

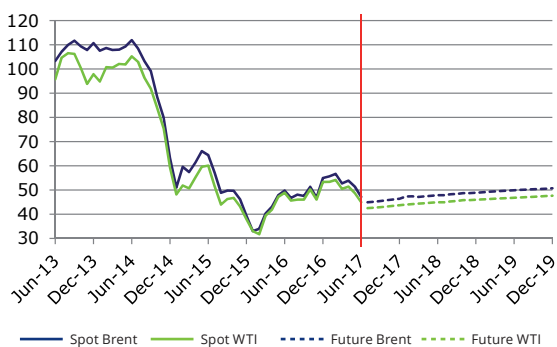


Newsletter Power & Utilities in Europe

Commodities



Crude oil (\$/bbl)



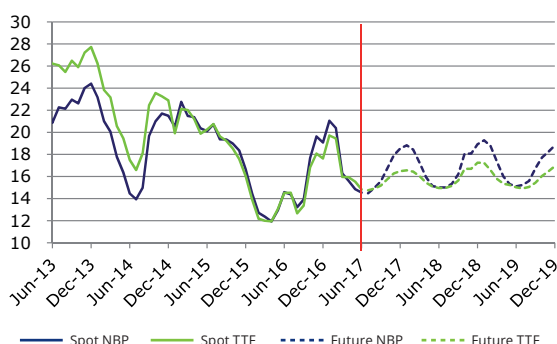
Source Capital IQ

OPEC and 11 non-OPEC countries, including Russia, agreed to extend production cuts of 1.8m barrels per day until 2018. Compliance with the agreement has been high at around 96%. However, Libyan and Nigerian oil production (both of whom are exempt from production cuts) increased over the second quarter.

Global supply rose to 96.7mb/d and OECD commercial oil stocks are now higher than their levels when OPEC first agreed to cut production. As a result of the continuing oversupply in the oil market, oil prices have been in phased decline from \$55/bbl in March to reach a low of \$45/bbl by the end of June. The period from April to June 2017 saw prices heading for the biggest quarterly decline since 2015, during which time Brent Crude has fallen about 10 percent.



Gas (€/MWh)



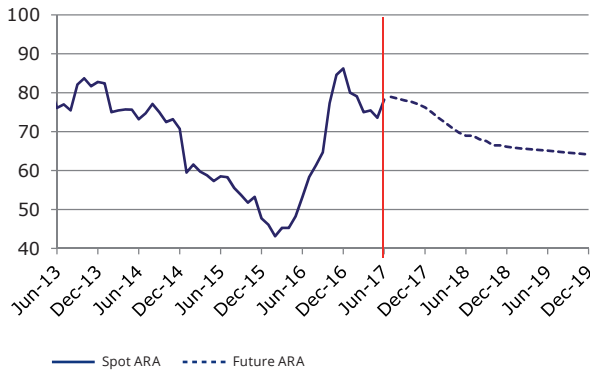
Source Capital IQ

Gas prices in Q2 2017 have largely met expectations from Q1 and have followed typical seasonal consumption patterns with warming weather reducing demand after a cold winter. Particularly hot weather in the UK in June combined with the UK Belgium gas interconnector closing for maintenance saw UK prices fall sharply in late June as falling demand and a lack of export route for UK gas fed through to wholesale prices.

In the forwards market the spread between NBP and TTF for next winter has widened. This may reflect the recent announcement in June that the Rough gas storage facility, which accounts for 70% of UK gas storage capacity, is to close permanently after being partially closed over winter 2016/17.



Coal (\$/metric ton)

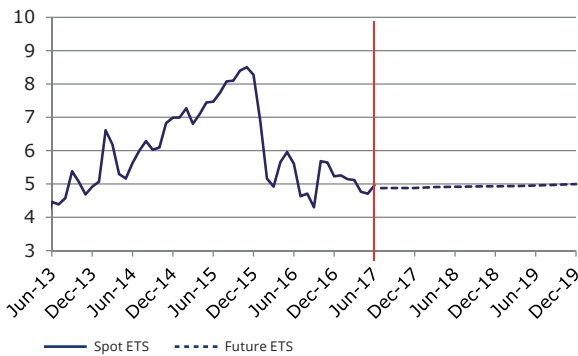


Source Capital IQ

The coal price slide from late 2016 was arrested in April as Cyclone Debbie hit key coal production facilities in Australia. This led to China becoming a key swing supplier of coal in the global market during and immediately following the cyclone switching from being the largest coal importer in 2016 to being a major exporter at on spot markets. As markets moved into June coal prices ticked up again to around 80\$/metric tonne.



Carbon CO₂ (€/ton)



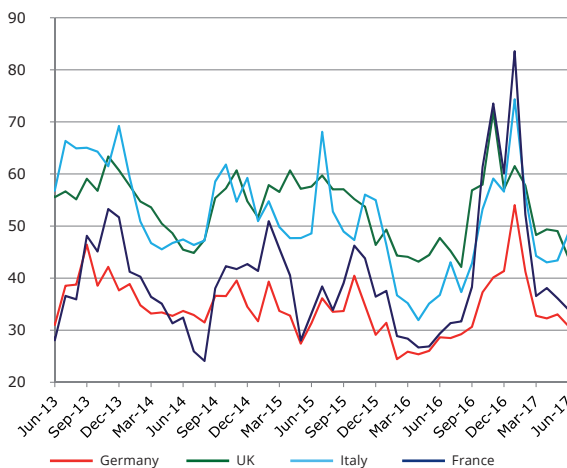
Source Capital IQ

Carbon prices have decreased steadily in Q1 and Q2 of 2017, but have not reached comparable levels to August 2016. **There was a late uptick in prices in June 2017 but generally trading has been fairly flat with negotiations to finalize the post-2020 EU ETS reform bill failing to reach an agreement in June.**

Longer term the potential for Brexit to impact on the EU ETS has been raised as a risk that may introduce volatility to EUA prices. **If Brexit negotiations were to result the UK leaving the EU ETS then this could have negative impacts on the market** as a whole but the price movement will depend on whether the UK is expected to be a long term net purchaser or seller of EUAs compared to its current allocation.



Baseload Electricity
Baseload Spot Day Ahead (€/MWh)



Source Bloomberg

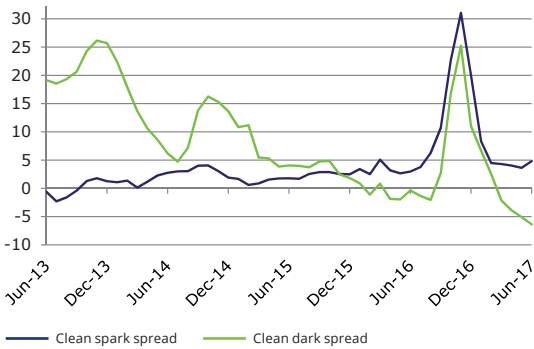
Moving out of a cold winter and into warmer months has seen electricity prices fall back from their winter peaks across the continent. This was supported by improving capacity margins and falling wholesale gas prices.

The **return to full capacity of the interconnector between Great Britain and France increased flexibility** in these markets and the return of a number of French nuclear plants to normal service eased supply concerns in these markets.

The return to more normal market conditions exposed the structurally higher level of UK power prices as a result of the UK's Carbon Price Floor legislation which tends to make the UK a net importer of cheaper continental power.



UK Clean dark & spark spreads (£/MWh)



Source Bloomberg

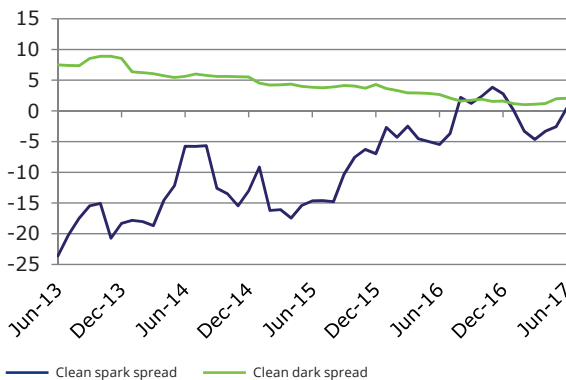
Following highs of both clean spark spreads and clean dark spreads in November, gas plant margins have fallen back to their pre-peak levels whilst coal margins continued to fall to their lowest level in many years reaching -£5/MWh. **This was driven by increasing generation from low marginal cost sources leading to gas plant regularly being the price setting plant on the UK system rather than coal and falling gas plant eroding margins available for coal generators.**

June in particular saw significant generation from low marginal cost generation with a new record set for low carbon generation on the UK system. For a period on the 7th of June more than 70% of generation in the UK was from low carbon sources. This briefly pushed prices into negative territory further biting into margins for conventional generators.

With increasing low carbon generation on the UK system this is a pattern that can be expected to be repeated in the future.



German Clean dark & spark spreads (€/MWh)



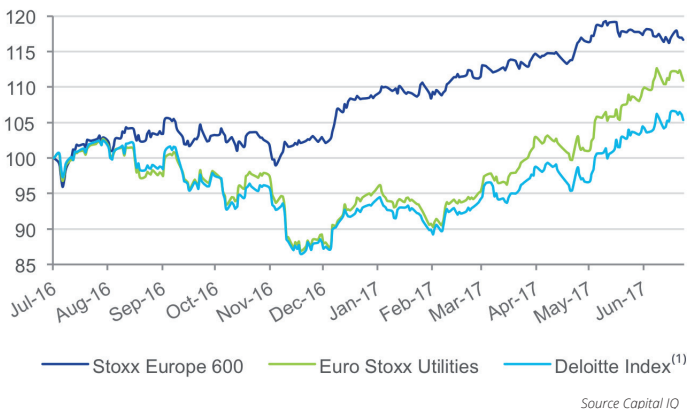
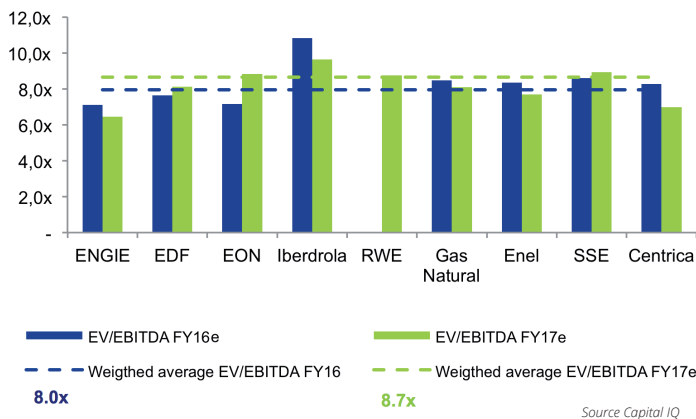
Source Bloomberg

Weak EU ETS prices continue to mean that coal is typically the price setting plant in the German merit order. **As the marginal plant for much of the time the margins for coal generation have been fairly stable over the last 3 months with electricity prices just high enough to bring to the market the level of coal generation needed.** Spark spreads increased in the second quarter of 2017 reflecting the decline in gas prices. **However, these were still too low for gas generation from plants with average efficiency to be profitable to dispatch.**

Spotlight on Power and Utilities market

Capital market overview

	Deloitte Index ⁽¹⁾	Enel	Iberdrola	ENGIE	EDF	Gas Natural	E.ON	SSE	Centrica	RWE
Market cap. ratios										
Currency		EUR	EUR	EUR	EUR	EUR	EUR	EUR	GBP	EUR
Market Cap as of June 17		49 496	45 055	33 114	26 826	21 712	18 600	14 948	11 033	11 960
3m stock price performance	9%	11%	6%	6%	29%	4%	22%	3%	-3%	24%
YoY stock price performance	5%	23%	17%	-4%	-10%	19%	-2%	-4%	-9%	34%
Market multiples										
EV/EBITDA FY16e	8.6x	8.4x	10.8x	7.1x	7.6x	8.4x	7.1x	8.6x	8.3x	n.m.
EV/EBITDA FY17e	8.8x	7.7x	9.6x	6.4x	8.1x	8.1x	8.8x	8.9x	7.0x	8.8x
P/E FY16e	9.6x	19.3x	16.5x	n.m.	9.4x	16.1x	n.m.	8.7x	6.6x	n.m.
P/E FY17e	14.8x	13.7x	16.4x	13.7x	15.0x	16.4x	13.3x	12.6x	12.6x	10.6x
Price/book value FY16e	1.3x	1.4x	1.2x	0.8x	0.7x	1.4x	n.m.	2.4x	n.m.	2.6x
Profitability ratios										
ROE forward 12m	2%	10%	7%	6%	5%	9%	n.m. ⁽³⁾	19%	33% ⁽²⁾	n.m. ⁽³⁾
ROCE forward 12m	10%	9%	5%	6%	4%	7%	n.m. ⁽³⁾	11%	17%	n.m. ⁽³⁾
EBITDA margin FY16e	20%	21%	25%	14%	21%	20%	16%	9%	8%	5%
EBITDA margin FY17e	20%	21%	27%	16%	21%	21%	13%	8%	9%	12%
EBIT margin FY16e	12%	13%	15%	8%	10%	12%	6%	6%	5%	0%
EBIT margin FY17e	12%	13%	15%	9%	8%	13%	8%	6%	5%	7%



Key messages from brokers and analysts

Despite weather headwinds, 1Q17 results were mostly ahead of market expectations (Morgan Stanley - May 29, 2017)

Generation and supply weakness in Q1 did not trigger changes in guidance (Morgan Stanley - May 29, 2017)

Yet, in the short term we do not see enough catalysts to drive a re-rating. Q2 results would be key, but weather is a risk. (Morgan Stanley - June 12, 2017)

Gas market, The Rough is shut as spot test support (Credit Suisse - June 22, 2017)

Sector consolidation: momentum depends on Engie/RWE outcome (HSBC - June 15, 2017)

How might UK energy supplier margin evolve if energy tariffs are capped? (Morgan Stanley - May 16, 2017)

(1) Deloitte Index is composed of Engie, EDF, EON, Iberdrola, RWE, Gas Natural, Enel, SSE and Centrica
 (2) Ratio linked to the expected level of non recurring income resulting from disposals program by Centrica
 (3) Not meaningful due to spin-off operations (Uniper/E.ON and RWE/innogy)

M&A Trends

Transactions involving Power & Utilities companies

Polska Grupa Energetyczna (PGE), Poland's biggest power producer, has agreed to buy for **\$1.2bn EDF's Polish power and heating assets**, composed of eight co-generation or combined heat and power assets.
(Reuters – May 19, 2017).

Redes Energeticas Nacionais (REN), a Portuguese utility company, reached an agreement to acquire **EDP Gas**, a distributor of natural gas, from **EDP Iberia**, a subsidiary of Energias de Portugal S.A for **\$567.6m**. EDP Gas owns the 4,460km gas distribution network in northwest Portugal.
(Marketline – April 12, 2017).

Energeticky a Prumyslovy Holding (EPH), a Czech utility company, acquired by **Centrica a combined cycle gas turbine** with a combined capacity of 2.3 GW for **£318m**. (CIA News – June 22, 2017).

Mitsubishi Heavy Industries (MIH) has reached an agreement with **EDF** to take over for **\$366m a 15% stake in New Areva NP** hosting Areva's nuclear reactor business purchased by EDF.
(Key Energy News - April 25, 2017).

Enel has agreed to buy, through a Public Offer, **Enernoc**, a US software provider offering demand response and energy services for utility, for **\$250m**.
(SeeNews – June 23, 2017).

EDF Energies Nouvelles acquired 67% of **Futuren**, a listed company specialized in wind energy and owning a 389MW capacity, for a total purchase cost of **€200m**.
(Marketline – June 22, 2017).

Toshiba will buy the 40% remaining stake in **NuGeneration** (Nugen), the UK nuclear joint venture, from **Engie** for roughly **€130m**. NuGen's Moorside project aims to develop a new generation nuclear power-station of up to 3.8GW gross capacity.
(SeeNews – April 4, 2017).

Transactions involving equity funds

The **UK government** sold the **Green Investment Bank PLC** to a consortium led by **Macquarie Group** for **£2.3 bn**.
(Dow Jones Newswires – April 20, 2017).

City of Oslo, has agreed to acquire **34% stake in Hafslund ASA**, a Swedish listed power group, from **Fortum Corporation**, an energy company focusing on the Nordic and Baltic countries, for approximately **€730m**.
(Reuters – April 26, 2017).

SAPE, the Romanian state owned holding company, exercised a put option resulting in the sale of **E-Distributie Muntenia** and **Enel Energie Muntenia**, two Romanian utility companies, to **Enel Investment Holding B.V** for **€400m**.
(Electronic News Publishing – April 13, 2017).

Poslki Fundusz Rozwoju, a state owned investment fund, agreed to acquire from **Tauron**, a Polish utility company, **a 14% stake in Jaworzno coal-fired power plant** expansion having 1,345MW capacity, for **\$236m**.
(Market Line – June 3, 2017).

The **Dutch province of Fryslan**, has agreed to acquire for **€127m a minority stake in Fryslan offshore wind power plant** in Netherlands with maximum capacity of 320MW.
(Marketline – April 21, 2017).

The Renewables Infrastructure Group Limited, a renewable energy infrastructure investment company, acquired **Garreg Lwyd Hill**, a wind farm from **Renewable Energy Systems Holdings**, a renewable energy company in Wales with a capacity of 34MW, for **£100m**.
(Marketline – May 19, 2017).

Eolus Vind, a Swedish wind power developer, signed an agreement with **Munich Re**, a reinsurance company, regarding the sale of **wind farm Jenasen** having an installed capacity of 79MW for **€106m**.
(Financial Wire – June 1, 2017).

European Power and Utilities companies wrap-up

EBITDA of the first quarter 2017 for most of European utilities is **down compared to first quarter 2016** due to adverse conditions: **warm winter, except in France, weak hydro and increasing competition** namely in the UK.

Nevertheless **results are better than expected** that enables **almost all energy companies to confirm their guidance**.

During the second quarter the **European Commission gives its approval to the state aid mechanism for German waste deal** that is a derisking step for German utilities and enable them to focus on the decommissioning of their nuclear reactors. In addition the German Constitutional Court ruled that the **German nuclear tax in place between 2011 and 2016 was illegal** and asked a refund to companies that should represent after interest and tax c.€2.3bn for E.ON and c.€1.7bn for RWE.

In the UK the **discussion in Parliament about a price cap on variable energy tariffs is likely to expose UK merchant utilities to a new risk** in addition to current high competition and uncertainty on supply.





Q1 2017 Highlights

- **First quarter 2017 sales at €21.1bn, stable in organic terms**
- **Nuclear output at a level consistent with 2017 target:**
 - France: 108.5TWh, i.e. -7.6TWh compared to Q1 2016 taking into account outages for additional controls started in 2016
 - United Kingdom: 16.0TWh, i.e. +0.3TWh compared to Q1 2016 with a high performance level maintained
- **Revenue of Q1 2017 at €19.5bn** i.e. +3.2%, namely due to the increase of gas purchase/ sale activities, commissioning of new assets in Latin America and tariff revision for gas infrastructures. It is also driven by the performance of thermal gas generation in Europe and a slightly favorable temperature impact in France.
- **EBITDA is down by 6% at €3.3bn (-3.6% on organic basis)**, the positive variation in sales being more than offset by unfavorable scope effects, a decrease in hydro and hydrocarbon production, and the shutdown of Tihange 1 nuclear power plant since September 2016
- **Solid cash generation** and net debt further decreased mainly due to the effects of the portfolio rotation program.

Key events in the period

- **Share capital increase** of €4.0bn
- Definitive **sale of 50% of RTE**, French TSO, to CDC and CNP Assurances
- Sale of EDF Trading's coal and freight assets to JERA Trading, EDF receiving a 33% stake in JERA Trading
- Definitive **sale of EDF DEMASZ**, EDF's Hungarian subsidiary to ENKSZ, a Hungarian Utilities company.
- Signing of an agreement with PGE, state-owned Polish Utilities company, for the **sale of EDF Polska's**
- Acquisition of a **majority stake in Futuren** specialized in onshore wind energy
- Alliance with the consortium led by Masdar, an Abu Dhabi renewable company, to develop a 800MW solar park in Dubai.
- Start of testing phases on coolant system loading and internal structure of Taishan nuclear power plant
- Announcement of the **closing of assets disposals in the US and in Asia**
- **Acquisition of the remaining 41% in the French Wind generation group La compagnie du vent**
- Equity investment (30%) in UNISUN, a solar photovoltaic company
- **Signing of financing agreements for Nord Stream 2**
- **Issuance of a €1.5bn Green bond**
- Decision to **transfer its 40% stake in NuGen project in the UK to Toshiba**

FY 2017 Outlook

- **FY 2017 guidance confirmed**
- **FY 2017 guidance confirmed**



Q1 2017 Highlights

- **Q1 2017 sales declined by 7% at €10.5bn** because of adverse currency translation impact, lower sales volumes in the UK and change in scope due to the disposal of E&P activities in the North Sea.
- **Recurring operating income is down by 22% at €1.0bn** due to higher power network fees, lower gas sales prices, higher costs for customer service and acquisition in Germany, and lower sales volume and higher cost in the UK.
- **Net debt decreased by 6% at €24.7bn** namely due to the €1.4bn capital increase.
- **Sales in the first quarter went down by 3% at €13.3bn** due to customer losses at innogy's UK and Dutch retail business, a drop of electricity feed into innogy's German distribution network and a negative currency translation impact on £.
- **Adjusted EBITDA of €2.1bn shows a 6% drop** than in the same period last year. The main reasons are declining generation margins and additional burdens in the UK retail business, partially offset by significantly lower expenses for operation and maintenance of distribution networks.

Key events in the period

- **Bond issuance of €2.0bn** to fund nuclear-storage solution
- Development by E.ON and Google of a Digital platform to develop photovoltaic solution for residential buildings
- **€1.4bn capital increase** to strength the equity and liquidity basis of E.ON SE in view of the impact by the payment of the risk surcharge to Germany's state-run nuclear fund in mid-2017.
- **Innogy became the new guarantor and debtor of RWE's senior bonds**
- All RWE's UK plants (generation capacity of c.8GW) have been qualified in the fourth UK capacity auction at £6.95 per KWh
- Repayment of CHF250m hybrid bonds

FY 2017 Outlook

- **FY 2017 guidance confirmed**
- **FY 2017 guidance confirmed**



Q1 2017 Highlights

- **Q1 2017 sales totaled €19.4bn, i.e. +8%** compared to Q1 2016, due to a positive currency translation impact and an increase in revenue from electricity sales to end users, transport of electricity and electricity trading. This was partially offset by a drop of sales in wholesale market and the deconsolidation of Slovenske Elektram.
- The **EBITDA amounts to €3.9bn, i.e. -3%** compared to Q1 2016, due to declining margin in Iberia and a negative scope impact with the deconsolidation of Slovenske Elektram.

- **Higher realized unit margins in North America Home energy supply and good optimization performance in North America business** continuing the performance momentum from H2 2016 despite warmer than normal weather
- **UK Business gross margin impacted by warm weather**, electricity cost volatility and the phasing of energy settlements
- Strong energy marketing & trading performance; NEAS Energy continuing to perform ahead of expectations

Key events in the period

- **Acquisition of CELG Distribuição**, electricity distribution company in Brazilian State of Goiás
- **Acquisition of Demand Energy networks**, a US company specialized in software solution and smart electricity storage systems
- **Board decision to authorize by December 31, 2018 the issue of bonds for a maximum of €7.0bn to refinance the Group maturing debt**
- Acquisition of 14% in E.Distributie Muntenia and Enel Energie Muntenia, Romanian utilities, for €400m, increasing its share to 78%.
- Investment of \$157m in a photovoltaic project in Australia (275MW) representing a total investment of \$315m

- **UK Home energy supply accounts down 261,000** in the year to date, reflecting the planned roll-off of collective switch tariffs and a greater shift towards enhanced segmentation and customer value, not only volume
- **UK Home energy standard tariff frozen until August**
- Commenced construction of a new fast response distributed energy gas plant at Brigg and a new battery storage facility at Roosecote
- **E&P production broadly on plan to the end of April** despite extended maintenance outage at Morecambe, with the Cygnus gas field performing ahead of expectations
- **Divestments program on track**, with completion of Trinidad and Tobago E&P assets expected later in H1 and Canada E&P sale targeted for 2017

FY 2017 Outlook

- **FY 2017 guidance confirmed**

- **FY 2017 guidance confirmed**



Q1 2017 Highlights

- **Q1 2017 sales totaled €8.3bn, i.e. +1%** compared to Q1 2016, due to the good performance of the Networks business of the US, Mexico and Brazil. This was partially offset by negative impacts of weak performance conduct in the generation and supply business in the UK, adverse weather conditions in Spain with Hydro production and Wind power falling respectively by 41% and 17%.
- **EBITDA is decreasing by 8% at €1.9bn** affected by the poor performance of the generation and supply activity in the UK due to Longannet plant closure, higher taxes and non-energy costs.

- **Q1 2017 sales totaled €6.5bn, i.e. +8%** compared to Q1 2016, due basically to the year-on-year increase in sales volumes and prices in the gas business as well as the evolution of exchange rates. It was partially offset by a scope impact with the deconsolidation of Electricaribe as part of the dispute with the Colombian state.
- **EBITDA is decreasing by 9% at €1.1bn** affected by a margin decrease in gas wholesale and electricity supply in Spain namely due to a contraction by 75% of hydroelectric production, as well as a scope impact with the deconsolidation of Electricaribe

Key events in the period

- **Strategic partnership with Vineyard Wind to develop a large-scale offshore wind power** project to be built off the coast of Massachusetts in the USA.
- **Award of the construction and operation of 766-MW combined-cycle power station in the state of Sinaloa, Mexico**
- Award through an auction process the rights to develop and construct an offshore wind farm with a capacity of up to 1,486 MW off the coast of North Carolina, in the United States
- **Completion of a green bond issue worth €1.0bn**

- **Two Bonds issued each worth €1.0bn**
- **The arbitration process to obtain a compensation from the Colombian State for the dispute on Electricaribe is still going on.** Gas Natural request amounts to €1.0bn.
- **Decision to invest €700m following award of 667 MW of wind power through Spanish Government auction**

FY 2017 Outlook

- **FY 2017 guidance confirmed**

- **FY 2017 guidance confirmed**

Talking points

1 - Tariff reforms in electricity transport and distribution: justifications and European dynamic

Sources: International Energy Agency (Repowering Markets), European Commission (Study on tariff design for distribution systems), Eurelectric (Network tariff structure for a smart energy system).

European context

European electricity systems are facing new challenges as energy transition becomes more and more the reality. While a debate concerning the future of utility-scale renewable firms on the one hand and off-grid solutions on the other hand is arising, shorter-term decisions have to be made in order to address the new challenges brought by the transition to a low-carbon economy.

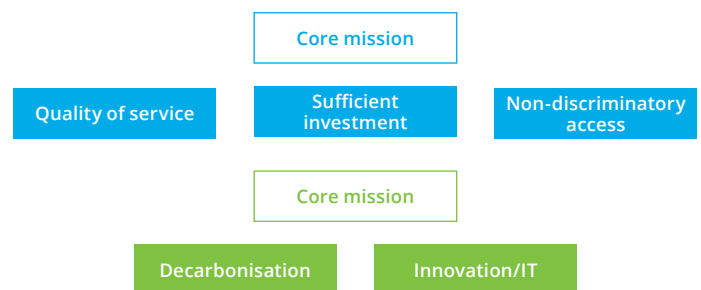
Indeed, **the Third Energy Package has enabled a massive penetration of Distributed Energy Resources (DER) which are now changing the traditional way networks are managed.**

Traditionally, electricity is delivered in a unidirectional way from a centralized production system through networks to end-users, whose behavior is passive, being that they poorly respond to market signals and do not adapt their decisions so as to minimize their energy costs. Networks are dimensioned, operated and developed in a regulated way, as they are identified as natural monopolies. They also play an insurance role, since they ensure customers electricity supply under good conditions (thus improving the so-called security of supply as well as power system security).

The traditional network regulation which has been promoted since liberalization is incentive-based, with the main objective of recovering network costs (input-based). This form of regulation has delivered efficient gains in the form of cost reduction. **But new technologies that allow real time flexibility, coupled with intermittent Renewable Energy Resources (RES), are now reversing the old regulatory paradigm.** They are reshaping the role of network operators, both regarding their perimeter of tasks (c.f. Figure 1) and their sustainability. But today's regulations do not address these issues, as they are mainly designed to recover network costs and not to enhance the development of technologies related to the energy transition. While flows will become bidirectional (with DER such as storage or electric vehicles) and demand will be more flexible, regulatory regimes will have to be designed to face technology changes, in particular for distribution networks. IEA¹ highlights these issues by calling for a 2.0 regulation with a main objective: establishing a smart, flexible distribution network. To do so, CEER Guidelines of good practice on electricity distribution network tariffs provides tools² for National Regulatory Authorities (NRA) to adapt their regulation. New design also needs to clarify whether the

tariffs should be based on volume or/and on capacity. If NRAs do not take in consideration all these aspects and do not modify network regulation to consider the new context, it may result in a less secure electricity system and undermine the transition to a low-carbon system, as DER could not be developed as needed.

Figure 1 - Core mission and new objectives of distribution network regulation (source : IEA)



The aim of the adoption of **the Energy Efficiency Directive (2012/27/EU)** by the European Commission (EC) has been to address these issues frontally. It requires to remove network tariffs that impede demand response, energy efficiency and penetration of RES. From the point of view of NRAs, it translates into the introduction of 3x20 objectives through their network tariff schemes. It is clear that networks are, in the EC's mind, the backbone of low-carbon electricity markets and efficient use of energy.

Therefore, energy transition, which leads to a changing role for networks coupled with technology revolution, bring a wind of change which is spreading across the Old Continent. Among the most urgent ones, regulation of distribution networks has to be modernized to accommodate the deployment of DER.

New technologies are reshaping electricity systems and call for a rethinking of regulation

DER - such as RES, distributed storage, distributed demand response - and smarter technologies³ are creating new challenges for NRAs.

1. IEA, Market design and regulation during the transition to low-carbon power system, Repowering Market, 2016.

2. Council of European Energy Regulator has established in January 2017 a Guidelines of good practice on electricity distribution network tariffs. This reference paper highlights "seven key principles for distribution network tariff structures" as well as the "Key considerations in the application of the principles in the design of tariffs for use of distribution networks". Every European regulator should refer to CEER's guidelines in the reform process. <https://www.ceer.eu/documents/104400/-/-/1bdc6307-7f9a-c6de-6950-f19873959413>

3. Technologies such as smart-meter which allow to measure dynamic consumption (and no more static as before)

Massive penetration of RES

NRAs have to deal with the emergence of more mature technologies for RES, which belong to Distributed Generation (DG) technologies (c.f. Figure 2), enabled by support schemes⁴ from European states and serious decreased in investment costs.

Figure 2: Examples of distributed generation technologies (Source: IEA)

Renewable	Solar PV Onshore Wind Small hydroelectric Wood Municipal solid waste
Non-renewable	Natural gas-fired fuel cells Small reciprocating engines Natural gas-fired small and micro turbines

Two problems can be identified with regards to the rapid integration of RES on national networks.

- (i) **Firstly, local production, when higher than local demand, requires more transmission networks or more storage systems, because it might result in more local congestions.** Therefore, there is a need for network reinforcement which in turn requires investments that have to be recovered by TSOs & DSOs. Thus, tariffs will have to be accordingly designed.
- (ii) Secondly, RES, as an intermittent way of producing electricity, may result in more system imbalances, as generation is not precisely predictable in the very-short term. **RES thus require “back-up” power plants (gas-fired or coal-fired) and flexible tools (such as smart-meter or storage capacity, c.f. below).** This leads to more investment in both peak capacities and grids as well as an adapted management from the DSOs & TSOs and thus from NRAs.

Distributed storage to reduce peaks

Distributed storage technologies (such as efficient batteries) have appeared while large-scale storage (pump station) has continued its development. They both bring solutions to improve network operations (i) but also new regulatory challenges to be dealt by NRAs (ii).

- (i) Electricity storage is one of the solution to support RES development. Indeed, production surplus from RES may be stored to be reinjected during peak period when production cannot face demand. All this at a lower cost, as RES production is cheaper than peak power generation.
- (ii) Electricity storage raises new challenges for NRAs, such as double-pricing. Indeed, as a way of extracting and reinjecting electricity to the grid, storage could be priced twice, for injection and extraction. In addition, storage may raise environmental issues, as pump station completely upset their environment.

Ambivalent role of electric vehicles

Increasing use of electric vehicles will have two impacts on the grid. On the one hand, these vehicles have to load directly on the grid, leading to an increase in electricity demand and capacity needs. On the other hand, they may be seen as distributed generation since they can inject directly electricity to the grid and be used as batteries. As a connected storage capacity, electric vehicles could bring more flexibility to the grid. As shown in the paragraph above, storage capacity bring new challenges for regulator (the double-pricing issue for electric vehicle is especially relevant), that have not been yet addressed. Electric vehicles also induce capacity needs, which might result in an increase of consumption peaks. Therefore, tariffs must be constructed in a way to incentivize an efficient use of these vehicles.

Demand response technologies: addressing distribution system needs

Demand response technologies enable to optimize the use of all the consumption and production technologies listed above. Smart-meters, coupled with smart-appliances, will allow consumers to directly react to price signals (market prices and regulated prices). They will enable households to optimize their electricity bills by managing their use of electrical equipment in live. Distribution companies will also benefit from smart-meters. They will have the possibility to adapt their tariffs according to the consumption profile of their customers. Smart-meters will also help to improve self-consumption for clients which have their own power generation equipment (for instance PV).

Smart-meters and smart-appliances, by increasing the demand elasticity in price of customers, will lead to new challenges for the energy value chain (aggregators, suppliers, network operators and producers) as well as for NRAs, in particular regarding energy tariff determination. Indeed, customers will be more and more reactive to incentives send by NRAs through network tariffs. Therefore, **by fixing tariffs, NRAs will have to be careful about message they want customers to understand and the impact it will have on cost recoverability.** The coordination between the regulated tariffs and the new commercial offers by suppliers also needs to be ensured.

An evolving cost structure

Energy transition requires deep structural transformations. These needs for new means of consumption coupled with massive technological ruptures are resulting in the appearance of new potential ways of looking at electricity. The increasing role of Distributed Energy Resources (DER) is affecting Distribution System Operators (DSO) total cost. Indeed, it requires network investments to integrate these resources, in order to cope with new flows and their volatility, and with demand fluctuation. In this regard, DSOs costs balance between (i) OPEX and (ii) CAPEX is evolving.

- (i) DER services will likely enable a decrease in unit OPEX as they can replace some costly internal operations (such as meter reading).

⁴ Support schemes such as Feed-in-Tariffs, Feed-in-Premium or contract for differences.

(ii) It is not clear how CAPEX will evolve. On the one hand, the level of investments needed might be limited by the use of DER by reducing the total length of transmission and distribution lines (local production, local storage etc.). On the other hand, additional investments in smart devices are required by smarter distribution grids.

In traditional incentive-based regulation, CAPEX and OPEX are subject to efficiency and productivity incentives, and regulation is focusing on cost recovery. But in the light of future investments in grid technologies, regulation has to evolve in order to cope with the evolution of both the cost structure and the role of network. Therefore, an output-based (i.e. smart network) regulation will be needed, in addition of the traditional input-based one (i.e. power delivery).

Overall, the energy transition has therefore mixed impacts on the operation and development of power grids. **New services will emerge and new investments will be needed, leading to a structural upheaval of grids**, which could either manifest itself by higher or lower grid costs, depending on the level of DG penetration, the location, the size and the form of the technologies.

These additional costs or benefits have to be directly reflected into the regulation and in particular in the tariff design, in order to ensure most of essential cost allocation criteria. The biggest risk is that current tariff design is unable to address the new constraints and leads to issues regarding cost recoverability and sustainability of essential infrastructure.

The landscape of regulatory regimes for distribution and transmission grids is therefore driven to evolve to tackle these issues. And indeed, studies at the EU level⁵ show the limitations characterizing the existing tariff design (volumetric tariff, static tariffs etc.) but they also highlight the movement toward a reform of tariff methodologies to better address technological evolution and energy transition.

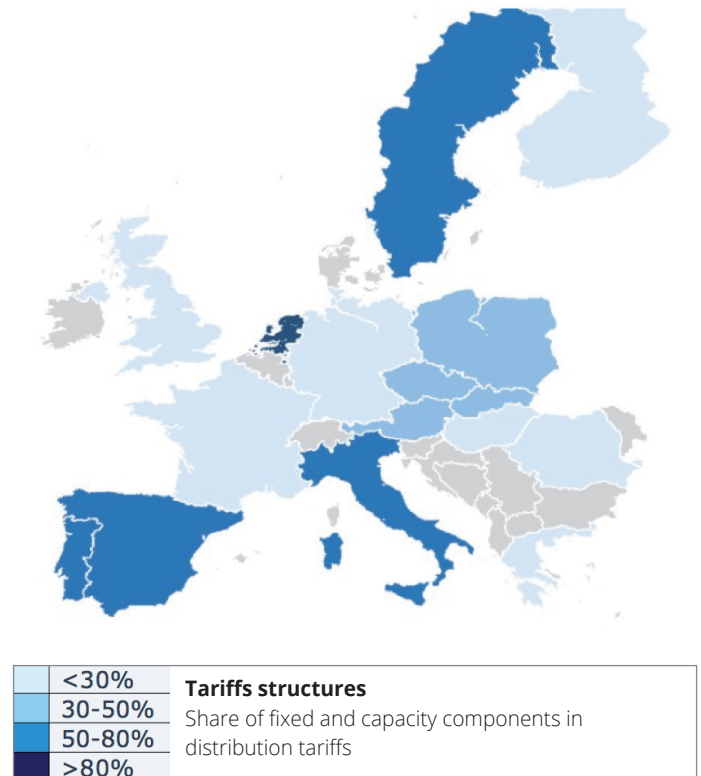
European situation and new regulatory schemes

A lack of regulatory coordination at European level

Current distribution and transmission tariffs are largely designed to ensure cost recovery, cost reflectivity and fair allocation based on network usages. But there still is considerable variations between countries. In particular, it appears to be no consensus on the way distribution and transmission have to be priced, especially on the debate between **volumetric component**⁶ and **capacity component**⁷.

Thus, **the current benchmark of European countries shows that the volumetric component is dominant at European level** but this is counterintuitive from an economic point of view and few economic justifications are brought forward by regulators which have adopted such a tariff model.

Figure 3 European huge differences in distribution tariffs (Source: European Commission)



Indeed, a volumetric component could lead to substantial issues of cost reflectiveness and cross subsidies between network users. With volumetric tariffs, kWh charges might rise to offset the loss of consumption due to DER users. While volumetric component could incentivize customers to reduce their consumption, network cost incurred to customers with DER would be shifted to customers who do not have access to DER. Thus, equity principle would no longer be respected. Capacity-based tariffs, if well-adjusted, could resolve these issues, as DER users would only save the marginal cost they incur to the grid. In addition, capacity-based tariffs ensure that sufficient investment can be made in peak-capacities, because DSOs will be remunerated according the installed capacity. Besides, and although non consensus can be shown between European countries for the moment, the analysis of several national tariff designs allow to show an evolution in Europe from volumetric tariffs to tariffs based on capacity. As explain latter, capacity based tariffs seem to be better suited with the new investment needs on grid.

5 For instance, Study on tariff design for distribution system, prepared for European Commission 2015 https://ec.europa.eu/energy/sites/ener/files/documents/20150313%20Tariff%20report%20final_revREF-E.PDF
 6 Volumetric tariffs are based on the energy consumed (euro/kWh).
 7 Capacity tariffs are based on the peak-demand of consumers (contracted capacity with their distributor, in euro/kW).

The Netherlands

The Netherlands was the first European country to adapt its distribution pricing with a 100% capacity component⁸ for low voltage consumers (i.e. residential clients).

Since 2009, distribution is regulated under a regime which focuses on output⁹ and total cost. There are two rationales for moving from energy-based tariffs to capacity-based, according to Dutch government and regulator:

- (i) DSOs' costs depend much more on capacity than volume. It means that it is the capacity during peak-demand which drives DSO's costs. Therefore, Dutch regulator is trying to respect the best as he can the cost causality principle.
- (ii) The Netherlands sought to simplify administrative processes for both DSOs and suppliers by implementing capacity-based tariffs. Prior to the reform, consumers received two bills: one from DSOs and one from energy suppliers. With capacity-based tariffs, consumers pay only for the capacity contracted and costs relative to energy metering are directly removed, because tariffs no longer depend on energy consumption. Thus, by simplifying administrative processes, government seek to reduce administrative costs.

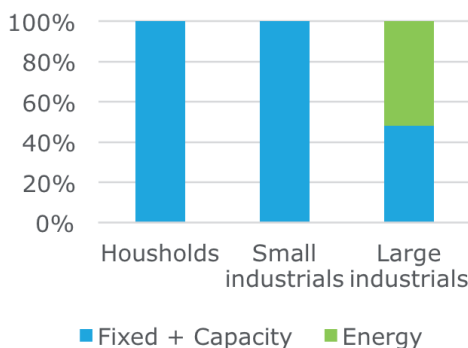
New tariffs are made of two main components:

- A fixed charge
- A charge which is function of the capacity subscribe and/or the maximal capacity used during the month.

In addition, in order to ensure the right incentives for energy efficiency to customers¹⁰, the Netherlands government decided to introduce an energy consumption tax, which depends directly on the amount of consumed electricity.

Note also that the government gave subventions to most vulnerable consumers between two years in order to accompany reform processes.

Figure 4: Share of capacity and energy in Netherlands' tariffs in 2015 (Source: European Commission)

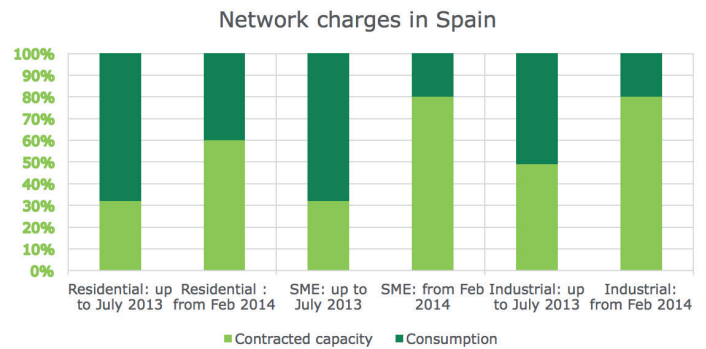


Spain

DSOs in Spain have faced huge issues regarding the recovery of their costs. In order to clean up distributors' budget, the country engaged a regulatory reform as of 2013. Spain is also a leading European country in RES installed capacity, as the national resources in wind and solar are huge. Spain is, thus, a good example of reforming country.

Before 2013, volumetric component was dominant. **Since 2013, a greater capacity component has been introduced directly in distribution tariffs.** Spain also implemented a "sun-tax" to overcome the problem of self-consumption that reduces electricity draw from the grid and reduces DSOs revenues. Every self-producer of PV has thus to pay charge for each kWh produced on their premises alongside the electricity sourced from the grid. Cost allocation is made according to a differentiation between consumers which is mostly based on the capacity called at peak hours. It is thus a differentiation in time which is applied.

Figure 5: Proportion of capacity and consumption network charges in Spain before and after reforms (Source: IEA)



Portugal

Portugal decided in 2015 to introduce dynamic Time of Use (ToU) tariffs, allowed by the installation at large scale of smart-meters. Static ToU tariffs provide incentives to shift load from peak period to off-peak period, but they do not enable demand flexibility in the short term. Meanwhile, dynamic ToU tariffs will allow customers to be complete responding market players and thus promote demand side flexibility. The introduction of these tariffs has three main objectives: (i) Minimizing grid cost by allowing customer to participate in mechanisms which encourage efficient use of the grid; (ii) Providing new mechanisms to the grid operator to allow the reduction of demand in higher consumption's situations; (iii) minimizing production variation impacts from RES to benefit operational security of the grid. Portugal is the first European country to implement this original form of Time of Use tariffs, and its example has to be followed carefully.

⁸ With capacity-based tariffs, consumers pay for the amount of kW they contracted. With energy-based tariffs, they pay for the amount of kW per hours (kWh) they consumed.

⁹ Output-based regulation tries to focus on quality of services while input-based tries to improve the productivity of regulated firms.

¹⁰ Energy-based tariffs incentivize customers to reduce their consumptions, because the more they consume, the more they pay. As energy efficiency is one of the main objectives of European energy directives, it is logical that Netherlands adapt energy taxes.

Italy

Most of households are equipped with smart-meters in Italy, thus allowing to limit the maximum power delivered to the house. Historically, a progressive volumetric component was applied to households, in order to respect the principle of cost-reflectiveness. Italian distribution tariffs are divided into three parts: (i) a fixed component, (ii) a capacity component and (iii) a volumetric component. However, as of 2015, the Italian government decided to eliminate these progressive volumetric tariffs, moving toward a major capacity component. Following the decision of the Italian NRA, the capacity component of the tariff tripled in 2015 and the fixed component increased by 66% for households. The Italian “ideal” tariff structure is thus designed to ensure the cost-reflectiveness, as the fixed charge covers the cost of metering and the capacity charge covers the cost of network and especially the cost of insurance brought by the existence and operation of the network.

Sweden

Sweden is an interesting case because the regulator only fixes great principles and DSOs then determine tariffs with the only obligation to respect objectives dictated by the NRA. The main principle is that tariffs have to incentivize energy efficiency, efficient use of grid and production efficiency. This original regulatory process allow for market studies on consumers, as their behaviors can be directly observed through their tariff choices. **As some DSOs have already implemented dynamic Time of Use tariffs, studies have been made to analyze consumer behaviors. Most of these studies show that customers do react on the tariffs price signals by decreasing peak demand in peak periods and shifting electricity use from peak to off-peak period.**

Figure 6 Distribution tariff characteristics for households in 2015: a large diversity (Source: European Commission)

	Fixed component	Capacity component	Time differentiation	Fixed + Capacity component
Netherlands	☺	☺	☹	100%
Spain	☹	☺	☺	84%
Sweden	☺	☹	?	79%
Portugal	☹	☺	☺	38%
Italy	☺	☺	☹	34%
France	☺	☺	☺	20%
Great-Britain	☺	☹	☺	14%

To conclude, there is a clear lack of transparency in European methodologies. Tariffs structure are very diverse, without economic justification for most of cases. However, one can identify a trend: countries are moving from volumetric tariffs to capacity based tariffs, which seems to be justified, both with regards to the economic theory and the penetration of new technologies. **As Energy transition can no longer be postponed, the little reform’s wave identified in few countries needs to be accelerated.**

2 - Gazprom: end to its alleged abuse of dominant position?

Sources: European Commission (2017), Market test notice, "Communication from the Commission published pursuant to Article 27(4) of Council Regulation (EC) No 1/2003 in Case AT.39816 — Upstream gas supplies in central and eastern Europe":

<http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:C:2017:081:FULL&from=EN>

Gazprom (2017), Commitment Proposal, "Proposals for Commitments COMP/39.816 – Gazprom commitments under Article 9 of Council regulation N°1/2003"

http://ec.europa.eu/competition/antitrust/cases/g2/gazprom_commitments.pdf

European Commission (2012), Press Release, "Antitrust: Commission opens proceedings against Gazprom":

http://europa.eu/rapid/press-release_IP-12-937_en.htm?locale=en

European Commission (2011), MEMO/11/641, "Antitrust: Commission confirms unannounced inspections in the natural gas sector":

http://europa.eu/rapid/press-release_MEMO-11-641_en.htm?locale=fr

Central and Eastern European (CEE) gas customers are awaiting the decision of the European Commission (EC) on whether it considers commitments proposed by Russian natural gas provider Gazprom sufficient to address its relevant competition concerns. The price to pay for Central and Eastern European customers may be high!

2011: Dawn Raids

In September 2011, the EC announced the start of its inspections at the premises of companies active in the supply, transmission and storage of natural gas in several Central and Eastern European Member States. The dawn raids included Gazprom, a leading world gas producer and exporter holding the world's largest natural gas reserves.

2012: Opening of proceeding against Gazprom

Following its dawn raids, in September 2012 the EC opened an official proceeding against Gazprom to investigate whether it may have broken EU antitrust rules by abusing its dominant position in the upstream gas supply gas market in Central and Eastern Europe, which could harm EU gas customers.

2015: Statement of Objections

In April 2015, the EC has sent a Statement of Objections concerned by its practices in Central and European gas markets. Overall, the EC concluded that Gazprom's practices were considered to "[...] raise barriers to the free flow of gas within the Internal Market, to lower the liquidity and efficiency of gas markets and to result in higher natural gas prices". If such practices are pursued, they may put CEE gas customers at the risk of paying higher gas prices and / or facing disrupted gas supplies.

2017: Market Test

In response to the Statement of Objections, Gazprom has proposed commitments to address/meet the EC's competition concerns. The EC then invited third parties to comment on Gazprom's commitments concerning CEE gas markets.

EC competition concerns

Gazprom is a global energy company active in the wholesale supply of natural gas and holds the world's largest natural gas reserves. Many EU Member States are dependent to a large extent on gas supplies from the Russian provider. Following a preliminary investigation, the European Commission expressed its concerns as regards Gazprom breaking EU competition rules by pursuing an overall strategy to partition CEE gas markets.

The EC's competition concerns, as expressed in its Statement of Objections, relate to Gazprom abusing its dominant position by: (1) imposing territorial restrictions; (2) practicing unfair pricing policy; and (3) leveraging its dominant position by imposing commitments from wholesalers concerning gas transport infrastructure.

Territorial restrictions

Gazprom imposed territorial restrictions on its supply agreements in a number of CEE countries (Bulgaria, the Czech Republic, Estonia, Latvia, Lithuania, Poland, Hungary and Slovakia). These took the form of export bans, destination clauses and other measures that have prevented the cross-border flow of gas.

Unfair pricing policy

As noticed by the EC, imposing territorial restrictions may have served as a measure to practice an unfair pricing policy in five CEE countries, namely Bulgaria, Estonia, Latvia, Lithuania and Poland, by charging them with significantly higher prices than those of their western neighbors.

Leveraging of dominant position

It was also noticed that Gazprom may have leveraged its dominant position in the upstream gas supply market in Bulgaria and Poland. The EC's investigation has shown that Gazprom may have obtained advantages as regards the access to or control of gas infrastructure and in particular with regard to (1) the South Stream pipeline project in Bulgaria and (2) the Yamal pipeline in Poland.

Under the charm of Gazprom commitments

Although Gazprom did not agree with the EC's preliminary assessment, it has proposed commitments to address its competition concerns. It has committed to introduce changes in its contracts with the aim of eliminating obstacles to the free flow of gas in order to ensure competitive prices in CEE.

Free flow of gas in Central and Eastern Europe

In order to address concerns of the EC regarding territorial restrictions, Gazprom has committed to remove all contractual barriers to the free flow of gas and to undertake actions enabling their better implementation.

In particular, this included the commitment to remove contractual restrictions preventing customers from re-selling gas they have bought over borders. In this regard, Gazprom has also proposed to eliminate clauses that would limit the incentives for the re-sale of gas (e.g. sharing profits from re-selling gas with Gazprom). Gazprom has also committed to offer swap-like operations, enabling a change in the delivery point for gas initially contracted to Hungary, Poland and Slovakia to be transferred instead to Baltic States and/or Bulgaria in exchange for a fixed service fee.

Finally, Gazprom has also addressed the particular case of the Bulgarian market by changing its contracts in order to remove obstacles for the Bulgarian gas operator to facilitate interconnection agreements between Bulgaria and other EU Member States.

Competitive gas prices in Central and Eastern Europe

As regards the concern of excessive pricing policy, Gazprom has committed to introduce changes to its price revision clauses. Under the proposed commitments, customers in Central and Eastern Europe would have the possibility to trigger a price review in case their price diverged from "competitive price benchmarks". The benchmark was defined as the average weighted import border prices in Germany, France and Italy and the price level at the relevant generally accepted liquid hubs in Continental Europe. The frequency of the price review request would be increased to one every two years and an extraordinary one every five years.

Removal of demands obtained through its dominant position

Finally, Gazprom has committed not to seek any damages from its Bulgarian partners following the termination of the South Stream project in Bulgaria.

Are the commitments actually sufficient?

Although attractive at first sight, the proposed commitments may not be sufficient to address the competition concerns identified by the EC. They present several loopholes that may make them ineffective in practice.

Commitment for Free flow of gas in Central and Eastern Europe

Regarding swap-like operations and reselling, Gazprom does not provide a justification of the level of its service fees. It does not show how the calculated service fees reflect costs of undertaking a particular swap-like operation. Service fees may appear too high for swap-like operations to actually take place in practice.

Commitment for competitive gas price in Central and Eastern Europe

Firstly, there is no clear methodology with regards to the selection and the use of competitive benchmarks in the price revision procedure. Under its current form, there remains substantial flexibility in interpreting which benchmarks should be considered for the trigger and price revision procedure. Secondly, the commitments overlook a major ingredient of long-term contracts, which is the retroactive effect of the price review. Gazprom may thus have the possibility to continue to practice excessive prices. In case the conditions for triggering a price review are met, a customer could encounter a lengthy litigation and/or arbitration process for new revised prices to be set. Absent a retroactive effect in the commitment, a customer whose demand for a price revision was satisfied may still incur losses in the form of excessive prices which it faced during the negotiation and litigation period.

Even if corrected in view of their desired economic impact and objectives, Gazprom may remain to have economic incentives and possibilities to leverage its dominant position.

Commitment to leverage its dominant position

Even if the proposed commitments would be corrected in a way to overcome their existing shortcomings, there are many reasons to believe that Gazprom may have both the incentive and possibility to leverage its dominant position. The proposed commitments may hence not be sufficient to address the identified competition concerns. The sources of such possibilities are infrastructure-based.

Firstly, Gazprom may have the possibility to restrict gas supplies. Many EU Member States are and will remain in the near future to a large extent dependent on gas imports from Russia. Controlling gas supplies may thus serve as another potential tool for Gazprom to hinder competition in CEE countries. It is worth reminding the gas supply disruption to the European Union in January 2009¹¹.

Secondly, thanks to its infrastructure, Gazprom may be in the position to maintain market segmentation. By isolating CEE countries from the rest of the European Union, it may have the possibility to practice unfair pricing in these countries.

11. See "Commission staff working document - Accompanying document to the Proposal for a Regulation of the European Parliament and of the Council concerning measures to safeguard security of gas supply and repealing Directive 2004/67/EC - The January 2009 gas supply disruption to the EU : an assessment".

Finally, Gazprom may be in the position to practice unfair pricing policy towards its CEE customers in the time window between the possible price revisions, the frequency of which has been defined in the proposed commitments. In case Gazprom maintains excessive prices after the introduction of the decision, its customers may have to wait years until the arbitration tribunal re-establishes prices to a competitive level. The possibility for Gazprom to maintain excessive pricing after the introduction of the decision contradicts the key advantage of a commitment decision, which is the resolution of competition concerns in a quick and effective manner.

It is worth reflecting at this point on the consequences of the European Commission adopting a commitment decision rather than a prohibition decision.

Why not a prohibition decision?

Article 102 of the Treaty on the Functioning of the European Union prohibits abusive conduct of a dominant position in a particular market. The European Commission may adopt two types of decisions when deciding to pursue a case. It may enforce its rules either by introducing a commitment decision under Article 7 of the EU's antitrust Regulation 1/2003 or a prohibition decision under Article 9 of the same regulation.

When pursuing a case under a commitment decision, companies present commitments that are intended to address the European Commission's competition concerns arising from an initial investigation. The European Commission then launches a market test to consult market participants on whether they find the commitments sufficient to address competition concerns. If found sufficient, a decision is made to make them legally binding.

Another way of proceeding is issuing a prohibition decision. This path requires an in-depth investigation which might result in an official finding of infringement. Under a prohibition decision, companies may also be fined for their practices.

One may also question the decision of the European Commission to introduce a commitment decision rather than a prohibition decision. Indeed, the latter presents several advantages and may appear to be better suited for the case under study.

Firstly, it has greater requirements in terms of the level of qualitative and quantitative evidence necessary to prove the infringement. This could hence help better understand the sources and origins of Gazprom's alleged abuse of dominant position. More effective remedies could be then proposed to address the identified competition issues.

Secondly, it contributes to a better understanding of law. It could hence provide guidance on how similar cases could be assessed by the EC in the future. For this reason, prohibition decisions are considered to have a stronger deterrent effect.

Finally, the introduction of a prohibition decision could increase the likelihood of private competition law actions. By establishing the existence of the infringement, they may be helpful for victims of antitrust violation, such as Gazprom's customers. Deciding to pursue follow-on actions, victims would not bear the burden of proving the existence and exact form of the infringement before the court.

All in all, commitments proposed by Gazprom, although attractive at first sight, seem to hide several loopholes that may make them ineffective in practice. Also, even if improved, Gazprom may still have the possibility and incentive to leverage its dominant position. Approving the proposed commitments and issuing a final decision by the EC on their basis may come at the risk of excessive gas prices paid by Gazprom's CEE customers.

Policy and Regulation Radar

This section summarizes the key changes respectively in the EU or in the country regulation that may significantly affect the power and utilities companies.

What is changing in the EU regulation?

“Europe on the Move”: New mobility package

Key features	Insights
<p>On 31st May, the European Commission (EC) presented a package of proposals designed to modernise European mobility and transport. The aim of the package is to help the sector to remain competitive in a socially fair transition towards clean energy and digitalisation.</p> <p>The package called “Europe on the Move” consists of:</p> <ul style="list-style-type: none"> • A long-term plan to deliver clean, socially fair, competitive mobility to all Europeans in 2025. • A first set of 8 legislative initiatives with a special focus on road transport. • A number of non-legislative accompanying documents, presenting a wide range of EU policy support measures (investment financing for infrastructure, research and innovation, collaborative platforms, etc.) <p>A number of these proposals have direct or indirect implications for the energy sector. This package seeks to encourage cleaner transport, thereby contributing to the EU’s efforts to meet its Paris Agreement commitments:</p> <ul style="list-style-type: none"> • There are incentives for cleaner fuels, with further initiatives to follow relating to emissions standards for cars and vans, as well as for heavy goods vehicles. • Strong emphasis is put on e-mobility and the deployment of electric vehicles, complementing the ‘Clean Energy for All Europeans’ package. • It is also an input for completing the Energy Union, that identified the transition to an energy efficient, decarbonised transport sector as one of its key areas of action. 	<p>‘Europe on the Move’ is a wide-ranging set of initiatives that will make traffic safer; encourage fairer road charging; reduce CO2 emissions, air pollution and congestion; cut red-tape for businesses; fight illicit employment and ensure proper conditions and rest times for workers.</p> <p>The key elements of the Commission’s proposal are as follows:</p> <ul style="list-style-type: none"> • Socially fair and competitive mobility: Clearer and common rules, combined with better enforcement and the elimination of unnecessary red-tape, will contribute to a level playing field between road hauliers. • Clean and sustainable mobility: the EC proposes to make use of improved emission standards, smart road charging as well as scale up the use of low-emission alternative energy for transport, such as renewable electricity, advanced biofuels, or hydrogen. <ul style="list-style-type: none"> - For heavy vehicles, the EC plans to modify existing rules on permitted designs to improve aerodynamics. - The EC will also promote the use of the most fuel efficient vehicles through a monitoring and reporting of CO2 emissions and fuel consumption. This monitoring data will also be of use to local authorities if they wish to design appropriate road user charging schemes to discourage the use of the dirtiest vehicles. - Concerning road charging the EC has proposed: <ul style="list-style-type: none"> • Provide for fairer pricing by phasing-out time-based systems. Charging based on distance as opposed to time, better reflects actual usage, emissions and pollution. • Reward environmentally-friendly vehicles. Member States should vary the level of the charge based on the CO2 performance of vehicles. • Contribute to sustainable infrastructure funding. <p>These proposals are accompanied with provisions for electronic tolling allowing seamless travel between Member States.</p> • Connected mobility: Current EU tolling systems lack interoperability, which is a problem especially for cross-border traffic. An interoperable system would allow one toll tag and one simple billing system.
	<h4>Next steps</h4> <p>This first batch of 8 proposals will be complemented over the next 12 months by other proposals, including on post-2020 emissions standards for cars and vans as well as the first-ever emission standards for heavy-duty vehicles.</p>

[Link: Europe on the Move. Commission launches new mobility package](#)

European Energy Council

Key features	Insights
<p>The European Energy Council that took place on June 26th, was focused on the European Commission's 'Clean Energy for All Europeans' package.</p> <p>The Council adopted, without debate, a regulation on energy efficiency labelling. This will allow customers to be more aware of the energy efficiency and energy consumption of household appliances, thus helping them to reduce their energy costs and contributing to the moderation of energy demand.</p> <p>In addition, the Council agreed its position on two proposals for revised directives on:</p> <ul style="list-style-type: none"> • Energy efficiency: establishing a 30 % EU energy efficiency target and an energy savings obligation of 1.5 %, decreasing to 1.0% for the period 2026-2030. • Energy performance of buildings: aiming to promote energy efficiency in buildings and to support cost-effective building renovation with a view to the long term goal of decarbonising the highly inefficient existing European building stock. <p>Also, the Council took note of a progress report on the legislative files under the Clean Energy package regarding in particular the internal market for electricity, governance, energy from renewable sources and interconnections.</p> <p>Finally, the Council was informed by the Commission on recent developments in the field of external energy relations. It was highlighted the recent request for a negotiating mandate on an agreement between the EU and the Russian Federation on the Nord Stream 2 pipeline. The aim of the agreement is to avoid legal uncertainty and ensure that the on-shore part of the pipeline complies with all the EU's relevant legislation in this field.</p>	<p>The main aspects commented about each legislative proposal are as follows:</p> <ul style="list-style-type: none"> • Energy efficiency labelling: The main new elements are: <ul style="list-style-type: none"> - Rescaling: The regulation establishes deadlines to replace the current A+, A++, A+++ classes with an A to G scale. <ul style="list-style-type: none"> • 6 years as general deadline, combined with 18 additional months aiming for the appearance of the label in shops; • 15 months for the "white" products (dishwashers, fridges, washing machines), combined with 12 additional months aiming for the appearance of the label in shops and 9 years for heaters and boilers with a sunset clause of 13 years. - Product database: it will operate from January 2019. The database will enable market surveillance authorities to enforce labelling requirements, and make sure that efficiency calculations behind the label correspond to those declared. • Energy efficiency: The Council agreed its position on a proposal for a revised directive on energy efficiency. The main elements are: <ul style="list-style-type: none"> - Overall EU energy efficiency target of 30% for 2030. - An energy saving obligation of 1.5%, decreasing to 1.0% for the period 2026-2030, unless the mid-term review in 2024 concludes that the EU is not on track to meet its targets. - Long term individual actions may count for energy savings obligation. - Alternative measures are recognised as equivalent to energy efficiency obligation schemes. - Possibility of partially counting renewable energy generated on-site towards savings in the 2020-2030 period. - Obligation to take into account energy poverty when designing new measures. - Improved metering and billing provisions for the benefit of final users of heating and cooling. • Energy performance of buildings: The Council agreed its position on a proposal for a revised directive on the energy performance of buildings. The main elements are: <ul style="list-style-type: none"> - The proposal requires member states to establish long-term renovation strategies, addressing also energy poverty. It strengthens the links between energy efficiency policy and financing. - The revised directive promotes electro-mobility, by requiring at least one charging point per ten parking spaces for electric vehicles in non-residential buildings and pre-cabling for every parking space in residential buildings. These requirements will apply to buildings with more than ten parking spaces. - The introduction of a smartness indicator for buildings is proposed and the inspection of heating and air conditioning systems is simplified. - The proposal underlines the importance of aligning the Digital Single Market and the Energy Union agendas, as digitalisation of the energy system is quickly changing the energy landscape, from the integration of renewables to smart grids and smart buildings.
	<p>Next steps</p> <p>The agreements on revised directives will allow for the start of negotiations with the European Parliament.</p>

Link: [European Energy Council](#)

Key consultations from EU

What is discussed?	Insights	Link
<p>“Consultation on the list of proposed projects of common interest for Cross-Border Carbon Dioxide Transport”</p>	<p>EU seeks to collect views on the need for a Cross-Border Carbon Dioxide Transport Infrastructure (on the third list of projects proposed for the PCI label in energy infrastructure) from an EU energy policy perspective bringing together security of supply, market integration, competition and sustainability.</p> <p>Closing date: August 15th.</p>	<p><u>Link to the consultation</u></p>
<p>“Evaluation of the TEN-E regulation”</p>	<p>EU seeks to collect views on the Trans-European Networks - Energy (TEN-E) Regulation as part of a wider evaluation to assess the impact of the TEN-E regulation on Europe’s energy networks and the progress of Projects of Common Interest (PCIs), including a consideration of how the regulation might evolve in the future.</p> <p>Closing date: September 4th.</p>	<p><u>Link to the consultation</u></p>
<p>“Consultation on the mid-term evaluation of the Nuclear Decommissioning Assistance Programme”</p>	<p>EU seeks to collect views on the Nuclear Decommissioning Assistance Programme by means of a questionnaire. This public consultation is designed to support the mid-term evaluation of the Nuclear Decommissioning Assistance Programme for the 2014-2020 programming period.</p> <p>Closing date: September 29th.</p>	<p><u>Link to the consultation</u></p>

Country reporting on changes in the Policy and Regulation framework

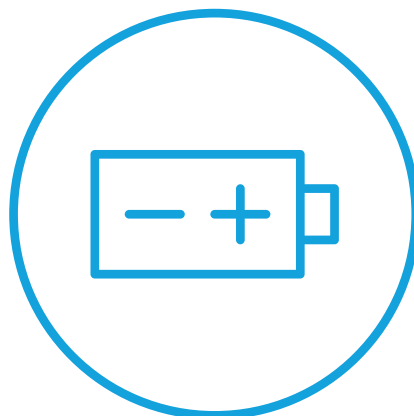
United Kingdom			
Topic	Key features	Insights	Next Steps
Embedded Generation: Modification of TNUoS charging agreement	<ul style="list-style-type: none"> Ofgem (the regulator) considers Transmission Network Utilisation Use of System (TNUoS) demand residual payments to Embedded Generation to be a “major concern” and distortion in the capacity and wholesale market, driving up consumer costs (see last Newsletter). In this context, Ofgem has proposed to reduce the payment received by small electricity generators at peak times. The current payment at £47/kW is expected to rise to £70/kW over the next four years. Ofgem has decided to introduce a phased reduction of £3/kW to £7/kW over 2018 to 2021. 	<ul style="list-style-type: none"> The new regulation is likely to reduce the competitiveness of smaller distribution system connected generators. In particular the reduction of embedded benefits is likely to make small generators less competitive in the capacity market and lead to higher capacity market clearing prices as embedded generators will not be able to bid as low as they have done before. Ofgem expects to reduce the cost to consumers with the modification of the current system. 	Final decision taken in June 2017.
Electricity Network Price controls – reductions in National Grid and distribution company allowances	<ul style="list-style-type: none"> Ofgem is proposing a reduction in National Grid’s allowance as it has voluntarily decided to defer £480 million of its allowed expenditure. National Grid was expected to use this allowance to upgrade and maintain its high voltage transmission grid but lower than expected demand meant that this expenditure was not necessary. Similarly lower than expected demand meant that a number of Distribution Network Owners (DNOs) (Western Power Distribution, Scottish Power Distribution, UK Power Networks and Scottish and Southern Electricity) did not spend as much money as previously expected on network reinforcement. Separately three distribution networks owned by Western Power Distribution and UK Power Networks canceled a number of major schemes and delivered others with lower expenditure. As a result Ofgem is proposing to reduce allowances by £132.2 million for these networks. 	<ul style="list-style-type: none"> Reduced allowances are likely to feed through into end user electricity prices of which network costs are a significant proportion. Whilst these represents potentially substantial revenue reductions for the electricity network companies this is part of the general regulatory framework for the sector and therefore these decisions are unlikely to materially affect investor confidence. 	A final decision on proposals is expected to be published at the end of September in 2017.
New protection for consumers from back-billing	<ul style="list-style-type: none"> Ofgem has proposed that suppliers will not be able to back-bill customers for energy consumed more than twelve months previously. Some suppliers currently bill consumers on the basis of estimated consumption and record the meter reading later - if the actual consumption is higher than that estimated, suppliers send consumers a catch-up bill to recover costs. In 2017 energy suppliers signed a voluntary agreement to not back-bill consumers for energy used more than twelve months previously and thereby recover all costs within a year. However, Ofgem is concerned that suppliers are not keeping their commitment and has therefore proposed to enforce back-billing protections. Additionally, Ofgem is considering whether different time-defined billing limits should apply to consumers based on the technology of meters they use. 	<ul style="list-style-type: none"> The impact of this proposal should be marginal given that the industry had already signed up to a voluntary agreement to achieve the same outcome. However, Ofgem is intervening because they did not believe that the voluntary agreement was being followed by all so this regulation may now level the playing field for suppliers by enforcing a common standard. Ofgem expects the proposal to reduce uncertainty and cost to consumers. 	Initial comments on back-billing were received by 28 April 2017. Further comments on Ofgem’s detailed proposals are to be heard in the summer of 2017.

Country reporting on changes in the Policy and Regulation framework

United Kingdom			
Topic	Key features	Insights	Next Steps
<p>Extension to the Energy Company Obligations Scheme (ECO)</p>	<ul style="list-style-type: none"> The government has extended ECO and outlined key changes to the scheme. ECO is a government initiative aimed at targeting fuel poverty and lowering carbon emissions by increasing energy efficiency. As a part of the scheme, large energy suppliers work with installers to provide energy efficient tools to consumers' homes. The scheme ran from April 2015 to the end of March 2017. The extended scheme began in April 2017 and key changes being proposed include: <ul style="list-style-type: none"> - Focusing eligibility requirements wherein more support is to be directed to lower income groups; - Granting local authorities the ability to determine households for ECO support which suppliers can use to identify up to 10% of their Affordable Warmth Obligation; - Closure of the Carbon Savings Community Obligation and maintaining a minimum level of solid wall insulation and delivery to rural areas; and - Introduction of a system of 'Deemed scores' using a simplified version of the current SAP methodology. 	<ul style="list-style-type: none"> ECO can be a complex and costly scheme to participate in as a supplier. Suppliers below a certain size threshold are no required to participate. The ECO extension is expected to obligate three new suppliers given their size. Particularly for these suppliers new to the scheme it is likely to be a substantial cost burden although their participation will have been expected and they will have had time to prepare. Separately some of the reforms to the scheme are intended to simplify the scheme to make it simpler and cheaper to participate in. As the government's main domestic energy efficiency scheme it was important that it was extended particularly given the perceived failure of an alternative programme for energy efficiency (the Green Deal) that sought to encourage home owners to invest in their own energy efficiency measures. 	<p>A consultation on this is expected to begin in the summer of 2017. The government has made a commitment to this scheme till 2022.</p>
<p>Closure of the Renewables Obligation to new applications</p>	<ul style="list-style-type: none"> The Renewables Obligation (RO) scheme – one the UK government's main support mechanisms for large-scale renewable electricity projects – has closed to new generating capacity. Large-scale renewable electricity projects are now exclusively supported by the Contracts for Difference (CfD) policy. 	<ul style="list-style-type: none"> The closure of the RO in March 2017 was announced in 2011 and has long been expected. There is currently uncertainty over future budgets for renewables support through the CfD mechanism particularly for onshore wind. The final closure of the RO may now limit the ability for new onshore wind development to be financially supported in the UK. 	<p>Scheme closed.</p>

Country reporting on changes in the Policy and Regulation framework

France			
Topic	Key features	Insights	Next Steps
Obligation to improve energy efficiency of public service and tertiary purpose buildings	<ul style="list-style-type: none"> · In 2009 the Parliament started discussion about the improvement of building energy efficiency. Nine years later the Decree has been passed. · The Decree is set in accordance with the objective of the energy transition law to reduce the final energy consumption by 20% until 2030 and 50% until 2050. · The Decree targets public service and tertiary purpose buildings having a surface larger than 2,000 sq.m (80% of total tertiary buildings) that represent about 15% of the final energy consumption in France and sets different targets in terms of energy saving: <ul style="list-style-type: none"> - 25% of savings by 2020, - 40% of savings by 2030, - 60% of savings by 2050. · To reach these targets the Decree asks different actions to buildings owners: <ul style="list-style-type: none"> - An energy efficiency audit report (to be presented in July 2017) presenting measures to satisfy the target for 2020 but also a scenario to reach 40% of saving by 2030. - Education of employees for a sustainable use of premises. - A monitoring by a public Agency. 	<ul style="list-style-type: none"> · While it appears volunteer the Decree is highly flexible: <ul style="list-style-type: none"> - If works have been performed before 2006, the target is compared before beginning of such works - If works are too expensive (€200/sq.m) or not profitable enough (breakeven on 5 for private actors and 10 years for public actors) then they are not mandatory. · Over the past years the best in class obtained a decrease in energy consumption comprised between 20% and 39%. In this respect obtaining in three years a 20% saving for all building looks critical. 	<p>The timely delivery of the audit report presenting measures to satisfy targets may be questionable since it's due on July 1st, 2017. This short notice is directly a consequence of the 9 years delay before coming to the Decree.</p>

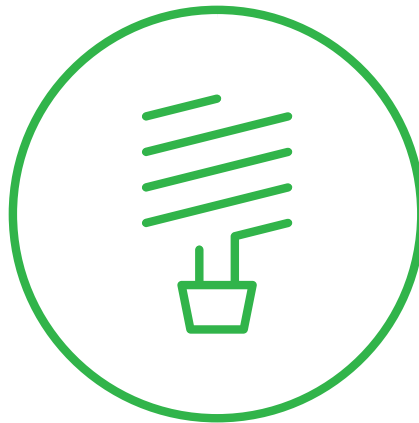


Country reporting on changes in the Policy and Regulation framework

Spain			
Topic	Key features	Insights	Next Steps
<p>New Royal Decree for remuneration of new renewable facilities based on an auction</p>	<ul style="list-style-type: none"> • Last May, a renewable facilities auction took place in Spain. (See details and rules in Q4 2016 Newsletter). As a result of the auction, there were allocated 2.979 Mw to wind facilities, 1 Mw to photovoltaic facilities and 20 Mw to other technologies. • Although there were presented a lot of bids, it was established a maximum limit of 3,000 Mw and many bids were left out of the auction. For this reason, the Spanish Government has called a new auction. • As in the previous auction, the concept auctioned is a percentage of reduction on the initial value of the investment fixed by the Spanish government. This amount will be included in the calculation of the remuneration. 	<ul style="list-style-type: none"> • Each participant will offer a reduction on the initial value of the investment according to their calculations of efficiency and profitability that they expect of each project. • The rules for the new auction are the same as those used on previous auction. The differences are: <ul style="list-style-type: none"> - Unlike previous auction in which all renewable technologies could participate, the new auction is only for wind and photovoltaic facilities. - The maximum limit values for the percentage of reduction established by the Spanish government have been incremented. • As in the previous auction, these rules benefit to the wind facilities. In case of a tie, the technologies with more operating hours (wind facilities) will be allocated. 	<p>The auction will be held on July 2017.</p> <p>The projects should be finished before 31st December 2019.</p>
<p>Renewal of the operating permit for the nuclear power plants</p>	<ul style="list-style-type: none"> • In June 2017, the Spanish government has passed the extension of the term to submit the request of renewal of the operating permit for the nuclear power plants. • According to the previous regulation, the nuclear power plants had to submit the request 3 years before the expiration date of the operating permit. Now, they have the possibility to submit the request 2 months later than the approval of the Spanish Energy and Climate Comprehensive Plan (expected for 2018), or when they have to present the Periodic Safety Review (31st March of the previous year to the expiration year) if the Plan has not yet been approved. 	<ul style="list-style-type: none"> • For example: The operating permit for “Almaraz” started on 8th June 2010 with a validity of 10 years (8th June 2020). With the previous regulation the request of the renewal had to be submitted on 8th June 2017. Now, the deadline has been extended. The request can be submitted 2 months later than the approval of the Spanish Energy and Climate Comprehensive Plan (expected for 2018) or when they have to present the Periodic Safety Review (31st March 2019). • However, the term to present the documentation associated has not been extended. The documentation has to be presented 3 years before the expiration date of the operating permit. With this documentation the Nuclear Safety Council will evaluate the continuity of the activity if the request of renewal is submitted. 	<p>The Spanish Energy and Climate Comprehensive Plan is expected for 2018.</p>

Country reporting on changes in the Policy and Regulation framework

Germany			
Topic	Key features	Insights	Next Steps
<p>Regulation on public Charging Stations</p>	<ul style="list-style-type: none"> • The Regulation on public charging stations deals with the technical requirements to be fulfilled by operators of public charging stations as regulated in the European Directive on infrastructures for alternative fuels. • The regulation was now amended with respect to: <ul style="list-style-type: none"> - the requirements to offer ad hoc charging, - exemptions for low load charging, - the definition of charging station operators. 	<ul style="list-style-type: none"> • The amendments safeguard that public charging stations operators offer ad hoc charging either by cash payment or direct payment methods, e.g. by credit card. This is for the benefit of the users, while it does not limit e-roaming use cases. It opens up all new infrastructure to any customer. • The regulation also clarifies, who is considered to be operator of the charging stations and thus bears the duties and profits from certain reliefs. This gives security to all operators, not only to those operating public stations. 	<p>The amended regulation is effective since 14 June 2017.</p>



Snapshot on surveys and publications

Deloitte

The carbon-neutral utility: Building a low-carbon economy through cleaner power – June 2017

The push toward sustainable energy has gained substantial momentum in recent years. How can various technologies being used in sustainable energy generation help power utilities navigate the potentially difficult choices involved in “greening” their output?

[Link to the survey](#)

Drivers of digital disruption - The utilities sector mega trends – June 2017

The Internet of Things is beginning to transform the Energy and Utilities sector, with customers, employees and assets all becoming increasingly connected.

[Link to the survey](#)

Choose, aggregate, transact: Increasing options for electricity customers – May 2017

Renewable energy demand is driving utility business model change: Demand for renewable energy and increasing penetration of distributed energy resources is transforming the industry. Utility business models are changing in response to this new paradigm.

[Link to the survey](#)

Role of Blockchain in the Energy and Resources Industry – April 2017

Blockchain revolution has gone beyond the financial services industry and is evolving as the next game changer for many businesses across many sectors. The documents brief on how Blockchain could impact the energy and resources industry.

[Link to the survey](#)

Agencies or research institutes

International Energy Agency

Tracking Clean Energy Progress 2017– June 2017

The report highlights the overall status and recent progress in developing and deploying key clean-energy technologies. It brings together broad IEA expertise, integrating several analysis.

[Link to the survey](#)

Energy Technology Perspectives – 2017

This year’s edition of the International Energy Agency (IEA)’s comprehensive publication on energy technology focuses on the opportunities and challenges of scaling and accelerating the deployment of clean energy technologies. This includes looking at more ambitious scenarios than the IEA has produced before.

[Link to the survey](#)

Status of Power System Transformation – 2017

This report informs stakeholders of the dynamic changes that are occurring in power systems around the world and provide insight into measures that can help to overcome new challenges.

[Link to the survey](#)

European Commission

Sustainable and optimal use of biomass for energy in the EU beyond 2020 – June 2017

This study provides an analysis of biomass supply potentials for energy use in the EU, projections of EU bioenergy demand post-2020, and an impact assessment of possible EU policy options for bioenergy sustainability post-2020, with a focus on biomass for heat and power.

[Link to the survey](#)

Report on the first results of H2020 projects on energy efficiency and system integration – May 2017

The study analyses the initial results from Horizon 2020 projects in four areas: Energy Efficiency, Low Carbon Energy (grids and storage), Low Carbon Energy Renewable Energy System Market Uptake and Smart Cities and Communities. It comes in support to the Interim Evaluation of H2020 and the midterm review of the Multiannual Financial Framework.

[Link to the survey](#)

Mapping of the current EU clean energy finance landscape – April 2017

The main goal of this report is to map and explain the sources of finance and corresponding clean energy investment opportunities that are interacting in the EU's clean energy finance landscape. Suggestions on how to usefully incorporate such findings in existing macro-economic models are then provided.

[Link to the survey](#)

Case study – Energy Resilience and Vulnerability in the EU and Other Global Regions – April 2017

This case study examines the resilience of the EU economy to energy supply shocks and provides comparisons with six other global regions. Trends in the EU and other global regions are reviewed for key indicators that measure aspects of resilience to energy supply shocks. The case study then proceeds to present the results of new econometric analysis of the degree of substitutability between energy and other production factors across EU sectors.

[Link to the survey](#)

Eurelectric

Eurelectric position paper on Energy Poverty – May 2017

A number of experts report that “energy poverty is an extensive and increasing problem”. They generally refer to people having difficulty paying their energy bills and/or adequately heating/cooling their homes. Quantifying “energy poverty” at EU level is however very complex as it is a multifaceted issue and data are not comparable from a country to another.

[Link to the survey](#)

Electrification report : a bright future for Europe – the value of Electricity in Decarbonising the European Union – April 2017

This report makes it clear that electricity from carbon-neutral generation is the cleanest energy carrier, making electricity the main vector for a decarbonized energy future in Europe. The value proposition of electricity in European societies today is magnified by the fact that this sectors can benefit from the electricity sectors clear commitment and trajectory towards carbon neutrality.

[Link to the survey](#)

European Commission’s proposal for a regulation on the internal market for electricity – April 2017

In this report, Eurelectric supports the overarching legal coverage provided by the electricity regulation to further integrate wholesale market. Liquid and well-functioning wholesale markets where prices reflect the actual system situation will sustain RES integration, decentralized generation and empower consumers.

[Link to the survey](#)

Oxford institute for Energy

The Decarbonised Electricity System of the Future : the “Two Market” Approach – June 2017

This paper suggests to create separate markets for different sorts of power at both producer and consumer ends: “on demand” or “as available” power. Consumers would be able to select the type of power, for a better optimization of resources.

[Link to the survey](#)

Future European Gas Transmission Bottlenecks in Differing Supply and Demand scenarios – June 2017

Projecting forward to 2030 this paper, using the EWI TIGER model, looks at how bottlenecks may change under two scenarios based on high and low cases for LNG and Russian pipeline gas imports respectively, in the context of modest European gas demand growth. Bottlenecks are examined both in terms of LNG and pipeline import capacity at the European border and at critical interconnector points within Europe.

[Link to the survey](#)

Global Trends in Oil and Energy: Implications for the GCC and Foreign Policy Responses– June 2017

This paper examines how global energy markets are evolving, what this could mean for Gulf oil exporters, and how these countries could respond. It identified ten structural trends that are expected to be largely responsible for shaping global energy markets over the next two decades and analysing their implication on Gulf exporters.

[Link to the survey](#)

European traded gas hubs: an updated analysis on liquidity, maturity and barriers to market integration – May 2017

This Energy Insight provides an analysis on the maturity and development of European traded gas hubs, including both longer-term established hubs and recently emerging ones, both from a liquidity and price perspective, in order to come to an overall assessment of the policy goal of achieving a Single Energy Market for natural gas in Europe. This Insight offers an update on both hub liquidity development and hub price metrics to the end of 2016.

[Link to the survey](#)

Natural gas demand in Europe in the next 5-10 years – May 2017

In this presentation, the author argues that even if gas demand growth in 2015 and 2016 may not necessarily be signs of recovery, the next 5-10 years will/could be different from the longer term 'future of gas' debate in Europe. The presentation concludes that now is the time to make the arguments of the immediate benefits of natural gas, but at the same time, there will not be 'one scenario fits all' and specific factors need to be considered for each country.

[Link to the survey](#)

European Gas Pricing Dynamics – May 2017

This paper argues that the Dutch TTF is now the most liquid hub in Europe (in front of the UK NBP). He also analyses the dynamics of the new Groningen cap, US LNG and record Russian flows. The presentation concludes with a focus on the potential impacts of Brexit on policy and infrastructure.

[Link to the survey](#)

Does the Portfolio Business Model Spell the End of Long-Term Oil-Indexed LNG Contracts? – April 2017

The paper argues that, despite the challenging period to 2021 with a soft market or 'glut' of LNG, the majors amongst the portfolio players are well placed for the next wave of new supply projects in the mid 2020s, due to the synergies from existing positions, advantaged cost of debt and more flexible contracting/sales and pricing strategies.

[Link to the survey](#)

Managing Electricity Decarbonisation: learning from experience – the cases of the UK and Spain– April 2017

The background of the article is that the EU is aiming for an Energy Union; member states have common targets. So it might be expected that member states would all have very similar measures in place. In fact, there are huge differences between countries. This study compares the approaches in Spain and the UK in order to understand what works best and what lessons can be learned from their experience.

[Link to the survey](#)

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