserve:** an independent agent (often the TSO) contracts or tenders with peaking units for reserve capacity.
- **Capacity payments:** fixed or variable payments are awarded to all or part of the eligible capacity declared or actually available.
- **Capacity auctions:** several years before the new capacity is required, the TSO launches an auction and selects the resources to satisfy a target margin above projected peak load demand.
- **Capacity obligations:** each supplier has an obligation to meet the anticipated load of its customer portfolio, plus a predefined security margin.
- **Reliability options:** forward capacity options (contracts for difference) give the holder the right to be paid the difference between the energy market spot price and a predetermined strike price.

Overlaid onto this, the way in which a chosen capacity mechanism is implemented can influence how it works (see Figure 4 below). Capacity mechanisms might be:

- **Price-based or volume-based:** in a price-based mechanism, policymakers set a price and let the market determine volume, whereas in a volume-based mechanism, the capacity requirement is defined and a price emerges through market dynamics.
- **Centralised or decentralised:** contracts may be awarded centrally or through bilateral arrangements.
- **Market-wide or targeted at specific plants or technologies:** the mechanism might reward all capacity, or only a subset.

Figure 4: Key aspects of the different types of capacity mechanisms

	Strategic Reserve	Capacity Payments	Capacity Auctions	Capacity Obligations	Reliability Options
Price vs Volume based	Volume	Price	Volume	Volume	Volume
Centralised vs Decentralised	Centralised	Centralised	Centralised	Decentralised	Centralised
Targeted vs Market-wide	Targeted	Targeted or Market-wide	Market-wide	Market-wide	Market-wide

Source: FTI-CL Energy

> "Even with different drivers in national markets, policymakers should agree at regional and EU level a minimum set of harmonised principles for capacity mechanisms in order to avoid market distortions."

Bram Delvaux
Of Counsel, Linklaters (Brussels)

Different outcomes...

Such has been the recent rise in popularity of capacity mechanisms that, by the end of the decade, a majority of EU Member States aim to have a dual energy and capacity approach. Inevitably, there are significant differences across national proposals:

- Capacity payments have been in place for several years in less well-interconnected markets on the periphery of Europe. Spain, Portugal, Ireland, Greece and Italy are examples. Within this group, Italy recently decided to move to an auction system, while reform discussions in Spain and Greece could lead to a move away from the current approach, which relies on administratively-set capacity prices, toward a more market-based approach.

- Strategic reserves have been used in the Nordic countries for a number of years. These countries rely heavily on hydro-power and need to ensure enough capacity is available to meet demand in dry years. Strategic reserves are being implemented in Belgium and Germany as an interim solution, and are being discussed in Poland.

- Capacity mechanisms are being implemented in the UK and in France, and are being considered in Germany as a longer-term option.

For a more detailed summary of what Member States have implemented and are planning, please refer to the Annex (page 28).

So the prospect of a proliferation of models (as occurred, for example, with schemes to incentivise renewable energy) seems a real one and suggests an increasingly complex regulatory environment for power in Europe in the next few decades.

This patchwork of national approaches also raises concerns about the consequences for the EU energy market as a whole. The deployment of national capacity mechanisms, which vary in their shape and aims, threatens to undermine integration of European power markets and to create distortions between national markets. "Even with different drivers in national markets, policymakers should agree at regional and EU level a minimum set of harmonised principles for capacity mechanisms in order to avoid market distortions," points out *Bram Delvaux, Of Counsel, Linklaters (Brussels)*. "The Ukraine gas crisis has shown that we need European, not national, responses to our need for energy security of supply," adds *Kai Uwe Pritzsche, Partner, Linklaters (Berlin)*.

Even within Member States, there are risks associated with the introduction of these schemes. Competitive market pressures help to keep prices down and ensure that new investment is made, and plant operated and maintained economically. There is a legitimate concern that poorly implemented capacity mechanisms could undermine competition, increasingly forcing governments into dictating what gets built and when.

All this has not escaped the attention of the European Commission. In the next section, we look more closely at the powers available to the Commission to intervene and its stated intentions on their use.

Figure 5: Map of capacity mechanism initiatives in Europe

Source: FTI-CL Energy

Capacity mechanisms: the rules on State aid

Summary

The European Commission possesses powers under the rules on State aid to intervene where Member States propose initiatives that threaten to distort competition by bestowing advantages on certain participants in a market.

The utilisation of those powers in the sphere of energy has recently been clarified by the publication of Guidelines. These make clear that capacity mechanisms should be proportionate and should not extend beyond the problems they are designed to address.

The European Commission possesses extensive powers to intervene in Member States' capacity mechanism initiatives where these involve State aid. Understandably concerned about what the expansion of capacity mechanisms might mean for its own policy priorities, the Commission has responded by clarifying its intention to use its State aid powers in this context and explaining its proposed approach. The recent publication of Guidelines[8] on the use of its powers in the fields of energy and environment suggest that it has every intention of scrutinising proposals fully to minimise market fragmentation. "In times of increasing discussion about capacity mechanisms, State aid is the Commission's tool of choice to ensure a level playing field in European energy markets," points out *Kai Uwe Pritzsche, Partner, Linklaters (Berlin)*.

The Commission has to steer a fine line between, on the one hand, permitting Member States to react quickly and effectively to real pressures on domestic markets and trying to protect the wider liberalisation project and, on the other hand, preventing more market fragmentation than is necessary. Inevitably, some of its criteria have required Member States to refine their approaches, and indeed there are tensions within the EU's own aims that will have to be balanced as real examples are considered.

Here, we look at what these powers are and what the Guidelines tell us about the key areas of scrutiny.

State aid: the legal framework

The rules on State aid[9] are intended to ensure a level playing field for all industries within the EU by preventing some companies from gaining an unfair competitive advantage through government assistance. For a measure to amount to State aid, it must:

- involve a transfer of aid through State resources;
- entail an economic advantage for undertakings;
- distort competition by selectively favouring certain beneficiaries; and
- have an effect on intra-Community trade.

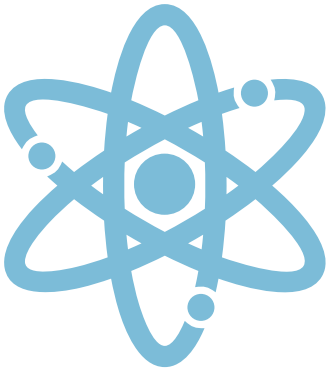
The starting point is that State aid is, in principle, incompatible with the common market[10]. However, certain forms of aid are automatically exempted from the general prohibition if they address certain social "goods" such as environmental protection[11].

Where an initiative is not automatically exempted, the Member State must notify it to the Commission, which alone determines whether the conditions for compatibility with the common market are fulfilled.

8. Guidelines on State aid for environmental protection and energy 2014-2020.
9. Articles 107 and 108 TFEU.
10. Article 107(1) TFEU.
11. Article 107(2) and (3) TFEU.
12. Generation Adequacy in the internal electricity market – guidance on public interventions.
13. Following the ruling in the Altmark judgment.

> "In times of increasing discussion about capacity mechanisms, State aid is the Commission's tool of choice to ensure a level playing field in European energy markets."

Kai Uwe Pritzsche
Partner, Linklaters (Berlin)



The State aid rules and capacity mechanisms

In November 2013, the Commission issued a staff working paper[12] to give guidance to Member States on how to "make the most" of public intervention to ensure generation adequacy while delivering the internal electricity market. The Commission advocates a consistent approach to the issue of generation adequacy and capacity mechanisms in Europe: schemes must not only comply with competition and State aid rules but should also adopt a consistent approach to achieving the objectives and requirements of EU energy policy.

The Commission's position with respect to State aid in the energy sector is set out in the Guidelines. These extend the scope of existing guidelines beyond the environmental field into the energy arena, while also clarifying and simplifying the assessment of State aid measures.

The Commission acknowledges that well-designed public support measures can make a key contribution to achieving the EU's energy and climate objectives for 2020 and to facilitating the achievement of the single energy market.

As well as addressing renewable support schemes, the Guidelines deal with State aid measures intended to secure generation adequacy. To the extent that such measures amount to aid, they will be allowed only if they satisfy the criteria described to the right.

Is the capacity mechanism State aid?

Not every capacity mechanism designed to ensure security of supply need necessarily involve "State aid". It could be seen as compensation for the cost of a public service obligation of general economic interest[13], which would avoid the need for Commission approval. Governments may therefore have the option of structuring measures so as to avoid the State aid regime altogether.

This seems to be the approach taken in France, where the French government has taken the stance that a broad-based capacity mechanism that includes demand side response (DSR) and is backed by the market should qualify as a public service obligation (in relation to security of energy supply) and not as State aid.

There may be some doubts as to whether this approach will be followed elsewhere and as to whether the Commission agrees. It would appear that all cases of capacity mechanisms currently with the Commission for the purposes of State aid clearance are considered to qualify as State aid and will be assessed against the criteria in the Guidelines. Although it is not yet clear exactly why the Commission considers State aid applies in these cases, we anticipate that many Member States will seek to get their schemes approved to avoid any risk of regulatory ambiguity.

Does the mechanism aim at a well-defined objective of common interest?

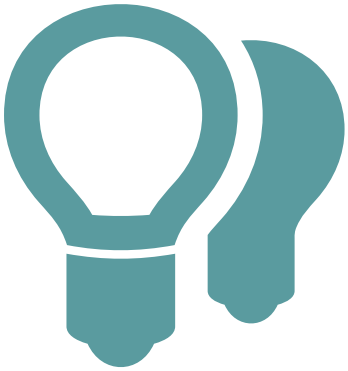
If the State aid rules do apply, then the objective of the capacity mechanism must be clearly identified. The assessment of whether or not there is adequate generation must be conducted in a manner consistent with the ENTSO-E generation adequacy assessment, taking into account the contribution of cross-border trade and interconnectors.

Secondly, the underlying causes of the problem must be analysed to understand why the market alone would not deliver the necessary solution without public intervention. Member States will need to demonstrate the regulatory and market failures justifying state intervention. Indeed, the existence of distortive features, such as caps on wholesale market prices, barriers to the development of DSR, or ill-designed RES support schemes may account for the capacity adequacy problem.

In cases where regulatory barriers are identified, they should *a priori* be addressed, to the extent possible, before implementing the capacity mechanism.

> "While the new Guidelines, as expected, set out the key questions, the open principles leave considerable discretion with the Commission in practice as to where this comes out for any particular scheme."

Paula Riedel
Partner, Linklaters (London)



Is the aid well designed to address the market failure?

The response constituted by the capacity mechanism must be appropriate and proportionate: the capacity mechanism should provide incentives for operators to contribute to solving the problem. A mechanism that does not have an influence on operators' behaviour is likely to be discarded, as the aid measure would then be disproportionate and would risk bestowing windfall profits.

Capacity mechanisms should remunerate the creation of capacity, not sales of energy. Interconnection capacity as a remedy to the problem should be considered. The mechanism should not discriminate between existing and future generation capacity. An open competitive bidding process would be a good solution to minimise the risk of unreasonable rates of return or windfall profits. The measure should be constructed to ensure that the price paid for capacity automatically tends to zero when levels of capacity supplied are expected to be adequate for demand.

Are the distortions of competition and effect on trade limited or avoided, so that the overall balance is positive?

The design of the measure should avoid negative effects on the market and should not constitute a barrier to market integration. For instance, export restrictions or wholesale price caps should be avoided. The measure should have a positive impact on competition or, at least, it should not unduly reinforce market dominance. To the extent physically possible, the mechanism should allow the participation of operators located in other Member States.

The mechanism should not operate contrary to other objectives. In particular, it should, in case of equivalent technical and economic parameters, give preference to low carbon generators, and should not undermine market liberalisation.

It will be clear that the Commission's advertised approach to the rules sets a high standard, which will not always be easy for Member States to live up to. Further, taken literally, a number of these principles seem at odds – can you, for example, simultaneously give preference to low carbon technologies and not undermine market integration?

"While the new Guidelines, as expected, set out the key questions, the open principles leave considerable discretion with the Commission in practice as to where this comes out for any particular scheme," notes *Paula Riedel, Partner, Linklaters (London)*. "As always, it will be for the Commission to weigh each of the principles in the context of the particular capacity mechanism scheme."

In the next section, we look at the issues that provide the biggest challenge in satisfying the Commission's objectives.

Capacity mechanisms: striking the balance

Summary

The Commission's Guidelines have set out in principle their expectations if they are to grant approval under the State aid rules.

However, as the Guidelines themselves suggest, a literal application of these requirements is likely to prove impracticable.

A number of important schemes are now before the Commission for determination this summer.

The challenge for Member States and the Commission together will be to find a balance allowing capacity mechanisms to perform the role for which they were intended, while doing the least damage to the operation of the market into which they are introduced.

Against the background of the generic criteria for assessing compatibility with the common market are set the principles laid out in the Guidelines. Below are the issues most likely to test the Commission as it deals with applications for approval by Member States of their capacity mechanism schemes.

Regulatory or market failures

The Commission Guidelines

In order to ensure cost effectiveness and minimise distortion of the internal electricity market, Member States are encouraged to identify and, *where possible*, remove regulatory or market failures that cause or may exacerbate generation adequacy concerns before intervening in the market.

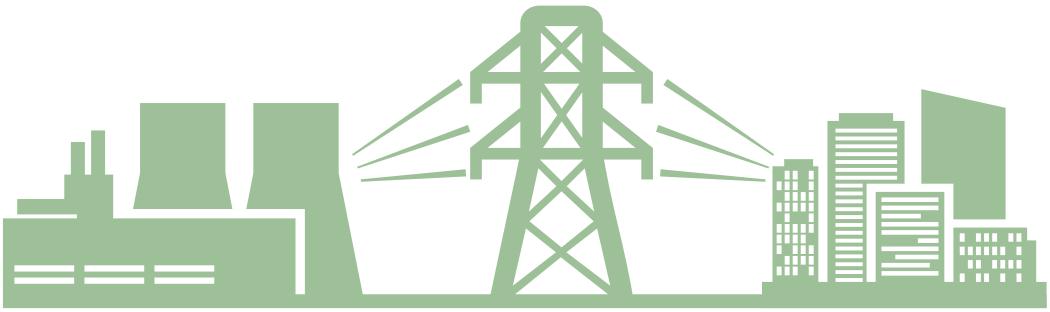
Assessing which existing regulatory barriers could be deterring investors from building new generation and, where possible, removing them first, is a key part of the State aid analysis.

However, this is easier said than done. The European energy regulatory landscape is full of schemes and mechanisms which, either alone or in combination with other factors (regulatory or market-based), could be said to prevent generators from capturing scarcity value to make peak power plants profitable and consumers from reacting to price signals at times of scarcity.

Broadly, they fall into two groups. The first are EU-wide. Some have to do with remaining obstacles to full EU energy market integration. Despite the Commission's best efforts over two decades to ensure a fully competitive market, there are several respects in which progress has been slow. The level of competition in some Member State markets remains limited. Market coupling initiatives have been postponed many times, and the integration of short-term balancing markets remains some years off. "Market integration, including balancing markets, is a priority. But my experience is that these projects are very complex and that it takes time. Even in the most ambitious implementation roadmaps, balancing markets won't be integrated before 2020," remarks *Charles Verhaeghe, Senior Economist, FTI-CL Energy (Paris).*

On a different note, a number of regulatory barriers, though arguably contributing to the security of supply problem, promote another central pillar of EU energy policy: support for low carbon power and emissions reductions. As we have seen, one of the main disruptive forces has been the success of various Member State schemes for supporting renewable power, whether through contracts for difference or feed-in tariffs. Both the Large Combustion Plant Directive (LCPD)[14] and the Industrial Emissions Directive (IED)[15] have imposed restrictions that have helped push thermal plants out of the market. The Commission cannot intend that these regulatory initiatives be dismantled; indeed, its insistence that capacity mechanisms operate alongside broader energy policy suggests not.

14. Directive 2001/80/EC of the European Parliament and of the Council of 23 October 2001 on the limitation of emissions of certain pollutants into the air from large combustion plants.
15. Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control) (Recast).



In the second group are regulatory barriers or market dynamics unique to individual Member States. This is, perhaps, a more likely area in which the Commission would be tempted to impose conditions to the grant of State aid approval, recognising that the need for approval provides some leverage towards achieving its longstanding goals. A classic example might be seeking to remove the remaining regulated retail tariffs. Even at a domestic level, though, addressing all of these features would be well nigh politically impossible in the short term, which is an issue, given the pressing need to take action.

It must be right that, as the guardians of the competitive model, the Commission should give a strong signal in this area, to warn Member States off an ill-considered intervention. Given recent and ongoing regulatory change, the EU can ill-afford a high-profile regulatory intervention to go wrong. That said, it remains to be seen whether the Commission would actually refuse approval on this basis. Applied too literally or too widely, this requirement to remove *a priori* all offending regulatory or market forces might preclude Commission approval for any capacity mechanism altogether for many years to come. We have to assume that is not what the Commission intends – hence the rider in the Guidelines, "where possible".

"We expect the Commission to challenge Member States to make their case and perhaps, in some cases, to impose conditions at a domestic level to the grant of that consent. But this is a case where the best is the enemy of the good – the short- and medium-term priorities are too pressing," comments *John Pickett, Partner, Linklaters (London)*.

Duration: tailoring the cure to the ailment

The Commission Guidelines

Capacity mechanisms should be designed to deliver a price of zero when there is sufficient capacity available, allowing smooth exit from the mechanism. Capacity mechanisms should be subject to regular review in line with a roadmap for addressing underlying market and regulatory failures.

A further Commission concern is that the solution of a capacity mechanism should not extend beyond the ill it is designed to cure and should be no less, but no more, than is necessary to address the problem. As and when security of supply issues recede, the design of the mechanism should ensure that prices for capacity fall to zero. To do otherwise would be to overcompensate generators. Equally, a mechanism needs to be flexible over time. As *Jose Gimenez, Partner, Linklaters (Madrid)* points out, "capacity payments of a fixed amount and independent of the revenue that the plant obtains on the market may not be the right mechanism for guaranteeing long-term supply security as load factors may fall further, so that not even these capacity payments are enough to recover investment costs."

This needs to be reconciled, however, with the importance of regulatory certainty or "grandfathering" for investments made on the basis of the new policy. Particularly in the case of countries that require new investment, if anything is to happen, investors will require certainty of sufficient revenues over the long term to secure at least some return over the short run marginal cost of generation.

Most countries have implemented or are implementing mechanisms that are designed to be an integral part of the market to which they belong, and for the incentives they provide for building new generation to be capable of persisting indefinitely.

Jose Gimenez goes on: "In Spain, capacity payments proved to be an effective mechanism for promoting the construction of CCGT plants in the decade from 2000 and for guaranteeing supply security. However, the system wasn't designed for such a sharp decline in the use of these plants as has occurred in the last three years. And it was precisely when capacity payments needed to be higher due to reduced load factors that the Government reduced them to control the tariff deficit."

The Commission recognises grandfathering generally as a principle of good regulation, and that long-term commitments may be necessary for cost effectiveness, as well as the concept that regulation must be effective.

Nor do the two objectives of flexibility and regulatory certainty need to be contradictory. The right approach ensures that any process (ideally by auction) for the award or allocation of support for provision of capacity will result in that support reducing to zero when there is no need to secure further capacity, but that long-term commitments made at the prevailing market price for capacity in the year the contract is struck are honoured for their full term. This is consistent with the approach taken for many years to renewable incentives: the Commission has advocated that renewable tariffs should reduce for new plants as targets are met and costs come down, but at the same time has been supportive of grandfathering the support committed to existing investments.

Most countries have implemented or are planning to implement mechanisms that are designed to be an integral part of the market to which they belong, and for the incentives they provide for building new generation to be capable of persisting indefinitely. Mechanisms under consideration are intended not only to respond to transitory failures or issues, but to complement market design by addressing the structural "missing money" problem and giving visibility to investors, as is the case in several North American markets. The forward capacity markets being developed in the UK, France and Italy (see Table 2, below), for instance, are conceived as a potentially enduring structural complement to their respective energy markets. For many Member States, the assumption is that this is not a problem that is going to go away.

In and of itself, a regular review of the need for a capacity mechanism is not, at first sight, onerous, and seems prudent: it is expected that most Member States will, as the UK has done, commit to doing so. Investors are encouraged to be undeterred on the basis that long-term commitments will be grandfathered. However, this may fail to take full account of the adverse psychological impact such reviews have on the investment community for whom (particularly when performed by new administrations) they raise a threat of adverse regulatory change.

Given the requirement that the value of fresh support reduces to zero once there is no further need to secure capacity, it could be questioned whether the further requirement for regular reviews could (and should) be dispensed with by the Commission, as it is always open to Member States in any event to review a policy which has become redundant.

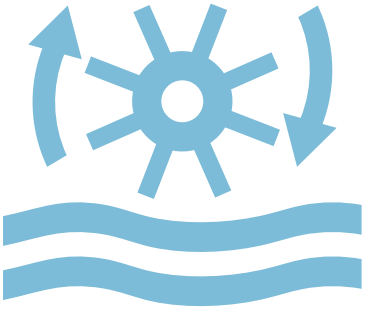
Table 2: Time and price management in capacity markets (UK, France and Italy)

	UK	France	Italy
Forward period	4 years	4 years	4 years
Contract length	1 to 3 years for existing Up to 15 years for new build	1 year	3 years for all
Price management	Sloped demand curve Different treatment of price takers vs makers Price cap: possibly 1.5 x cost-of-new-entry	None Fixed margin on actual demand Capped by penalty level	Variable demand Caps and floors for existing

Source: FTI-CL Energy

> "Establishing the right framework for developing demand-side response is a big challenge. This is also a major opportunity for consumers. Incorporating demand side response in capacity markets is a win-win: it should spur its development while making capacity markets work more efficiently."

Charles Verhaeghe
Senior Economist, FTI-CL Energy (Paris)



Demand Side Response (DSR)

The Commission Guidelines

Capacity mechanisms should allow demand side participation.

Many prospective schemes in the EU are testing different approaches to valuing DSR, but few countries currently allow DSR providers to participate in their energy market or a capacity mechanism. A growing number of countries have allowed for the participation of industrial consumers in balancing markets, but opportunities such as aggregation and valuing DSR on spot markets may be restricted, as the table below shows.

Even where energy market rules allow full DSR participation, penetration usually remains frustratingly limited.

Experience in the US has shown, however, that a capacity mechanism that allows for adequate participation by DSR can enable it to take off. The chart below shows the significant increase in DSR capacity in the PJM (Pennsylvania – New Jersey – Maryland) region in the north-east of the US following the introduction of a capacity mechanism in 2007 that also remunerates capacity provided by DSR operators. As a result, DSR available capacity has increased by a factor of eight in less than 10 years.

In early-adopter countries such as the UK and France, an ambition to increase opportunities for DSR has been one of the drivers behind the desire to adopt a capacity mechanism. As *Paul Lignières, Partner, Linklaters (Paris)* points out: "French plans for a capacity mechanism aim to support energy transition by promoting greater moderation in energy use. The objective is not only to ensure a sustainable security of supply, but also to generate adequate investment in both production facilities and in "erasure" capacity (i.e. capacity which reduces energy use), in a context where the market's inclination to invest in Europe is being questioned."

Figure 6: DSR possibilities in Europe

	2013	2014		2013	2014
Austria	●	●	Norway	●	●
Belgium	●	●	Poland	●	●
Finland	●	●	Slovenia	●	●
France	●	●	Spain	●	●
Germany	●	●	Sweden	●	●
Ireland	●	●	Switzerland	●	●
Italy	●	●	UK	●	●
Netherlands	●	●			

● Commercially active ● Partial opening ● Preliminary development ● Closed

No thorough regulatory review (but on first review, DSR development not visible):
Albania, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Greece, Hungary, Latvia, Lithuania, Macedonia, Moldova, Montenegro, Portugal, Romania, Serbia, Slovakia, Ukraine.

Source: SEDC

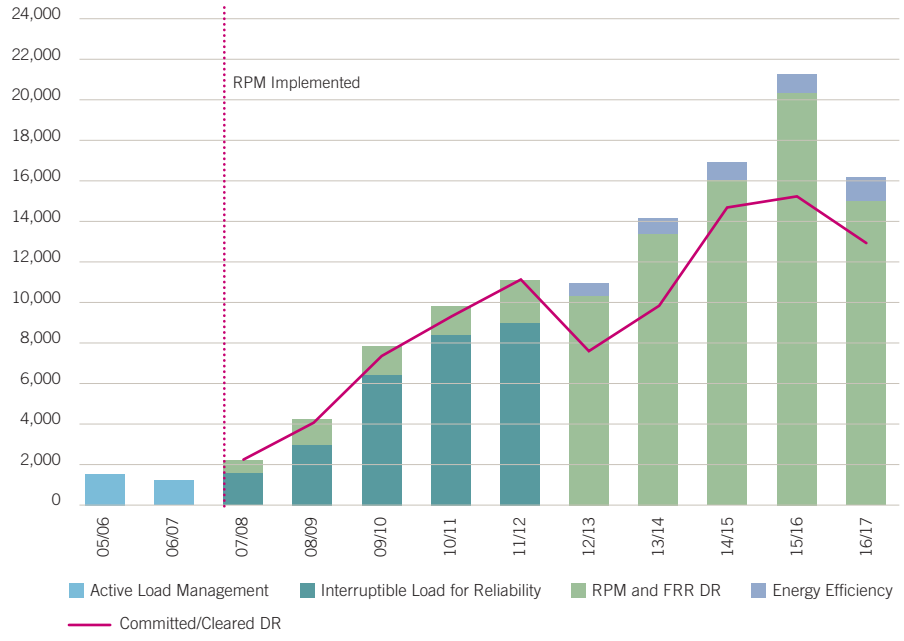
However, incorporating DSR also makes the implementation of a capacity mechanism more difficult. It increases complexity by requiring the parallel resolution of a host of questions that DSR raises that would not need to be resolved for a large-scale generation-only mechanism. These range from who the counterparty is (unlike generation, DSR aggregators are not normally the owners of the unit whose load is reduced), through how to determine an administratively operable baseline from which the reduction can be measured, to metering solutions and how to treat on-site generation (is it generation, or DSR, or both?).

"DSR means you have to design your capacity mechanism to deal with both high and low voltage networks and some quite small volumes – it makes a much wider proposition," comments *John Pickett, Partner, Linklaters (London)*.

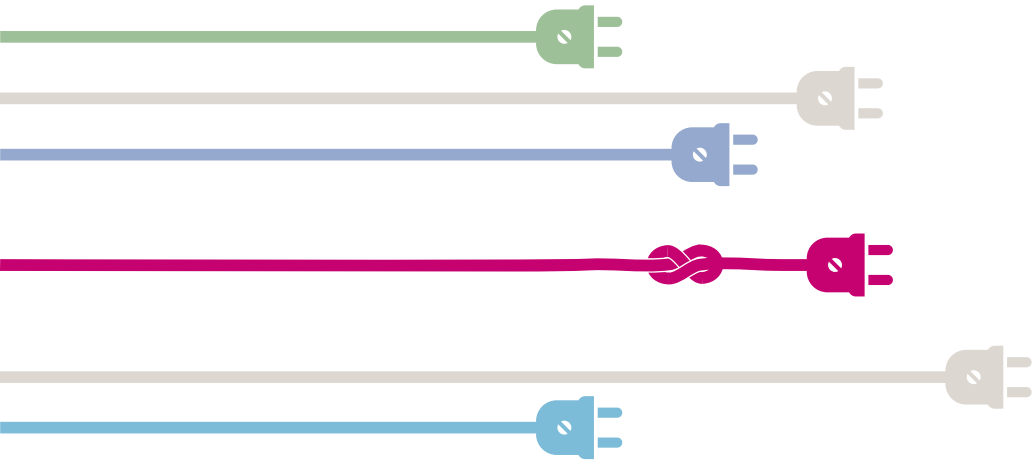
These are complex questions for which it can be hard to find the right answers first time. Schemes like in the UK and France that have sought to grapple with the detail, notwithstanding pressing time constraints, and have committed to further learning through doing, should be given credit for seizing the opportunity to move this important dimension of the energy agenda forward.

> "DSR means you have to design your capacity mechanism to deal with both high and low voltage networks and some quite small volumes – it makes it a much wider proposition."
>
> **John Pickett**
> Partner, Linklaters (London)

Figure 7: Demand side participation in PJM capacity market



Source: PJM – 2016/17 auctions' results



New vs existing generation, technology neutrality and decarbonisation objectives

The Commission Guidelines

Capacity mechanisms should be open to new and existing generation capacity. Base restrictions on participation should be defined on technical performance rather than on predefined technology types. Capacity mechanisms should be consistent with decarbonisation objectives.

In most countries, reversing mothballing is, at least to some degree, likely to form part of the economically efficient solution, as well as conferring the obvious level-playing-field benefits. Remunerating new generation alone sends the wrong signals – it risks incentivising the closure of existing plants and the building of new ones, even where that would be less cost effective. "When devising capacity markets, some Member States make the mistake of giving priority to new capacity, leaving stranded assets as an unresolved problem," says *Arnaud Coibion, Partner, Linklaters (Brussels)*.

It is not surprising, then, that the Commission has insisted on including both new and old capacity in the mix.

It does, however, raise some real political questions. Compensating existing plants that are already economic may be considered challenging in an affordability-constrained world. A key part of the calculation will be whether the level of competition in the market is sufficient to ensure that the cost of the support provided by the mechanism to existing plants will be offset (at least in large part) by a corresponding reduction in wholesale prices. This would be neutral for the consumer, but potentially highly sensitive for other generators whose economics are linked to wholesale prices.

As a consequence, some proposed capacity mechanisms (in Belgium, for instance) are open only to new generation, although it is not clear how palatable this will be to the Commission – Belgium's application for approval remains work in progress.

The Commission has accepted, however, that restrictions can apply on technical grounds – acknowledging the fact that in many markets this is about flexible capacity rather than just installed capacity *per se*.

Similarly, the Commission intends that capacity mechanisms should operate alongside existing and future schemes intended to ensure decarbonisation objectives are met. Accordingly, the requirement for technology neutrality should not require Member States to reverse actions taken to restrict the deployment of higher carbon emitting plants. Nor should it necessarily be read as requiring the scheme to provide incremental support for low carbon plants that are otherwise compensated, as long as it does not positively impede their deployment. Since, in many countries, the development of further flexible capacity is rapidly becoming a limiting factor on renewable deployment, the effectiveness of these schemes can be seen as providing important structural support for renewable initiatives.

Cross-border participation

The Commission Guidelines

Mechanisms to ensure generation adequacy should be open to all capacity that can effectively contribute to meeting the required generation adequacy standard, including from other Member States.

The Commission's concern is that preventing the participation in capacity mechanisms of generation from other Member States could lead to inefficiencies and distortions in energy markets. Implementing a capacity mechanism in one country without allowing cross-border participation could distort flows on an interconnector between the two and could steer new investments away from neighbouring markets by undermining their economic viability. This, in turn, could jeopardise security of supply in those countries, and possibly the wider region. "Taking into account the cross-border contribution to national security of supply is a necessity in an integrated European energy market. It can save costs for consumers and provide better incentives to invest in interconnectors or in generation assets in a coordinated way. Doing this right will require some additional work, but will be worth the effort," says *Fabien Roques, Senior Vice-President, FTI-CL Energy (Paris)*.

> "In view of the intrinsic differences in energy mix between Member States, it is an illusion to believe that one single capacity mechanism can be implemented throughout Europe. The challenge faced by the Commission is to ensure that national mechanisms do not create distortions and are not ultimately detrimental to a unified energy market."

Arnaud Coibion
Partner, Linklaters (Brussels)

Equally, account must be taken of the current lack of interconnection in some locations. It is frustrating that there remains oversupply in some areas that cannot be used to meet demand elsewhere in the EU because the infrastructure is not there to support it – notwithstanding concerted efforts over many years. Any impetus lent to the cross-border interconnector programme by highlighting where new development would be most economically efficient would be desirable.

In these circumstances, the Guidelines provide that participation by foreign generators is allowed *"where such participation is physically possible, i.e. where the capacity can be physically provided to the Member State implementing the measure, and the obligations set out in the measure can be enforced"*.

Current EU legislation[16] already provides that Member States must respect their commitments to export power, even during periods of high demand in their country, and that they must not discriminate between cross-border contracts and national contracts.

The options

There are a number of possible approaches to including cross-border participation in capacity mechanisms:

1. Taking into account the statistically likely contribution from interconnectors.
2. Allowing actual cross-border exchange of capacity/foreign participation.
3. Harmonising and coordinating national capacity mechanisms.
4. Implementing an EU-wide capacity mechanism.

On options 3 and 4, as we have seen, the drivers behind capacity mechanisms vary between Member States, while several countries already have capacity mechanisms in place and others are still in the process of implementing them. It seems highly unlikely in the short- to medium-term that a single design would meet the needs of different countries, or that much by way of harmonisation and coordination can be expected, except where regional markets share similar issues. "In view of the intrinsic differences in energy mix between Member States, it is an illusion to believe that one single capacity mechanism can be implemented throughout Europe. The challenge faced by the Commission is to ensure that national mechanisms do not create distortions and are not ultimately detrimental to a unified energy market," says *Arnaud Coibion, Partner, Linklaters (Brussels)*.

Unsurprisingly, therefore, the focus of the Guidelines falls on how to include interconnector capacity and overseas participants within a Member State scheme (options 1 and 2, left).

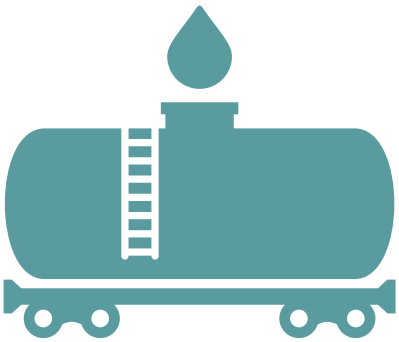
The requirements for cross-border exchange of capacity

The principle of option 2 is that generating capacity available in country B may bid in the capacity mechanism of country A. However, in practice, implementing the exchange of capacity between countries raises several issues, amongst others:

- how to certify the foreign capacity;
- how to deal with cross-border transmission capacity;
- how to make sure the foreign capacity is comparable to internal capacity and provides the same product/ contribution to security of supply; and
- how to deal with capacity scarcity in both countries.

These issues are not easy to resolve. For example, certifying capacity in a foreign country implies either that the national certification body (usually the TSO) may operate in the foreign country, outside its "jurisdiction", and have access to all necessary information, or a high level of operational and regulatory coordination with the neighbouring country, notwithstanding that regulatory differences could mean a lack of a consistent legal framework to allow for certification and necessary controls. "We are some way from having the regulatory frameworks in place to do this," comments *John Pickett, Partner, Linklaters (London)*.

16. Article 4 of Directive 2005/89/EC of 18 January 2006.



The table below shows that several approaches could be envisaged, but that all give rise to significant issues.

Table 3: Pros and cons of different approaches to cross-border participation

	Principle	Pros	Cons
Reservation of cross-border transmission capacity	Part of the cross-border transmission capacity is kept for foreign capacity providers in the capacity mechanism, and can no longer be used by market participants in standard capacity allocation Participants could buy capacity in separate auctions Participants could be obliged to use capacity at periods of system stress	Guarantees the availability of cross-border transmission capacity for foreign capacity providers to take on capacity obligations Enables a similar treatment and commitment of internal and foreign participants	Inconsistent with EU network codes' provisions on capacity allocation and with market coupling Limits full efficiency of cross-border trading, as exchanges might be prevented, despite being economically efficient or contributing to security of supply
Participation in long-term cross-border capacity allocation	Foreign participants would have to have purchased transmission rights during long-term auctions of cross-border capacity to demonstrate their ability to deliver capacity	May be compatible with target models for capacity allocation foreseen in EU network codes May allow for efficient market coupling	Through netting and market coupling, flows may be inverted from the capacity mechanism country back to the neighbouring country Depending on product definition, it might not be sufficient for the foreign participant to actually provide the same product Implications if both countries are capacity-scarce?
Specific cross-border ticket auction	Foreign generators have to acquire specific "tickets" to allow them to participate in the capacity mechanism ("explicitly" or "implicitly") Same obligation as national generators with adapted penalty regime	Compatible with target models for capacity allocation in EU network codes and with market coupling Share value between foreign participants and interconnectors and thus give right incentives for investment	In case of scarcity, may not guarantee a physical delivery of energy to supply demand: load shedding might still be necessary, which may be seen as a scheme failure, at least politically Complex implementation
No obligation with regards cross-border transmission capacity access	Through market coupling, cross-border flows are optimised and should respond to prices: scarcity in the capacity mechanism country should be reflected in prices, and imports should follow	Compatible with target models for capacity allocation in EU network codes and with market coupling	A foreign participant receiving capacity remuneration contributes to security of supply as much as any other foreign participant However, from the capacity mechanism country point of view, there is no/limited added value compared to a statistical approach, and that may be politically challenging If both countries are capacity-scarce in real time, the consequences are likely to be shared: foreign capacity would not contribute to security of supply as much as internal capacity

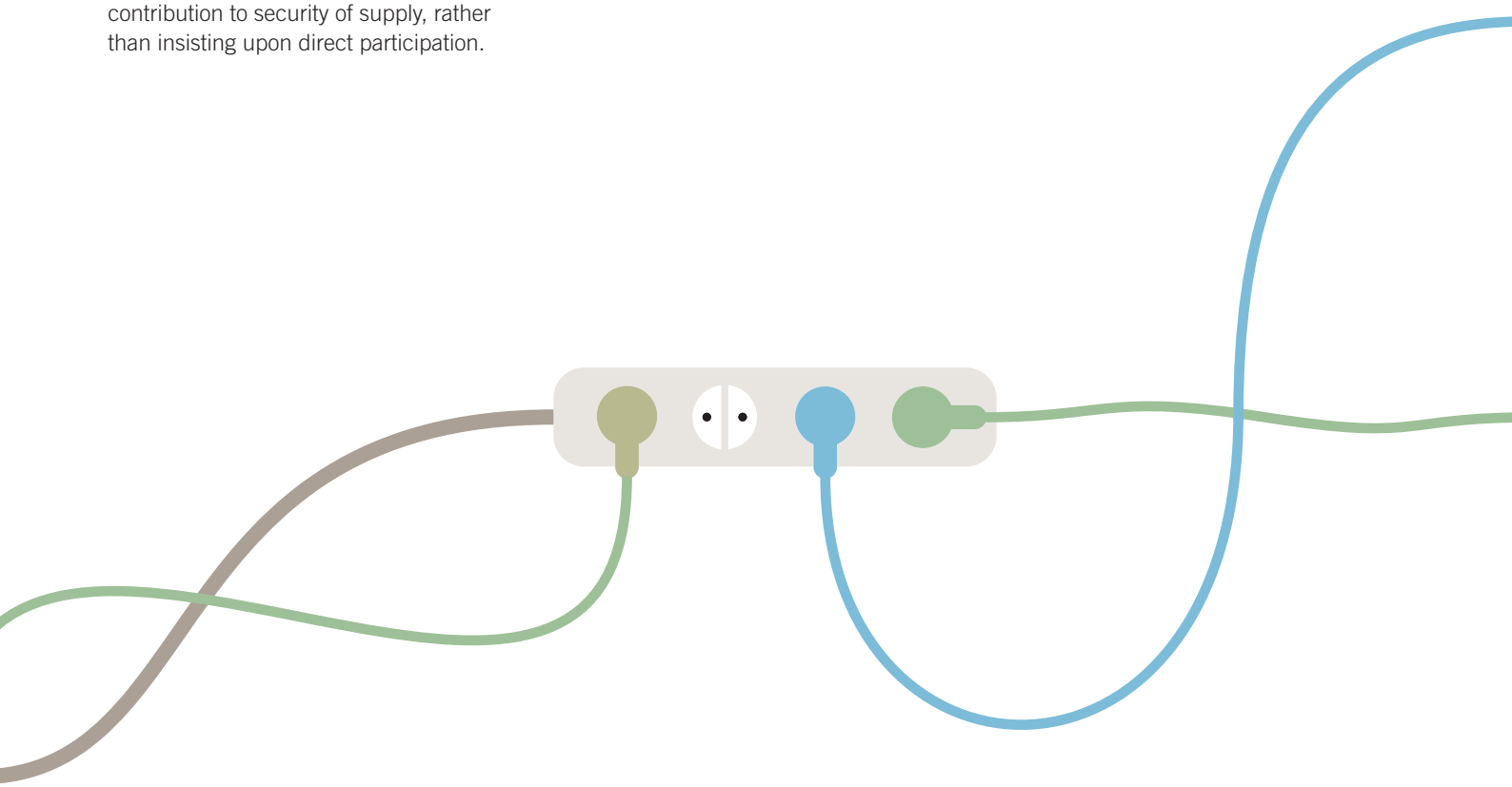
Analysis: FTI-CL Energy

Many of the capacity mechanisms that are being implemented currently take the statistical approach and have discarded direct participation, at least for the time being.

In its November 2013 Guidance, the Commission suggests a few ways of dealing with some of these concerns. However, it also acknowledges the practical difficulties in implementing a framework for cross-border participation and considers, as an interim solution, the possibility of simply taking into account the statistical contribution of imports towards meeting generation adequacy standards. It does therefore seem as if the Commission is likely to allow a statistical evaluation of cross-border contribution to security of supply, rather than insisting upon direct participation.

As a result, many of the capacity mechanisms that are being implemented currently take the statistical approach and have discarded direct participation, at least for the time being. France and the UK have, however, committed to further work on the integration of capacity mechanisms and cross-border participation. RTE, the French TSO, has announced a roadmap to work on this issue and has called for a discussion at the European level.

That said, simply taking into account the statistical contribution of interconnection could turn out to be an efficient solution. It permits the investment within the capacity mechanism country to be optimised in light of the complementary generation mixes in one or more neighbouring countries without requiring further regulatory intervention in the operation of cross-border flows.



Free flow of markets

The Commission Guidelines

Capacity mechanisms should not adversely affect the operation of market coupling, including intra-day and balancing markets. Negative effects on the internal market should be avoided, for example, due to export restrictions, wholesale price caps, bidding restrictions or other measures undermining the operation of the market.

Capacity mechanisms can create distortions and have consequences that alter the functioning of markets (short-term) and investment incentives in adjacent markets (long-term). Although in principle it should be possible to avoid these distortions, the devil is actually in the detailed design of these mechanisms, which are very complex to implement. "Capacity mechanisms can form a part of a larger plan to restore a more favourable pathway for energy investments in Europe, provided they are designed in a market-based and technology-neutral way so as to complement the energy-only market," says *Arnaud Coibion, Partner, Linklaters (Brussels)*.

There are examples where implementation of capacity mechanisms has resulted in barriers to export, caused by implicit reserve prices created by capacity mechanism obligations imposed upon generators and suppliers (see Figure 8 on the Russia-Finland case study on the following page). For instance, measures amounting to reservation of capacity for the national market should be avoided, since this may restrict generators' participation in market coupling and the integration of balancing markets. This can be a particular issue in a reliability option market, as generators no longer benefit from prices above the strike price, which therefore acts as a price cap. If the strike price is set too low, this can create distortions and prevent efficient cross-border exchanges.

> "Capacity mechanisms can form a part of a larger plan to restore a more favourable pathway for energy investments in Europe, provided they are designed in a market-based and technology-neutral way so as to complement the energy-only market."

Arnaud Coibion
Partner, Linklaters (Brussels)

Case study

The Russia-Finland case

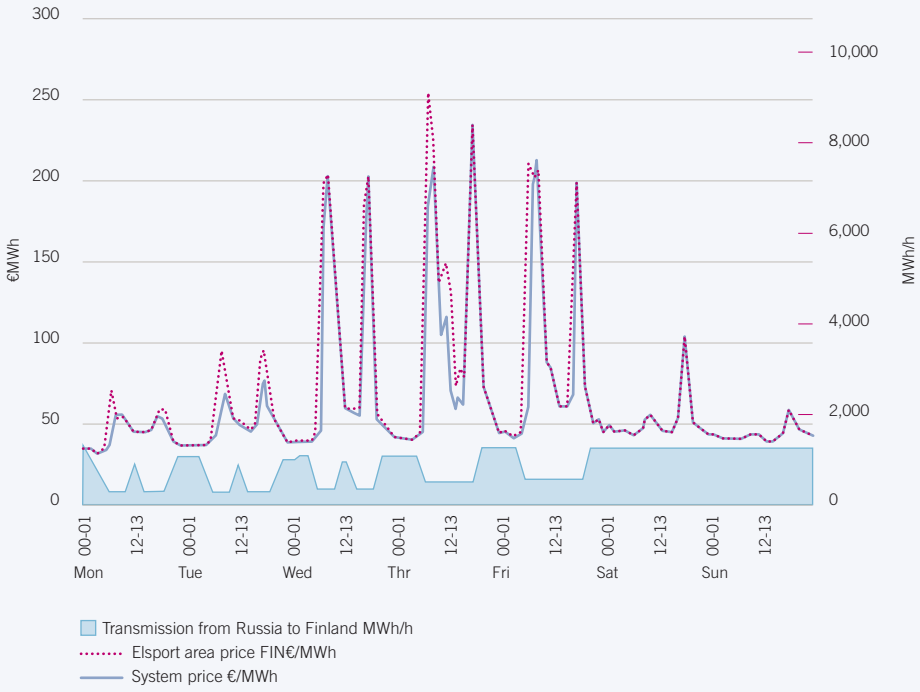
In 2011, major reforms in Russia liberalised the electricity sector. The reforms included the implementation of a capacity market to attract investment into new generation in Russia. However, following its implementation, unprecedented trading patterns were observed on the Russia-Finland interconnector.

The development concerned Finnish stakeholders, as it seemed to have significant impacts on spot prices in tight periods. Detailed assessment of the interaction between the two neighbouring markets showed that the capacity market rules in Russia were hindering cross-border electricity trade between the Nordic and Russian markets, despite the fact that the price spread between the two markets should have justified cross-border trading. The chart, right, clearly shows how periods of Russia-to-Finland export reductions had an upward effect on Nordic prices.

The reason for these reductions in exports was that, during certain daytime hours on weekdays, the capacity market in Russia incentivised participants to reduce exports in order to avoid capacity costs in the Russian system.

This example is a textbook case of how a capacity market can potentially distort cross-border trading if not properly designed to take this aspect into account.

Figure 8: Flows on the Russia-Finland interconnector in 2012 (week 5) and Finnish spot prices



Source: Lappeenranta University of Technology – presentation 19 June 2012

The way ahead

A decisive period

The next 12 months should see some decisive developments for capacity mechanisms throughout the EU.

As we have seen, the European Commission has set itself some challenging questions to determine in the context of a number of State aid applications involving capacity mechanisms, in respect of which decisions are pending this summer. These decisions will involve the first practical application of the new Guidelines. The approach taken may well determine the success of capacity mechanisms as a regulatory instrument. Where the Commission finds the balance between competing (and sometimes conflicting) needs and principles will be of great interest, and it will want to position the level of oversight correctly.

What happens next

Meanwhile, a number of legislative and other initiatives are expected in various Member States, which are reconsidering all or part of capacity mechanisms already in place, contemplating the creation of new schemes or phasing out existing ones:

- The UK has designed a full auction scheme, which, subject to State aid clearance, will come into force this year, with the first auction due in the autumn.
- In France, the market is still awaiting implementation of the capacity market finalised in 2010. Operational rules are being reviewed by the regulator and the government. The capacity market is expected to be fully operational by year-end, for delivery in the winter of 2016-2017. As it considers that its capacity market does not involve State aid, France has not formally submitted it to the Commission for clearance.
- In Poland, draft legislation, or at least proposals for principles, for a capacity market are expected to be published by the government in cooperation with the national regulator in the second half of this year.
- Spain and Greece are both considering reforms to their current schemes. In Spain, a new Royal Decree is expected to be approved by the government in the course of this year, replacing the current support scheme with a more flexible one.
- Belgium has very recently seen the introduction of its strategic reserve via a law amending the federal Electricity Act. In accordance with a transitional regime for 2014, the Minister for Energy has ordered a strategic reserve of 800 MW for a three-year period from 1 November 2014. This has been notified to the Commission for State aid clearance. Following recent nuclear generation outages, additional volumes may be procured to safeguard security of supply. At the same time, a call for tenders for new investment in CCGT (for commissioning in 2017) and open-cycle gas plants (for commissioning in 2016) with investment support is being challenged before the Council of State.
- We will see the outcome of Italy's decision to move from a centrally procured, targeted mechanism for capacity reserve to an auction system. The final draft of a new capacity payment system to be introduced in 2017 is currently under discussion. The proposal involves remuneration paid by the TSO, which buys reliability options on generation capacity deemed necessary for critical periods within a four-year horizon. Participation in the auctions will be voluntary, with a pay-as-bid mechanism. The new system also provides and regulates complementary and adjusting auctions and a secondary capacity market.

Contact us

We hope you found this report interesting. For more information, or if you have any queries, please get in touch by emailing us at capacitymechanisms@linklaters.com and a Linklaters contact will get back to you shortly.

> "The path to integrated electricity markets has been, and still is, fraught with pitfalls. Regional cooperation with regard to capacity mechanisms should start now, in order to pave the way, if not to the implementation of a European target model in the long-term, at least to increased coordination and harmonisation between national schemes."

Charles Verhaeghe
Senior Economist, FTI-CL Energy (Paris)

- A key question remains Germany. While the decision to adopt a strategic reserve as an interim measure (scheduled to expire on 31 December 2017) has been taken, the next 12 months may be expected to shed more light on whether Germany will join in a wider market mechanism. The new German government's coalition agreement sets out the coalition parties' intention in the medium term to develop a capacity mechanism which takes into account cost-efficiency and consistency with European rules, and which ensures a competition-oriented solution which is open to different technologies, without specifying the details of such a mechanism. Sources in the German economy and energy ministry suggest an intention to develop a new capacity mechanism which is synchronised with that of neighbouring countries. In developing its market-based mechanism for the future, it will thus be interesting to see if Germany opts for a system closer to the French decentralised obligation mechanism or to the UK's centralised capacity auction.

- Finally, as countries across the EU consider new types of capacity mechanisms or await implementation, Sweden is gradually phasing out its strategic reserve, with the intention of reducing its capacity from a maximum of 1,500 MW today, via 1,000 MW by 2015 and 750 MW by 2017 to a complete phase-out by 2020. Notwithstanding that schedule, the scheme will be reviewed regularly in the interim so as to be able to phase it out as soon as market conditions permit.

Reigniting Europe's energy markets

At first blush, the evolution of capacity mechanisms may look like a dry regulatory issue. However, in the broader context, it is anything but. The effective operation of the EU's power market has been disrupted and governments across the EU are engaged in increasing intervention to keep the lights on. The ramifications of getting this intervention wrong would be significant to the future of a low cost, clean and, above all, reliable energy future for Europe.

The good news is that regulators clearly appreciate the point. Both at national and EU levels, real consideration is being given regarding the best way to intervene, and many legislative and administrative checks and balances have been applied. The approach in the Commission's Guidelines reflects a determination to protect and reinforce competitive markets, whilst acknowledging the art of the possible. Many Member State models for capacity mechanisms include strong elements of competition, such as auctions and pricing which is responsive to market conditions: all are intended to work alongside the existing market.

Although the principle of a free market in generation has not been irretrievably lost nor the liberalisation project abandoned, an increase in regulatory complexity in the short- and medium-term looks unavoidable. Prospects for a uniform approach among Member States, much less for a pan-EU solution, seem currently non-existent, and we wonder what this means for market integration. There must also be some return to "picking winners": all these mechanisms have, at least to some extent, to define what constitutes "valuable" capacity. As the level of regulation increases, so does the exposure of market participants to regulatory changes. "The path to integrated electricity markets has been, and still is, fraught with pitfalls. Regional cooperation with regard to capacity mechanisms should start now, in order to pave the way, if not to the implementation of a European target model in the long term, at least to increased coordination and harmonisation between national schemes," recommends *Charles Verhaeghe, Senior Economist, FTI-CL Energy (Paris)*.

Worries about complexity, increased regulation and market fragmentation are legitimate concerns and, to the extent they can be mitigated, so much the better. But, most importantly, security and supply must be restored and time is of the essence. There is a strong sense that regulatory timetables are stretched and there is no margin for excessive deliberation or retracing steps.

How the process plays out in the next 6 to 12 months, therefore, matters greatly to stakeholders across the board, whether utilities, investors, lenders, regulators, governments or consumers. Delays caused by an extended approvals process will add to uncertainty and increase cost. Too much caution in the application of the State aid criteria could block schemes that are urgently needed for security of supply. Pathfinder schemes need to work when put to the test, and key decisions are still due from many Member States on whether or not they are going to adopt a capacity mechanism. It is, therefore, still too early to say whether these new regulatory instruments will help to deliver timely stabilisation of the EU's power markets. However, enough has perhaps now been done to show a way forward: there is light at the end of the tunnel.

Annex: Capacity mechanisms in key EU Member States

Questions:

1. Does the Member State have/ does it plan to introduce some form of capacity mechanism?
2. If yes, does/will the capacity mechanism take the form of either (a) a targeted mechanism in the form of a strategic reserve (i.e. centrally procured capacity removed from the energy market and only used in certain extreme circumstances) or (b) a market-wide mechanism where all providers are willing to offer reliable capacity and are provided with incentives to do so?
3. Is the capacity mechanism open to all technology types?
4. Is the capacity mechanism open to generation from outside the Member State?
5. Who operates and administers the capacity mechanism?
6. Is there a capacity agreement? Is it public or private? How long does it last?
7. Is there any change in law protection for generators?
8. Short description of the capacity mechanism.

Glossary:

EC: European Commission

EU: European Union

MS: Member State

NRA: National Regulatory Authority

TSO: (electricity) Transmission System Operator

Note: The Communication of the EC on public intervention in the electricity markets can be found here: http://ec.europa.eu/energy/gas_electricity/doc/com_2013_public_intervention_en.pdf.

Click here to view the new State aid Guidelines. http://ec.europa.eu/competition/sectors/energy/eeag_en.pdf

Icons:


Nuclear


Fossil fuels


Wind


Hydro

Solar, geothermal and other RES

Capacity mechanisms (electricity) in the EU: Implementation in key Member States

UK

Capacity mechanism in place/planned?	✓
Form of capacity mechanism	Market-wide
Technology types	
External generation?	✗
Administrator	National Grid (TSO)
Capacity agreement?	Public 1 year or up to 15 years
Change in law?	Some

Summary: The Government decides the amount of capacity it is seeking, based on analysis from the British TSO, National Grid and an enduring reliability standard.

Pre-qualified capacity will enter competitive central pay-as-clear auctions run by National Grid. Successful bidders will be awarded "capacity agreements", which provide a steady payment for capacity in return for a commitment to deliver energy when required in the delivery year, or face a penalty linked to the value of lost load.

The costs of capacity agreements will be met by suppliers based on their market share.

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Portugal

Capacity mechanism in place/planned?	?
Form of capacity mechanism	Targeted (availability and investment incentives)
Technology types	
External generation?	✗
Administrator	The Ministry in charge of the Energy sector, ERSE (NRA) and REN (TSO)
Capacity agreement?	N/A
Change in law?	✗

Summary: No proper capacity mechanisms are in place, but there are mechanisms that can be interpreted as elements of a capacity mechanism.

Two types of incentives result from the law:
(i) availability incentives to support thermo-electric power plants' continuous operation; and
(ii) investment incentives to support new investments in hydroelectric generation technology, awarded during the first years of operation.

Eligible power plants can only benefit from these incentives if they comply with a minimum coefficient of final availability ("Cdf"). The Cdf also determines the annual incentive amount to be awarded.

If a power plant subject to availability tests fails to reach a certain value of hourly average power, a penalty is applied, depending on the degree of the failure in relation to the Cdf. A 5 MW margin of tolerance applies.

France

Capacity mechanism in place/planned?	✓
Form of capacity mechanism	Market-wide
Technology types	
External generation?	✗
Administrator	RTE (TSO)
Capacity agreement?	?
Change in law?	✗

Summary: Each supplier of electricity is under an obligation to hold a certain amount of capacity guarantees, calculated each year, based on the peak consumption of its clients.

The capacity guarantees are granted by RTE to the operators of generation facilities or of "erasure" capacities, based on their ability and contractual commitment to help meet peak demand. The capacity guarantees can then be traded until a certain date to be set each year by RTE.

Electricity suppliers failing to justify that they hold sufficient capacity guarantees can be subject to a penalty to the cost of building a new capacity.

Operators of the certified capacities will be subject to a penalty to the cost of building a new capacity.

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Spain

Capacity mechanism in place/planned?	✓
Form of capacity mechanism	Capacity payments
Technology types	
External generation?	✗
Administrator	REE (TSO) supervised by the Ministry of Industry, Energy and Tourism
Capacity agreement?	N/A
Change in law?	✗

Summary: No proper capacity mechanisms are in place, but there are incentive mechanisms associated with the availability of capacity.

Two kinds of incentives are handed by the government:
(i) compensation for investments in new capacity; and
(ii) remuneration to existing plants in accordance with their installed capacity and level of availability.

The relevant plant operators must request eligibility from the Ministry of Industry, Energy and Tourism, which decides the capacity to receive the applicable remuneration. The remuneration is determined by the Spanish TSO, REE, and paid to each plant owner.

Belgium

Capacity mechanism in place/planned?	✓
Form of capacity mechanism	Targeted (strategic reserve)
Technology types	
External generation?	✗
Administrator	Elia (TSO), CREG (NRA) and the Minister for Energy
Capacity agreement?	Private or public 1-3 years
Change in law?	✗

Summary: A recent law of 26 March 2014 introduced a mechanism of strategic reserve that allows the Belgian TSO, Elia, to call upon production capacity that has been temporarily, or is scheduled to be, taken out of service. The mechanism allows such capacity to be (re)activated to bridge shortages in available production capacity, in order to match the load required to ensure the country's security of supply.

The cost of the strategic reserve is borne by a public service charge.

Besides the introduction of a strategic reserve, the government has also initiated proceedings for investment support through a competitive tender for combined steam- and gas and open-cycle gas-fired plants. The support is issued for up to six years following the commissioning of the plant.

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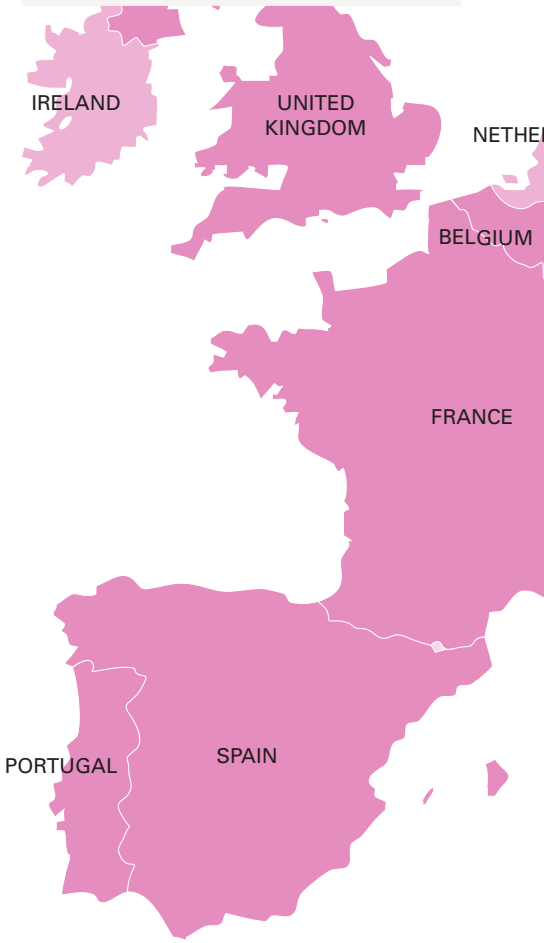

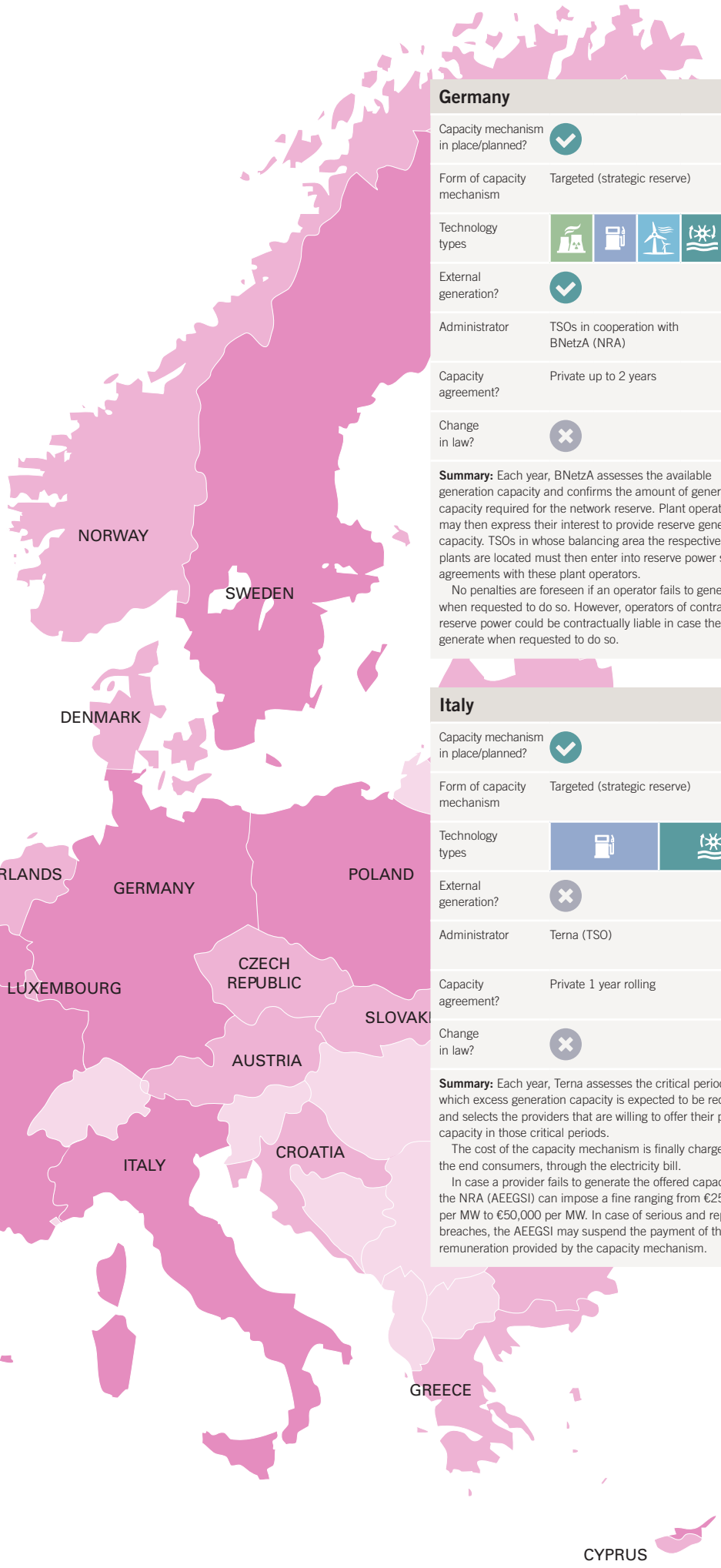

Germany

Capacity mechanism in place/planned?	✓
Form of capacity mechanism	Targeted (strategic reserve)
Technology types	
External generation?	✓
Administrator	TSOs in cooperation with BNetzA (NRA)
Capacity agreement?	Private up to 2 years
Change in law?	✗

Summary: Each year, BNetzA assesses the available generation capacity and confirms the amount of generation capacity required for the network reserve. Plant operators may then express their interest to provide reserve generation capacity. TSOs in whose balancing area the respective plants are located must then enter into reserve power supply agreements with these plant operators.

No penalties are foreseen if an operator fails to generate when requested to do so. However, operators of contracted reserve power could be contractually liable in case they fail to generate when requested to do so.

Italy

Capacity mechanism in place/planned?	✓
Form of capacity mechanism	Targeted (strategic reserve)
Technology types	
External generation?	✗
Administrator	Terna (TSO)
Capacity agreement?	Private 1 year rolling
Change in law?	✗

Summary: Each year, Terna assesses the critical periods in which excess generation capacity is expected to be required, and selects the providers that are willing to offer their power capacity in those critical periods.

The cost of the capacity mechanism is finally charged to the end consumers, through the electricity bill.

In case a provider fails to generate the offered capacity, the NRA (AEEGSI) can impose a fine ranging from €25,000 per MW to €50,000 per MW. In case of serious and repeated breaches, the AEEGSI may suspend the payment of the remuneration provided by the capacity mechanism.

Sweden

Capacity mechanism in place/planned?	✓ (due to be phased out in 2020)
Form of capacity mechanism	Targeted (strategic reserve)
Technology types	
External generation?	✗
Administrator	SVK (TSO)
Capacity agreement?	Public 1 year
Change in law?	✗

Summary: The strategic reserve is procured through a competitive tendering mechanism (under public procurement rules), which is carried out on an annual basis to cover peak demand in the winter season.

The companies that participate in the competitive tendering process offer a fixed fee for maintaining availability and a variable fee if the capacity is activated.

The legislation does not foresee penalties, but the contracts awarded do provide for contractual penalties.

Poland

Capacity mechanism in place/planned?	?
Form of capacity mechanism	Targeted (strategic reserve)
Technology types	
External generation?	✗
Administrator	PSE (TSO)
Capacity agreement?	?
Change in law?	✗

Summary: Currently, ancillary system services are carried out, the subject of which is:

(i) to maintain the contractor's generating units on standby in order to startup and produce electricity; and

(ii) to use the capacities of the contractor's generating units to feed power into the grid upon PSE's instruction,

both in exchange for a remuneration paid by PSE.

Draft legislation, or at least proposals for principles of a full-fledged targeted capacity mechanism (capacity reserve), are expected to be published by the Polish government and the NRA (ERA) in the second half of 2014.

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