



COMMISSION
DE RÉGULATION
DE L'ÉNERGIE

SURVEILLANCE

REPORT 2019

Functioning of the
wholesale electricity
and natural gas
markets

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MESSAGE FROM THE PRESIDENT OF THE CRE

Market surveillance: A fast-expanding mission for the CRE

Since its inception in 2000, the CRE ensures proper functioning of the electricity and gas markets in the interest of consumers, in compliance with energy policy goals set by the government and within European rules. Trust among the operators and more widely, the energy sector stakeholders, remains the basis for this market to operate efficiently. Indeed, efficient, transparent markets should result in fair prices for consumers and producers. They should also optimise the use of the electricity production capacity and resources, while stimulating innovation. Yet, energy markets have grown and become increasingly complex over the last two decades, especially when creating the internal energy market, to which the CRE makes an active contribution. As such, the CRE's market surveillance mission is hugely important, to help build this trust by ensuring that prices are established in fair and transparent conditions.

The CRE was given the legislative powers for market surveillance in 2006. Since 2011 this task has been conducted as part of REMIT, the European regulation on wholesale energy market integrity and transparency. Over the years, wholesale market surveillance has grown, with sanction decisions taken by the CRE's Dispute Settlement and Sanctions Committee (CoRDs) for breaches or violations of REMIT, in 2018 and 2019.

In 2019, the CRE created a new directorate dedicated to wholesale markets surveillance, in order to boost its performance. At the time of publication of the present market surveillance report, the CRE is investigating 9 open cases under the REMIT regulation, with some thirty cases subject to ongoing in-depth analysis.

This 13th edition of the annual CRE surveillance report for wholesale electricity and natural gas markets concerns the year 2019. It reflects the CRE's expanded market surveillance role. The surveillance report was expanded in 2018 to include the capacity mechanism and this year also focuses on balancing markets.

Technically, there were no disruptions to wholesale electricity and gas markets in 2019, apart from one incident that affected a daily electricity market auction, in June. As such, the markets effectively matched supply with demand.

For gas, 2019 was a year of lower prices. A European index of gas prices is emerging and becomes significant in the global LNG market. Price differences in key European markets remained very low. The creation of the single market zone in 2018 reinforced the importance of the French gas market, in the context of a dynamic European market with.

Regarding electricity, wholesale prices dipped in 2019 after rising steeply in 2018. European markets are increasingly interconnected but specific national characteristics, particularly the generation mix, continue to play a key role in the price formation.

Wholesale markets surveillance is a national and European challenge. The CRE has been keenly involved in working jointly with ACER and other national regulatory authorities. It wants to play a driving role to develop and harmonize market surveillance methods, while disseminating good practice to market participants.

While unprecedented lockdown measures were taken in early 2020 to combat the COVID 19 pandemic, the energy markets continued to operate non-stop, confirming just how robust they are. The effects of lockdown measures on energy prices were intense for all market timeframes. Meanwhile, the CRE pursued its surveillance tasks during this extraordinary period. It pays special attention to ensure transparent and seamless communication with the market on the state of electricity generation assets.

Wholesale electricity and gas prices play a key role in the energy sector economy. French society must have trust in the way markets operate regardless of whether prices are falling (as in 2019) or rising. This is therefore how the CRE perceives its surveillance task, to dissuade any abusive behaviour and subsequently build that trust.

Jean-François CARENCO,
President of the CRE

SUMMARY

The CRE ensures proper functioning of the wholesale energy markets by scrutinising market participants' operations, comparing them with all information sources at its disposal and cooperating closely with ACER and other European regulators.

The extent of the CRE's surveillance role within the REMIT regulation covers 942,000 transactions made in 2019 in the wholesale energy market, equivalent to 1,640 TWh traded, valued at more than €57 bn. Some thirty cases are currently subject to in-depth analysis.

The CRE has also opened 9 investigations under the REMIT regulation up to the date of release of this report.

Of these investigations, one case has been closed as it lapsed due to CoRDIS being unable to exercise its powers to impose sanctions, while another was closed as the practices assessed in the investigation took place before French Parliamentary Act 2013-312 of 15 April 2013 came into force and gave CoRDIS the power to sanction these types of breaches. Finally, CoRDIS is currently examining two cases while two others have been closed following its decision to apply sanctions.

In particular, one of these investigations referred to CoRDIS by the President of the CRE, resulted in CoRDIS issuing BP Gas Marketing Limited with a penalty¹ of 1 million euros in December 2019. This was the second decision taken by CoRDIS imposing a sanction under the REMIT regulation.

Investigation is still ongoing on the three remaining cases. The President of the CRE has issued a formal notice for one of these investigations, in accordance with Article L.134-29 of the French energy code.

The CRE also checks that persons professionally arranging transactions (PPAT)² comply to the obligations they must follow in accordance with of Article 15 of the REMIT regulation. The CRE considers surveillance activities undertaken by the PPATs to be of uttermost importance and strives to continually work with them. Existing cooperation arrangements with RTE, EPEX SPOT and Powernext continue on a regular basis, with productive exchanges. In 2019, the Nord Pool exchange started its operation in France and the CRE expects to have the same quality of dialogue with this company as it does with EPEX SPOT. The CRE is also in the process of fostering relations with French-based brokers operating in wholesale energy markets but also with gas network and storage operators in France.

During 2019, the CRE challenged the main companies producing and trading electricity, to ensure their systems and internal procedures complied with Articles 3 and 4 of the REMIT regulation (mandatory requirement to publish inside information and prohibition on insider trading). The responses received highlight procedures that govern the disclosure of inside information in the companies concerned. Several companies use a power threshold to qualify data as inside information, a criterion that is nevertheless not provided for in the REMIT regulation. The CRE intends to consider this matter, to assess the relevance of a power threshold for the French electricity market. Nevertheless, at this stage, the CRE notes that the four cumulative criteria provided for in Article 2(1) of the REMIT regulation must be analysed by market participants on a case-by-case basis to qualify data as inside information under REMIT.

In addition to this procedural scrutiny governing the disclosure and publication of inside information, the CRE has also checked the timeline of the publication of inside information by market participants. A certain number of publication delays greater than one hour (the maximum period recommended in section 7 of ACER guidelines for publishing inside information) were observed. The CRE contacted all concerned market participants to assess the circumstances resulting in these publication delays.

The year 2019 also witnessed the introduction of a cooperation initiative with other French independent administrative authorities. Several working groups were organised to discuss the subject of implementing general but also "enhanced" investigatory powers involving site visits and seizures. This dialogue with independent administrative authorities enables the CRE to scrutinise its practices, to innovate and, where appropriate, harvest synergies regarding investigatory powers, especially for "enhanced" powers, not yet introduced by the CRE at this time.

The CRE has long been committed to having a standardised set of rules and common practices in the European Union. As such, it plays an active role in European working groups and forums concerning REMIT, working closely with ACER, other European Union Members State energy regulators, as well as the financial and competition authorities. The CRE attaches great importance to progressing this work at the European level.

The European initiatives coordinated by ACER aiming at a common approach to implement the REMIT regulation have resulted in the publication of three sets of thematic guidance on practices likely to constitute market manipulation under Article 5 of the REMIT regulation. The manipulative practices targeted are "Wash Trade", transmission capacity blockage or "capacity hoarding" on the intraday electricity market, together with "layering" and "spoofing"

¹ CRE press release: <https://www.cre.fr/Documents/Presse/Communiqués-de-presse/le-cordis-sanctionne-la-societe-bp-gas-marketing-limitee-pour-manquement-au-reglement-remit-sur-le-marche-de-gros-du-gaz>

² PPAT: *Persons Professionally Arranging Transactions*.

on continuous wholesale markets. Furthermore, several amendments were made in 2019 to the general guidelines on applying the REMIT regulation, resulting in ACER publishing its fifth edition. The guideline amendments fell into two categories: (i) guidelines to manage inside information concerning details to describe inside information and "effective" publishing of this information, (ii) guidelines for additional indications on the practice of capacity hoarding that could constitute market manipulation.

The CRE also helped prepare the CEER response to the ESMA public consultation on the effect of maximum position limits in commodity derivatives. In this consultation, ESMA surveyed the market on the need to challenge the "REMIT C(6) *carve out*" exemption. This ultimately excludes physically delivered wholesale futures energy products traded using a multilateral trading system (*Organised Trading Facility* or OTF) from the list of financial instruments. The REMIT regulation therefore applies to these wholesale energy products. The CRE fully supports CEER's position about the need to maintain this exemption on operational characteristics in the gas and electricity markets. These also have their own specific regulations to combat market abuse and ensure transparency, in the form of the REMIT regulation. Given the responses to the public consultation, ESMA finally chose not to propose changes to the regulation.

Data management

The quality of transactional and fundamental data is vital to conduct wholesale market surveillance. As a result, the CRE is closely involved in ACER's efforts on the matter. Several meetings and round table discussions to improve data reporting were held in 2019 with the reporting parties, market participants, energy exchanges and transmission systems operators, etc., together with ACER and European regulators, including the CRE. These discussions facilitated a review on updates and additional clarifications to the various REMIT documents, concerning data formats and ACER declaration procedures. The updated documents were published on 30 June 2020. The CRE continues to take part in data completeness and quality tests.

As long as these tasks are not concluded, the CRE wishes to maintain the national data collection arrangements with organised market places (energy exchanges and brokers) to avoid any discontinuity in data coming under CRE surveillance operations.

Technical incidents at energy exchanges

The past year saw technical incidents experienced by EPEX SPOT and Nord Pool on 7 June 2019 and 4 February 2020, during the day-ahead multi-regional coupling process. These were the first serious incidents since coupling was introduced in 2009. The energy exchanges have released detailed incident reports and made corrections to their systems. Nevertheless, the occurrence of two unprecedented events in the space of a few months leads the CRE to adopt a cautious approach and to assist market operators and RTE to improve existing processes.

The United Kingdom's exit from the European Union is resulting in a transition period

The exit of the United Kingdom from the European Union took effect on 31 January 2020. However, until 31 December 2020, European rules, including the REMIT regulation, will still apply as a transitional measure. Looking ahead to the end of this transition period, the CRE would like to remind market participants about documents published by ACER³ and the British regulator, OFGEM⁴ to re-register market participants.

Falling commodity prices and mild weather in 2019

2019 saw a sharp fall in the prices for most commodities, a trend that began in the last quarter of 2018. Prices for gas, coal and electricity have been on a marked downward trend throughout the year, while oil and CO₂ bucked the trend. More precisely, oil prices for Brent crude rose again after collapsing in late 2018. However, the price in 2019 is still 9% less than the average for the previous year. The carbon allowance price continued to rise in 2019, averaging €24.8/tCO₂.

Weather-wise, 2019 was warmer than normal, making it the 3rd hottest year on record since the start of the 20th century, after 2014 and 2018.

This general context also applies to changes in electricity and gas wholesale prices.

³ <https://documents.acer-remit.eu/category/all-documents/>

⁴ <https://www.ofgem.gov.uk/about-us/ofgem-and-europe/preparing-eu-exit>

Electricity wholesale markets: A downward trend influenced by low commodity prices despite low nuclear and hydro power availability

Electricity prices in France and Europe dropped in 2019, amid falling commodity prices, such as for gas and coal.

After a year of recovery, French electricity production in 2019 fell from 548.6 to 537.7 TWh, down 2% compared to 2018. The nuclear and hydro power generation were lower due to their low availability in 2019. This generation shortfall was offset by greater demand from gas-fired power stations. Apart from hydro power, production from renewable energy sources rose by 15%, matching, in particular, growth in installed capacity.

The average baseload spot price for the year 2019 fell sharply before rallying at €39.4 MWh, a 21.5% drop compared to 2018 (€50.2 MWh). Intraday prices also settled at around €39.4/MWh and matched the drop in baseload spot prices. Similarly, the peakload spot product price fell (by 28%) to reach €42.6 MWh.

The price of calendar products in France and Europe fell throughout the year. On average, in 2019, the Y+1 France calendar futures price was roughly €50.9/MWh before ending the year at €44.1 MWh.

In these conditions, the ARENH volume requested for 2020 in the 2019 gates, was 29.2 TWh to cover system operator losses and 147 TWh for end customers. ARENH was competitive due to the rise in calendar prices, which largely exceeded €42/MWh.

Volumes traded on futures electricity markets were lower than for 2018. This was mainly due to a rise in ARENH demand which substituted for purchases made on the wholesale market. Intraday product volumes continued to grow, by more than 27% compared to 2018.

Electricity balancing markets: A key topic

Balancing markets feature a multitude of traded products as well as the special position of RTE as the sole buyer on most of these markets. In 2019, balancing capacities subject to market mechanisms were frequency containment reserves contracted via weekly calls for tender issued in 6 countries, switching to daily tenders on ¹ July 2019, and frequency restoration reserves with manual activation contracted by RTE through annual calls for tenders. Frequency containment and restoration reserves are also subject to privately agreed exchanges. Frequency restoration reserves with manual activation are activated by a specific market called the adjustment mechanism.

Balancing markets will undergo significant changes in 2020 and 2021, particularly as part of European integration of balancing markets, aiming at a complete rollout of market mechanisms for balancing and increased balancing energy exchanges between European countries.

The CRE stepped up its surveillance of the adjustment mechanism in 2019 and, in particular, pinpointed anomalies between adjustment orders issued by RTE for Swiss-based balancing units and cross-border capacity nominations made at the French-Swiss border by the relevant balancing service providers. These inconsistencies can result in a less efficient use of interconnections and can affect wholesale electricity prices. The CRE sent a request for information for surveillance purposes to the concerned balancing service providers to study the circumstances that led them to nominate capacity in a way that appeared to be inconsistent with the activation orders issued by RTE.

Capacity market: Changes to mechanism operating rules in 2019

To close the European Commission in-depth investigation on the capacity mechanism, opened in 2016, France pledged to allow the participation of foreign capacity and to create a multiannual contract scheme for new capacity. These new procedures were actually introduced in 2019.

Furthermore, following consideration given to the functioning of the mechanism in 2018, the settlement price for differences is now defined as the price disclosed by the last auction on organised trading platforms preceding the year of delivery.

Six capacity auctions took place on the EPEX SPOT market in 2019 for delivery year 2020, as well as one for delivery year 2018 and another for 2019. To date, two auctions have been held in 2020 for delivery year 2021, as well as one for delivery year 2022 and another for delivery year 2017, which was the first to complete the auction cycle.

Auctions held in 2019 for delivery year 2020 showed a significant rise in capacity guarantee prices at the first four auctions. The auction on 27 June 2019 reached a record-breaking price of €22,382/MW since the mechanism came into operation. Although prices did eventually fall back. The auction held on 12 December 2019 for delivery year 2020 was the first to combine the inclusion of interconnections and the new definition for the price used to financially settle differences. This auction set a price of €16,584/MW for a traded volume of 9.49 GW of capacity

guarantees. In total, the average auction price taken by the CRE to calculate regulated tariffs, excluding the ARENH rationing effect⁵, amounted to €19,458/MW compared to €17,365/MW for the previous year.

More specifically, when adding interconnections in late 2019, RTE was unable to sign agreements with foreign TSOs, so the simplified procedure (exclusive participation of interconnection operators) was applied to all borders and to all currently open delivery years (until delivery year 2022). As interconnection operator, RTE subsequently received all capacity guarantees for cross-border contributions for delivery years 2019 and 2020 (6,319 MW and 6,500 MW respectively). RTE sold 2019 and 2020 capacity guarantees at the auctions held on 16 May 2019 and 12 December 2019, respectively. Although RTE did not secure any income from the sale of its capacity guarantees for 2019, it did receive approximately €100 m from those of 2020. The associated income was returned to the public electricity network users via changes to annual public electricity network user tariffs ("TURPE").

The first auctions for the multiannual contract scheme were held in late 2019 in the form of calls for long-term tenders. The Minister for energy launched four calls for long-term tenders for the periods 2020-2026, 2021-2027, 2022-2028, 2023-2029 with a deadline of 12 December 2019. Only those calls to tender for the periods 2021-2027 and 2022-2027 were successfully awarded, for volumes of 151.1 MW and 225.7 MW respectively. The guaranteed prices for the successful bidders were €29,000/MW and €28,000/MW respectively. The bids selected from the two calls to tender were for battery storage and load-shedding only.

The capacity mechanism has been subject to numerous audits and consultations since it was launched. This work, in particular that undertaken in 2018 and 2019, provided greater flexibility in the mechanism and helped introduce specific corrections. There were no particular difficulties in 2019 and based on current information, the CRE considers that the price formation was fair for this year.

Nevertheless, the CRE reiterates its earlier view from last year that the current design of this market make it very difficult to monitor. In particular, the existence of several auctions with the same deadline, imposed by the European Commission, make it impossible to guarantee that supply meets demand at each auction. As a result, some capacity operators take part in auctions by using a floor priced offers whereas the vast majority of capacities have zero "missing money". This behaviour is understandable when there is a partial demand at each auction, to avoid auctions systematically giving a zero price. That said, although there have been no obvious failings in the year 2019, it is difficult to guarantee that these price formation conditions on the capacity mechanism truly reflect the reality of supply and demand. Furthermore, aside from the issue of the way the capacity market currently operates, the CRE intends pursuing its audits targeting the effects this market has on the creation of new production and storage capacity, where the emergence of new flexibilities (load shedding) will a challenge to the overall operation of the energy system, especially given uncertainties for winter 2020.

The CRE is therefore satisfied that RTE has taken the initiative to organise feedback exercises to assess the system and inform debate on any necessary changes. Discussions began in the first half of 2020, with the aim of RTE issuing its findings in September 2020.

Tight supply in nuclear electricity makes it more vital than ever to monitor this mechanism.

Wholesale gas markets: Price convergence in Europe, falling prices, rising inflows of LNG and higher transits for export

Quantities of gas transported in France rose by 40 TWh compared to 2018, to reach 740 TWh, thereby putting considerable pressure on the use of French gas infrastructures. While figures for injections and withdrawals from storage facilities remain relatively stable, LNG imports rose by more than 100 TWh while pipeline imports dropped by 67 TWh. This LNG found a market, with a 65% rise in exports to Spain, Italy and including Switzerland, compared to the previous year. Consumption rose by 2%, with contrasting pictures. Consumption connected to the distribution network remains stable while that for the transmission system rose by 5% due to increased electricity production from gas.

French spot prices for natural gas settled at an average of €13.6/MWh compared to €22.8/MWh last year, i.e., a drop of 41%. These prices reflect a volatile supply situation in Europe, high storage levels and oversupply in the market. Prices from the main gas hubs are converging well. For example, the average TTF price was €13.6/MWh.

Futures prices followed a very similar pattern due, in particular, to growth in LNG production and a drop in demand from Asia. Europe fully benefited from its liquid and deep market with a globally significant reference price that made LNG deliveries the obvious choice. As such, the calendar price for delivery in France in 2020, settled at an average of €18.2/MWh, a drop of €1/MWh compared to 2018, and ended the year at €13.5/MWh. The year closed with futures prices in *backwardation*, confirming the market's confidence in short-term gas supplies in Europe.

⁵ Where appropriate, the cost of capacity supply in the regulated tariffs includes capacity guarantees contained in ARENH. The average cost of capacity considered in regulated tariffs amounted to €3.1/MWh in 2019 and €3.5/MWh in 2020.

July 2020

The rise in LNG supplies and the flexibility provided by the French single market zone meant that the volumes traded on futures markets rose by 9%, to reach 738 TWh. By contrast, *spot* volumes traded on intermediated markets fell by 13%.

The rise in trade, especially flows to Spain, coupled with heavy demands on storage facilities, created network congestion that led to activate the locational *spread* mechanism 44 times. The CRE took measures to limit the number of activations by seeking to limit firm injection capacity in storage facilities to a level enabling them to be completely filled during the summer gas season while complying with transport capacities in the transmission system.

This report concerns data for the 2019 calendar year. Where appropriate, the key events from surveillance activities during the first few months of the year 2020 are also given.

The CRE and REMIT: Market surveillance, a European concern

The French Energy Regulatory Commission (CRE) has been tasked with monitoring the French wholesale electricity and natural gas markets since 2006. Each year, it publishes a surveillance report on French wholesale electricity and natural gas market operations, as well as its wholesale market quarterly reports.

Since 28 December 2011, the CRE's role in monitoring the wholesale energy markets has been subject to European regulation 1227/2011 of the European Parliament and of the Council of 25 October 2011 on the wholesale energy market integrity and transparency (REMIT).

In accordance with the provisions of Article L. 131-2 of the French energy code, the CRE monitors the wholesale electricity and natural gas markets and upholds, compliance, in particular, with Articles 3, 4, 5, 8, 9 and 15 of the REMIT regulation.

As such, the CRE pays special attention to the provisions ensuring wholesale energy market integrity and transparency by:

- prohibiting market manipulations and insider trading (Articles 3 and 5);
- requiring market participants to disclose any inside information at their disposal (Article 4).

The CRE also strives to ensure that persons professionally arranging transactions (PPAT)⁶ comply with their obligations to detect and declare suspicious insider trading or market manipulations pertaining to Article 15 of the REMIT regulation.

Finally, the application of specific articles of the REMIT regulation has been extended to the French capacity guarantees market. In application of Article L.131-2 of the French energy code, the CRE ensures compliance with the prohibition of insider trading (Article 3), the obligation to disclose all inside information (Article 4) and the ban on market manipulation (Article 5) relating to the capacity liability mechanism.

Since ¹ September 2019, a dedicated directorate within the CRE manages the operational implementation of the REMIT regulation. The Wholesale Market Surveillance Directorate is split into two departments: The Wholesale Market Analysis and Surveillance Tools Department (DAOS) and the Advanced Surveillance and Investigations Department (DSAE).

At European level, the implementation of the REMIT regulation is governed by provisions in Article 16 of the REMIT regulation which provides, in particular, for cooperation between ACER, the European Securities and Markets Authority (ESMA), other European Union Members State energy regulators, as well as the financial and competition authorities.

⁶ PPAT: *Persons Professionally Arranging Transactions*.

The CRE's activities in 2019 as part of its surveillance role



942,000 transactions

1,640 TWh traded

More than €57 bn in traded value

29 requests

for information

360 alerts received from ACER since October 2017



Some thirty cases currently being audited for surveillance purposes

1,412 market participants registered with the CRE



4 Chairs and Co-Chairs

of European REMIT working groups



3 ongoing investigations

1 investigation referred to CoRDIS

A 2nd sanction by CoRDIS in accordance with REMIT - €1 m

The French wholesale market in 2019

Electricity price



€39.4/MWh average spot prices, i.e. 35% less from the start to the end of 2019

€50.9/MWh average futures prices, i.e. 15% less from the start to the end of 2019

Natural gas price



13,6 €/MWh average spot prices, i.e. 47% less from the start to the end of 2019

€18.2/MWh average futures prices, i.e. 17% less from the start to the end of 2019

SECTION 1

CRE WHOLESALE MARKET SURVEILLANCE

1. IMPLEMENTATION OF THE REMIT REGULATION AS PART OF THE CRE'S SURVEILLANCE ROLE

The CRE carries out its surveillance mission through a cross-cutting appraisal of wholesale markets. This seeks to both analyse the effect of current events in the energy sector and detect unusual behaviour among market participants that could constitute suspicions of non-compliance with the REMIT regulation.

In application of the energy code, the CRE monitors, in particular, operations undertaken on the wholesale electricity, natural gas and capacity guarantees markets. In this context, it detects any unusual events or behaviour that could constitute a breach of the REMIT regulation.

The quality of transactional and fundamental data is essential to conduct the CRE's surveillance mission and, in general, for the monitoring of wholesale energy markets.

Having been responsible for monitoring wholesale markets for several years, CRE has set up various channels for collecting information from energy exchanges, brokers, grid operators, storage operators, as well as key market participants and specialist energy sector data providers. Since 2016, CRE's information sources have been supplemented by data collected by ACER at the European level.

In 2019, the scope monitored by CRE within the framework of REMIT represented 942,000 transactions on wholesale energy markets, i.e. the equivalent of 1,640 TWh traded, worth more than €57 bn. The CRE made 29 requests for information from market participants.

During 2019, CRE received 177 alerts from ACER regarding potentially suspicious behaviour from a total of 360 alerts received between October 2017 and the end of 2019. The CRE is currently conducting some thirty cases analyses of suspicious behaviour detected by other sources than ACER alerts. One investigation was opened in 2019 following one of these analyses.

1.1. Statistics by source of detection of potentially suspicious behaviours

CRE's surveillance activities are based on *ex-post* detection of potentially suspicious behaviour, either through internal detection tools or from disclosures sent by external parties.

Internal detection is based on surveillance tools designed to ensure the conjunctural monitoring of markets but also detection tools intended to monitor specific market segments and patterns of behaviour, as well as focusing on the given behaviour of certain market participants.

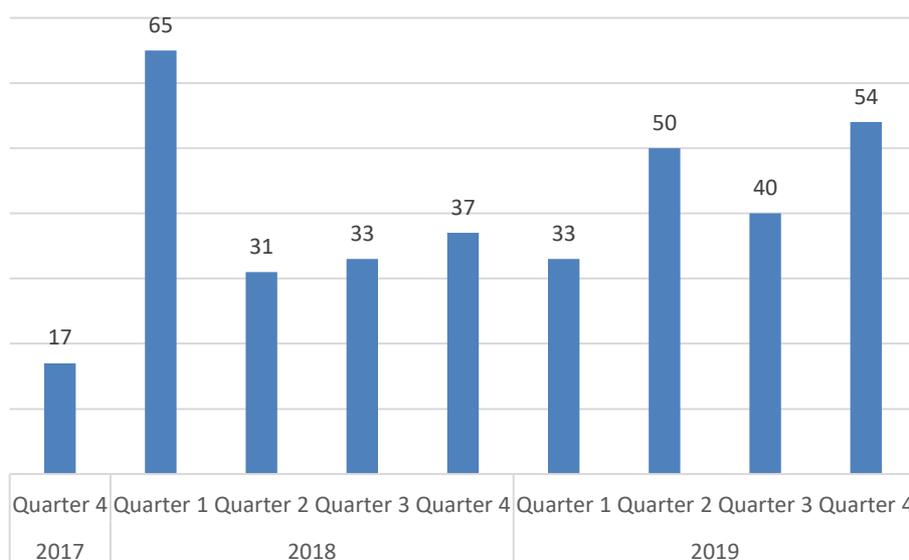
External detection relies on the reporting of suspicions from various sources. Firstly, as part of Article 15 of the REMIT regulation, PPATs must immediately alert the national regulation authority if they have reasons to suspect that a transaction could infringe Article 3 and 5 of the REMIT regulation. The CRE emphasises the value of this mission, as PPATs are an important source of information as the organisers of trading operations on their platforms⁷.

ACER also reports suspicious cases that it detects, as well as alerts issued by its automatic internal detection systems. On this latter, since the end of 2017, ACER has been sending alerts to national regulators on a monthly basis, pointing out transactions that it deems suspect. These alerts help identify unusual transactions, the analysis of which can lead to an in-depth analysis and possibly an investigation.

The surveillance platform currently being developed by ACER has generated more than 360 alerts of potentially suspicious behaviour, sent to the CRE from October 2017 to the end of 2019 (Graph 1). Some of these alerts are exclusively related to the French market, under the responsibility of the CRE, while others relate to cross-border products and therefore other regulators.

⁷ Currently, PPATs identified for their involvement in French markets are: EPEX SPOT, EEX, Nord Pool, TP ICAP, Griffin, Aurel BGC, HPC and RTE. The analysis to determine the possible PPAT qualification of the gas network and storage operators in France, GRTgaz, Teréga and Storengy, is in progress.

Graph 1: Changes in the number of alerts received by the CRE from ACER



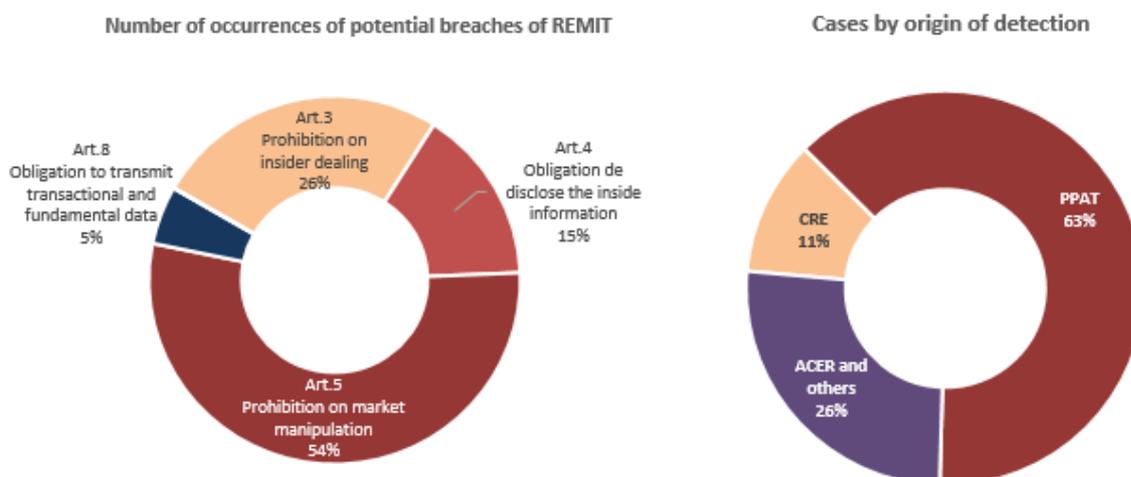
Source: CRE

Similarly, other regulatory authorities, whether in France or in other countries, send to the CRE information about potentially suspicious behaviour.

The CRE also receives information about suspicious behaviour from market participants. The CRE encourages this scrutiny and wishes to remind all individuals who suspect a breach of the REMIT regulation that they can report their concerns anonymously, if they wish, to the following e-mail address surveillance@cre.fr or to the dedicated European notification platform⁸. Suspicious behaviour detected, either internally by the CRE or externally, is analysed to ensure that the suspicion is reasonable. In addition to detailed analyses these cases; the CRE also scrutinises unusual market events or the specific behaviour of certain market participants. On the date the present report was published, the CRE is currently conducting in-depth analysis on some thirty cases, in addition to scrutinising ACER alerts. Apart from one case, seven inspections were closed in 2019 without opening an investigation.

Suspicious about REMIT regulation breaches that have been analysed mostly concern suspected breaches of Articles 3 and 5 (prohibition on insider trading and market manipulation) respectively in 26% and 54% of cases.

Graph 2: Breakdown of surveillance cases under in-depth analysis (excluding analyses of cases arising from ACER automated alerts)



Source: CRE

1.2. Surveillance of practices related to the management of privileged information

⁸ <https://www.acer-remit.eu/np/home>.



Pursuant to Articles 3 and 4 of the REMIT regulation, all market participants must disclose any inside information they hold on a wholesale energy product (Article 4) and is prohibited from communicating or using them to acquire or sell wholesale energy products featured in this information (REMIT regulation, Article 3, banning insider trading).

To prevent insider trading, in its deliberation 2018-073 of 22 March 2018⁹, the CRE recommended "*to those participants concerned, especially groups with both electricity or gas production activities or infrastructure and trading activities, to implement relevant control procedures for the circulation and use of insider information (establishment of insider lists, setting up of appropriate mechanisms, such as 'Chinese walls', in terms of processes or installations, ...)*".

As such, during 2019, the CRE interviewed the main entities with both power generation and trading activities, to ensure their systems and internal procedures complied with the provisions of Articles 3 and 4 of the REMIT regulation.

The analysis of responses received and documents provided by the market players interviewed, revealed that market players with facilities of more than 100 MW have internal procedures designed to comply with REMIT regulation and CRE's recommendations. These procedures aim, in particular, to control the circulation of information that could be qualified as "inside information" in application of Article 2(1) of the REMIT regulation before they can be published, to prevent any insider trading in those organisations.

The CRE has also noted that certain market participants with dispersed production plants containing facilities with individual installed capacities of less than 100 MW, have not yet implemented rigorous procedures to restrict the circulation and disclosure of potential inside information, or prevent insider trading. Indeed, those market participants have considered that information relating to the unavailability or variation in the availability of an installation with a capacity of less than 100 MW does not constitute inside information pursuant to Article 2(1) of the REMIT regulation.

The CRE is aware of the difficulties expressed by some market participants related to the application in practice of four cumulative criteria of the REMIT regulation, when qualifying information as inside information. In view of the fact that market players use the criterion of minimum power of unavailability, CRE plans to review the relevance of this criterion for the French market and its compatibility with criteria established by the REMIT regulation.

The CRE therefore wishes to emphasise that, to date, production capacity volume is not an appropriate criteria for qualifying information as privileged. In these circumstances, the CRE defines inside information using a case-by-case analysis of the four cumulative criteria, with regard, in particular, to all relevant market circumstances and without considerations to a power threshold, which is not specified in the REMIT regulation. Thus, the CRE asks all market participants to ensure they comply with the application of the REMIT regulation, regardless of their production facility capacity and to introduce the necessary procedures to meet Articles 3 and 4.

In addition to analysing procedures governing the circulation and disclosure of inside information, the CRE has also scrutinised the delays in which inside information was published by market participants. As a reminder, Article 4 of the REMIT regulation requires that the disclosure of inside information be made "*in a timely manner*". Section 7 of the ACER guidelines refers to this requirement, indicating that disclosure must be made as quickly as possible and, where applicable, within a maximum of one hour. In all cases, inside information must be disclosed prior to conducting transactions or transmitting orders for wholesale energy commodities related to this information, or to recommend that another person performs transactions or orders on the wholesale energy markets to which the information relates.

Article 4(3) of the REMIT regulation nevertheless allows each market participant, under their own responsibility, to "*exceptionally delay the public disclosure of inside information so as not to prejudice its legitimate interests*". The CRE, together with ACER, must therefore be immediately informed of this and receive supporting documentation justifying the delay to public disclosure.

As such, the analyses conducted by the CRE have highlighted that more than fifty disclosures of inside information in 2019 were published in a period greater than one hour. To date, no market participant has contacted the CRE to justify the deferred disclosure of these publications.

These disclosure delays may constitute a breach of Article 4 of the REMIT regulation. Consequently, all those market participants involved have been initially contacted by CRE's surveillance services to study the circumstances that led to these publication delays. Upon receipt of the responses, further analysis will be carried out.

1.3. Supporting PPATs in their surveillance mission

In application of Article 15 of the REMIT regulation, *Persons Professionally Arranging Transactions* (PPAT) for wholesale energy products must establish effective procedures to detect breaches of Articles 3 or 5 of the REMIT

⁹ Deliberation of the French Energy Regulatory Commission of 22 March 2018 on communication about the integrity and transparency of the wholesale energy market.

regulation and immediately alert the national regulatory authority if they have reason to suspect that a transaction may have breached Articles 3 or 5 of REMIT.

The CRE has long considered it essential that PPATs conduct surveillance activities and maintains an active collaboration with them. This enables the CRE to not only step up wholesale energy markets surveillance in France but also to benefit from the expertise of each PPAT on the market segments that they operate. In this regard, the CRE made contact with the Nord Pool exchange shortly after it began its activities in France, to establish the same level of cooperation as it has with EPEX SPOT.

Cooperation arrangements established with RTE, EPEX SPOT and Powernext continued on a regular basis in 2019, with fruitful exchanges. On January 1, 2020, Powernext's activities were merged with its sole shareholder, EEX, with whom the CRE intends maintaining dialogue of the same quality. Powernext's merger with EEX means that it is now the German financial regulator, BaFin¹⁰, which is in charge of monitoring the French futures gas markets for financial support products. This was already the case for French futures electricity markets. The CRE subsequently intends fostering working relations and regular exchanges of information with BaFin.

The CRE also intends to further develop its relations with France-based brokers operating in wholesale energy markets. As such, it has made contact with each of them. Furthermore, given the United Kingdom's withdrawal from the European Union, several brokers operating *Organised Trading Facilities* (OTF¹¹) in the UK have decided to relocate to France. The CRE therefore wishes to establish a regular collaboration from the start of their activities in France.

Finally, in 2019, the CRE launched a review of the PPAT qualification of French gas network and storage operators, GRTgaz, Teréga and Storengy. The aim is to increase their awareness of the REMIT regulation and be better able to detect possible REMIT breaches using data available to them.

1.4. Market participants' registration data

According to Article 9 of the REMIT regulation, market participants are required to register "*with the national regulatory authority in the Member State in which they are established or resident or, if they are not established or resident in the Union, in a Member State in which they are active*". By 31 December 2019, 1,412 market participants had registered with the CRE, 88 more participants than in 2018.

Each market participant must ensure that the information registered is accurate and up to date. Any changes to the information provided in the registration form must be forwarded in a timely manner to the relevant national regulatory authority. Any subsequent erroneous or obsolete information must also be amended as appropriate, as soon as possible.

In its 2nd open letter of 19 July 2018, on the quality of REMIT data¹², ACER highlighted problems relating to "*Energy Identification Codes*" (EIC) type X, i.e. those used to identify market participants in the European Register of Energy Market Participants (CEREMP), when they declare data. CRE's services has observed that some market participants, declaring data under Article 8 of REMIT were not registered as market participants in CEREMP. Some had not completed their EIC X code in CEREMP or had used a different one to declare data. Additionally, other participants have used unrecognised EIC X codes in the ENTSO-E register.

The CRE has contacted these participants to regularise their situation. The CRE joins ACER in reminding that all market participants must register on CEREMP platform to comply with Article 9 of the REMIT regulation and must also provide a unique EIC X code to be used when declaring data to ACER.

In this respect, ¹³ACER will amend its validation rules in 2020 for data declared by market participants in application of Article 8 of the REMIT regulation. Accordingly, all data declarations made with an EIC code that does not allow the identification of the participant on the CEREMP will be rejected. The CRE reiterates that non-compliance with data declaration rules may, in certain circumstances, constitute a potential breach of the REMIT regulation.

Furthermore, market participants are requested to use the CEREMP platform¹⁴ to complete their registration or to update their data in their participant record. For any questions on registering, market participants can consult a dedicated¹⁵ page on CRE's website or contact CRE's services at enregistrement.remit@cre.fr.

¹⁰ BaFin - Bundesanstalt für Finanzdienstleistungsaufsicht - the German financial regulatory authority

¹¹ The OTF is a multilateral system which brings together multiple buying and selling interests, at the discretion of its operator, to enter into transactions in bonds, structured finance products, emissions allowances or derivatives. In France, OTF operations are subject to approval by the prudential control authority (ACPR) after consultation with the financial market authority (AMF) when its operator is an investment service provider, or to authorisation by AMF when it is operated by a market undertaking.

¹² Available from the ACER website at: <https://documents.acer-remit.eu/acer-staff-letters/second-open-letter-on-remit-data-quality/>

¹³ <https://www.acer.europa.eu/Media/News/Pages/ACER-updates-validation-rules-under-REMIT.aspx>

¹⁴ https://www.acer-remit.eu/ceremp/home?nraShortName=9&lang=fr_FR

¹⁵ <https://www.cre.fr/Electricite/REMIT/Enregistrement-et-FAQ>

1.5. The United Kingdom's exit from the European Union is resulting in a transition period

The exit of the United Kingdom from the European Union took effect on 31 January 2020. A transition period is nevertheless in place until 31 December 2020 and European Union rules, including the REMIT regulation, will continue to apply during this time.

During the transition period, market participants registered in the UK do not yet need to register in any of the remaining 27 Member States. Pursuant to Article 8 of REMIT regulation, they must still declare REMIT data to ACER.

Looking ahead to the end of the transition period in late 2020, the CRE would like to highlight documents published by ACER¹⁶ and the UK regulator, Ofgem¹⁷ about registering market participants. These documents state that if the UK leaves the European Union without an agreement, Ofgem-registered market participants that issue orders and conduct transactions on wholesale energy products in the European Union must re-register with a regulator in a European Union Member State. This change will be facilitated by a feature of the CEREMP registration platform. Once the market participant has submitted his request to change national regulatory authority and that this has been approved by Ofgem, the actor will have to fill in and, if necessary, amend his information in the pre-filled fields using already available information.

The CRE advises market participants that re-registration requests will only be approved by Ofgem when an official decision confirming the end of the transition period has been taken. Nevertheless, requests can already be submitted in advance.

1.6. Technical incidents at energy exchanges

On June 7, 2019 and February 4, 2020, the *Nominated Electricity Market Operators* (NEMO¹⁸) in France, EPEX SPOT and Nord Pool, respectively encountered technical problems during the *multi-regional coupling process* (MRC). These are the first serious incidents since coupling was introduced in 2009. The two incidents caused a partial decoupling of markets operated by these NEMOs in part of the European zone, including France. In these circumstances, the processes established under the MRC involve local market auctions for the decoupled price areas with an allocation of the cross-border interconnection capacities affected by this decoupling on the JAO platform¹⁹.

On June 7, 2019, EPEX SPOT, then the only NEMO for electricity markets in France, received a "corrupted" order, i.e. an order that was rejected by the EPEX SPOT *trading* system, following an unintentional action from a market participant. This order blocked EPEX SPOT servers that could not function in time for market coupling and thus for the resulting price calculation process.

The crisis unit was thus forced to trigger partial decoupling procedures for all markets managed by EPEX SPOT, i.e. local auctions in the relevant price areas and cross-border capacity auctions using the JAO platform. The countries affected included Austria, Belgium, France, Germany, the Netherlands and the United Kingdom.

Due to a second IT problem that occurred while resolving the first fault induced by the corrupted order, the results of the local auctions were deemed to be wrong as they did not take into account all the submitted order books. These auctions were therefore cancelled and the market participants had the possibility to resubmit their orders. The final and correct results of these new local EPEX SPOT auctions were published after the closure of the cross-border capacity nomination gates in degraded mode. The price in France was €3.7/MWh for baseload and €6.2/MWh for peakload. In Belgium, the baseload price was €-133.6/MW compared to €-42.2/MW in Germany. While the German price can be explained by a surplus in renewable production, the Belgian price, by contrast, was severely affected by the incident.

On February 4, 2020, Nord Pool received an uncorrupted order but which prevented the IT system from successfully aggregating its customers' purchase and sales curves to submit the order book to the coupling algorithm. Unable to resolve the problem in time, Nord Pool declared its partial decoupling of the CWE region (Germany, France, Austria, Belgium and the Netherlands), while EPEX SPOT remaining coupled throughout the CWE area thanks to the Multi-NEMO solution introduced on 2 June 2019. As a result, EPEX SPOT performed a multi-regional coupling procedure without Nord Pool's portfolios in CWE nor their exclusively-managed interconnections (Baltic Cable, Kontek and COBRA Cable), while Nord Pool ran local auctions for each zone in the CWE region several times, without success. Having been unable to run local auctions before the nomination gates closed, Nord Pool was forced to cancel its

¹⁶ <https://documents.acer-remit.eu/category/all-documents/>

¹⁷ <https://www.ofgem.gov.uk/about-us/ofgem-and-europe/preparing-eu-exit>

¹⁸ NEMOs are entities in the European Union that perform tasks related to single day-ahead or single intraday market coupling in addition to their roles as market operators in the electricity market. Single day-ahead or single intraday market coupling relates to establishing a European electricity market with the goal of optimising exchanges of electricity between Member States via interconnections and levelling out electricity prices in Europe.

¹⁹ The *Joint Allocation Office* (JAO) is a service company that organises cross border transmission capacity auctions for all transmission system operators working in accordance with European Union legislation.

auctions for the entire region. The subsequent coupling price for delivery in France was €36.54/MWh for baseload and €41.15/MWh for peakload, in line with the fundamentals of the time.

The energy exchanges jointly published comprehensive analytical reports on both incidents and amended their systems to prevent a repetition of these problems. That said, two unprecedented events occurring in just a few months means that the CRE is keeping a watchful eye on analysing these incidents and supporting market operators and RTE to introduce new processes as well as improving existing systems.

2. INVESTIGATIONS AND SANCTIONS FOR REMIT REGULATION BREACHES

Under Article L.135-3 of the energy code, the President of the CRE can authorise its officers to proceed with necessary investigations for the accomplishment of the mission assigned to the Commission. As such, whenever there is suspicion of a breach in the REMIT regulations, the President of the CRE can open an investigation and appoint an investigating officer.

Article L.135-12 of the energy code allows for investigating officers to identify failures to comply with provisions in the REMIT regulation. These breaches are recorded in an official report and the individual(s) concerned, notified.

As per Article L.134-25, the President of the CRE can, if required, refer the case to the Dispute Settlement and Sanctions Committee (CoRDIS).

2.1. Investigations opened by the CRE

The CRE has opened 9 investigations under the REMIT regulation since 2014:

- 2 investigations opened in 2014,
- 3 in 2016,
- 2 in 2017,
- 1 in 2018,
- 1 in 2019.

These investigations focus on forbidden insider trading and market manipulation (Articles 3 and 5 of REMIT), as well as the requirement to disclose inside information (Article 4 of REMIT).

As part of these investigations, powers granted by Article L.135-4 of the energy code and Article 13(2) the REMIT regulation, to request information (accounting documents, invoices and all other supporting documents, including telephone records and existing exchanges data) were invoked.

Among these investigations, one was closed for prescription reasons due to the impossibility for the CoRDIS to exercise its power to sanction, another was closed as the practices examined during the investigation occurred before the French Parliamentary Act 2013-312 of 15 April 2013 came into force. This Act gave CoRDIS the power to sanction these types of breaches. Finally, CoRDIS is currently examining two cases while two others have been closed following its²⁰ decision to apply sanctions. Analyses are still in progress for the three remaining cases.

The President of the CRE has initiated a formal notice procedure for one ongoing investigation, in accordance with Article L.134-29 of the energy code.

2.2. Cooperation between French independent administrative authorities to conduct investigations

A memorandum of understanding between AMF and the CRE was signed in 2010. Its purpose is to allow both authorities to benefit from each other's information and expertise and to ensure the performance and full effectiveness of their respective missions, in accordance with provisions contained in Article L. 621-21 of the monetary and financial code and Articles 28 and 29 of French Parliamentary Act 2000-108 of 10 February 2000. As such, several meetings between the CRE and the AMF took place in 2019.

Cooperation between French independent administrative authorities (AAI) received a new impetus in 2019 through the establishment of working groups with other French independent administrative authorities (ACPR, ADLC, AMF,

²⁰ Table 1: European sanction decisions for breaches in REMIT regulation measures

ART, ARCEP, CNIL, HATVP)²¹. The CRE plays an active role in these groups which discuss, in particular, the implementation of investigative powers. In this context, CRE exchanges with authorities implementing general and 'enhanced' investigatory powers, such as ALDC and CNIL, so that it can draw inspiration from them and understand the most effective way of implementing them. This also enables, if necessary, to find solutions for pooling, but also implement the on-site inspection option set out in Article 13(2) of the REMIT regulation. As such, ADLC has notably held a training session on site visits and seizures for the various independent administrative authorities (AAI).

These inter-AAI contacts enable the CRE to continually challenge its surveillance and investigation methods, to innovate and, where appropriate, to share investigative powers, especially 'enhanced' powers that have not yet been implemented by the CRE to date.

Among the topics covered in the 2019/2020 cooperation programme are: (i) search and seizure of items contained in computer hardware during site and seizure visits (OVS), (ii) forming teams for investigations, hearings, visits and digital data analysis, (iii) compiling enquiry records and consultation procedures, (iv) delivering investigation, judgement and sanction procedures, (v) pooling IT resources for OVS' and more generally, investigations, (vi) procedure for closing investigations (vii) managing lawyer-client privileges and other confidentiality (business, private life), (viii) drafting formal notices, or similar.

Following the example of the memorandum of understanding with AMF, bilateral agreements could also be considered with other AAIs to combine specific resources and formalise dialogue.

2.3. Decisions sanctioning breaches of the REMIT regulation

2.1.1. A new CoRDIS decision

On 19 December 2019, CoRDIS issued a second decision fining²² BP Gas Marketing Limited (BPGM) 1 million euros for breaching the REMIT regulation. This sanction followed the opening of an investigation in July 2016 which was then referred by the President of the CRE to CoRDIS, in February 2019. In its decision, CoRDIS stated that BPGM had manipulated the PEG Sud market from October 1, 2013 to March 1, 2014, an act prohibited under Article 5 of the REMIT regulation. CoRDIS noted, in particular, that BPGM's behaviour was likely to influence the view that market participants might have of the position regarding supply and demand.

In accordance with Article L.134-27 of the energy code, the breaches in REMIT regulation can result in a financial penalty, the amount of which reflects the severity of the breach, the situation of the party concerned, the extent of the harm and resulting advantages.

2.1.2. Summary of key decisions penalising breaches of the REMIT regulation issued by other regulators in the European Union

ACER keeps an updated summary of ²³ the main decisions sanctioning breaches of the REMIT regulation.

The CRE wishes to briefly present some recent sanction decisions issued by other national regulation authorities with financial penalties greater than €1 m.

In May 2017, following an alert received by a market participant, OFGEM opened an investigation about InterGen's²⁴ behaviour on the wholesale electricity market. Upon completion of the investigation, OFGEM²⁵ noted that InterGen had issued transactions and orders that gave, or were likely to give, false or misleading indications about the supply, demand or the price of wholesale energy products, using a fictitious process or any other form of deception or contrivance. The four companies under the InterGen name were deemed to be responsible for this violation of the REMIT regulation. More precisely, InterGen deliberately sent false or misleading signals to the British transmission system operator (TSO), National Grid, by (i) sending physical notifications that were unrepresentative of their best assessment of the expected generation levels of power plants for a defined period of time and, (ii) sending false or

²¹ ACPR - French Prudential Supervisory and Resolution Authority, ADLC - French Competition Authority, AMF - French Financial markets Authority, ART - French Transport Regulation Authority (formerly ARAFER), ARCEP - French Electronic, Telecommunications and Postal Regulatory Authority, CNIL - French Commission for Information technology, Data Files and Civil Liberties, HATVP - French High Authority for Transparency in Public Life.

²² CRE press release: <https://www.cre.fr/Documents/Presse/Communiqués-de-presse/le-cordis-sanctionne-la-societe-bp-gas-marketing-limite-pour-manquement-au-reglement-remit-sur-le-marche-de-gros-du-gaz>

²³ Publication ACER REMIT Overview of the sanction decisions: <http://www.acer.europa.eu/en/remit/Pages/Overview-of-the-sanction-decisions.aspx>

²⁴ InterGen is a group of 4 companies: InterGen (UK) Ltd, Coryton Energy Company Ltd, Rocksavage Power Company Ltd and Spalding Energy Company Ltd.

²⁵ Finding that InterGen has breached Article 5 (prohibition on market manipulation) of Regulation (EU) No 1227/2011 of the European Parliament and of the Council of 25 October 2011 on wholesale energy market integrity and transparency ('REMIT'), OFGEM, 15/04/2020, <https://www.ofgem.gov.uk/publications-and-updates/finding-intergen-has-breached-article-5-prohibition-market-manipulation-regulation-eu-no-12272011-european-parliament-and-council-25-october-2011-wholesale-energy-market-integrity-and-transparency-remit>

misleading information about specific operational capabilities of their power stations by submitting declarations to the British balancing mechanism in an attempt to boost profits from its business. The sanction decision is a result of a negotiated settlement between OFGEM and InterGen and constitutes a final decision.

In November 2016, a market participant alerted OFGEM of suspicious activity on the British wholesale gas market. OFGEM opened an investigation revealing that between June 1, 2016 and August 31, 2016, Engie Global Market (EGM), acting through a trader working in their name and on their behalf, had manipulated wholesale gas prices to increase their profits. OFGEM noted that EGM had manipulated the wholesale energy market in connection with the month-ahead contract – concluded over the counter - for the delivery of natural gas to the United Kingdom balancing point, or "*National Balancing Point*". It should be noted that this is the first fine imposed by OFGEM on an energy company for acts committed by an intermediary. More specifically, EGM, through the intermediary of the trader, has repeatedly engaged in market manipulation known as "*spoofing*". This involves placing bids and offers to trade without intent to execute them in order to buy and sell at a higher or lower price than the prevailing market price, to increase trading profits. The sanction decision results from a negotiated settlement between OFGEM and Engie and constitutes a final decision.

Table 1: Sanction decisions in Europe connected to breaches of the REMIT regulation

Decision date	Authority, Member State	Market participant	Type of REMIT violation	Penalty enforced	Decision status
25/03/2020	OFGEM, United Kingdom	InterGen (UK) Ltd, Coryton Energy Company Ltd, Rocksavage Power Company Ltd, Spalding Energy Company Ltd	Article 5	£37,291,000 (approx. €42.5 m)*	Final
03/01/2020	VERT, Lithuania	UAB Geros dujos	Article 5	€28,583	Potential appeal
19/12/2019	CRE, France	BP Gas Marketing Limited	Article 5	€1,000,000	Under appeal
December 2019	MEKH, Hungary	Valahia Gaz S.R.L.	Article 5	30 000 000 Ft (approx. €90,000)	Under appeal
September 2019	MEKH, Hungary	MAVIR ZRT.	Article 5	1,000,000 Ft (approx. €3,000)	Final
05/09/2019	OFGEM, United Kingdom	Engie Global Markets	Article 5	£2,128,236 (approx. €2,393,427.80)	Final
20/02/2019	BNetzA, Germany	Uniper Global Commodities SE + Deux Traders	Article 5	€150,000 plus penalties of €1,500 €2,000 respectively for each trader.	Final
21/12/2018	Agent/DUR, Denmark	Neas Energy A/S	Article 5	153,000 DKK (approx. €20,400)*	Final
28/11/2018	CNMC, Spain	Multienergía Verde, S.L.U.	Article 5	€120,000	Under appeal
28/11/2018	CNMC, Spain	Galp Gas Natural, S.A.	Article 5	€80,000	Final
30/10/2018	Agent/DUR, Denmark	Energi Denmark A/S	Article 5	1,104,000 DKK (approx. €147,000)*	Final
05/10/2018	CRE, France	VITOL S.A.	Article 5	€5,000,000	Under appeal
24/11/2015	CNMC, Spain	Iberdrola Generación S.A.U.	Article 5	€25,000,000	Under appeal

*The sum includes (i) the penalty and (ii) compensation to injured parties.

3. WHOLESALE MARKET SURVEILLANCE AT EUROPEAN LEVEL

The CRE has long been committed to having a standardised *corpus* of rules and common practices in the European Union. As such, it plays an active role in European working groups and forums related to REMIT, in close collaboration with ACER, other European Union Member States energy regulators, as well as the financial and competition authorities.

As such, the CRE is a member of ACER's "Coordination Group" and co-chairs the ACER groups and the Council of European Energy Regulators (CEER) on REMIT (AMIT, CMIT²⁶, REMIT Policy Task Force and REMIT IT management & Governance).

These groups and related "task forces" contribute, in particular, to implementing the REMIT regulation at an operational level. They also take part in the development of non-binding *guidelines* published by ACER. The CRE attaches great importance to rigorously advancing this work through constructive collaboration.

3.1. Changes in ACER's missions relating to the implementation of the REMIT regulation

In July 2019, a revised version of ACER's founding regulation, part of the 4th legislative package on energy, entitled, *Clean Energy for all Europeans* proposed by the European Commission in November 2016, finally came into force and extended the scope of ACER's missions and activities²⁷.

Among the missions relative to the REMIT regulation, ACER can now provide operational assistance upon request of a regulatory authority for ongoing investigations under the REMIT regulation.

Furthermore, a fee has been introduced to diversify ACER's sources of funding and cover its costs incurred from gathering, managing, processing and analysing information and data provided by market participants or entities declaring information on their own behalf, under Article 8 of the REMIT regulation. ACER's regulation states that fees shall be *proportionate to the costs of the relevant services as provided in a cost-effective way and shall be sufficient to cover those costs. The fees shall be set at such a level as to ensure that they are non-discriminatory and avoid placing an undue financial or administrative burden on market participants or entities acting on their behalf.(...) The Commission shall regularly examine the level of those fees on the basis of an evaluation and, if necessary, shall adjust the level of those fees and the manner in which they are to be paid*".

This fee together with terms and conditions for payment have yet to be set by the European Commission, following a public consultation and discussions with ACER's Administrative Board and the Board of Regulators, which should be held in 2020.

3.2. Changes in ACER non-binding guidelines

ACER's non-binding guidelines currently comprise four key documents:

- general guidance note on applying the REMIT regulation and
- three thematic guidance notes on practices likely to constitute market manipulation under Article 5 of the REMIT regulation:
 - one guidance note on "Wash trades", a form of manipulative practice, defined as the entering into arrangements for the sale or purchase of a wholesale energy product, where there is no change in beneficial interests or market risk, or where beneficial interest or market risk is transferred between parties who are acting in concert or collusion, published in June 2017²⁸;
 - a guidance note on blocking transmission capacity, or "*capacity hoarding*" on the intraday electricity market. This is defined as the acquisition of all or part of the available transmission capacity without using it or without using it effectively, published in March 2018²⁹;
 - a guidance note on "*layering*" and "*spoofing*" on continuous wholesale markets, defined as issuing a large order or multiple orders to trade at different price levels (layers) on one side of the order book,

²⁶ AMIT and CMIT co-chaired the groups until mid-July 2019.

²⁷ Regulation (EU) 2019/942 of the European Parliament and of the Council of 5 June 2019 establishing a European Union Agency for the Cooperation of Energy Regulators

²⁸ Available to view on the ACER website at: <https://www.acer-remit.eu/portal/document-download?documentId=u518na123yg>

²⁹ For further information, visit: <https://acer.europa.eu/Media/News/Pages/ACER-publishes-guidance-on-capacity-hoarding-in-intraday-electricity-markets-that-could-constitute-market-manipulation.aspx>

in order to make one or more transactions on the other side of the order book, published in March 2019³⁰.

The general guidance on the application of the REMIT regulation were updated several times in 2019.

Firstly, ACER published an amendment to section 7 on 9 July 2019, regarding the implementation of the requirement to disclose inside information and, more specifically, sections 7.1 and 7.2 related to the publication of inside information in an "effective manner". More detailed guidelines are provided on the mechanisms to be used to disclose inside information. In particular, it is stated that for effective disclosure in accordance with Article 4 of the REMIT regulation, inside information must be disclosed using inside information platforms³¹ or a transparency platform. Several additions have also been made to section 8 on the enforcement of market abuse prohibitions and possible signals of insider trading or potential market manipulation. More precisely, section 8.2.3 on exemptions from the prohibition of insider trading has been amended to provide a more accurate interpretation of Article 3, paragraph 4, point b), of the REMIT regulation.

Secondly, section 6.4.1 (i) of the guidance was updated to provide additional indications to market participants with respect to the practice of capacity withholding (a forbidden practice consisting, in particular, without justification, of not offering or economically withholding all its capacity on the market when it is available). In particular, the fact of offering available generation capacity at prices which are above the market price and do not reflect the marginal cost or the opportunity cost of this capacity, resulting in the related wholesale energy product not being traded or related asset not being dispatched, is presented as an example of withholding economic capacity.

Finally, ACER published the fifth ³²edition of its general guidelines on the application of the REMIT regulation to include acquired experience and comments received from national regulatory authorities, market participants and other stakeholders. Section 5 of this new edition has been amended to provide more detailed guidance to describe inside information and, in particular, definitions for "information" and "inside information", contained in the REMIT regulation. This new version of guidelines also provides details and practical examples of the four cumulative criteria referred to in Article 2(1) of REMIT, which must be fulfilled to qualify information as inside information.

The CRE continues to assist efforts to develop common positions that define and oversee manipulative practices under the REMIT regulation. It has been an active contributor during the preparation of the various amendments to the general guidelines.

3.3. ACER public consultation on the definition of inside information

ACER conducted a public consultation exercise on the definition of inside information between 9 July and 16 September 2019. The aim of this consultation was to gather information on market participant experiences and approaches regarding their assessments of inside information and their compliance with the requirement to disclose it in an effective and timely manner. It also evaluated the need and feasibility of introducing thresholds on the disclosure of inside information.

The findings of the public consultation showed, in particular, the efforts but also the problems to achieve consistency related to case-by-case assessments of inside information by market participants. The need for additional guidance was expressed by many market participants, with a request for the establishment of a "safe harbour".

As such, ACER, in cooperation with national regulators, continues to work on non-binding guidance to make the existing system more consistent and geared to the different participants and markets.

3.4. CEER's response ³³to the ESMA³⁴ public consultation on position limits

The REMIT regulation is consistent with the prohibition of market abuse as set out in the financial regulation. Indeed, prohibitions on insider trading and market manipulation apply to wholesale energy products, except if they also constitute financial instruments under the MiFID II Directive³⁵, in which case Regulation (EU) 596/2014 of the European Parliament and of the Council of 16 April 2014 on market abuse (the "Market Abuse Regulation" or MAR) applies. Wholesale futures energy products entailing a physical delivery traded on a multilateral trading system (*Organised Trading Facility* or OTF¹⁴) are not deemed to be financial instruments. This exception is referred to under the term, "REMIT C(6) carve-out".

³⁰ For further information, visit: <https://www.acer.europa.eu/Media/News/Pages/ACER-publishes-guidance-on-layering-and-spoofing-in-continuous-wholesale-energy-markets.aspx>

³¹ Current list of inside information platforms: <https://www.acer-remit.eu/portal/list-inside-platforms>

³² 5th Edition ACER Guidance: https://www.acer.europa.eu/en/remit/Documents/5th-Edition-ACER-Guidance_08042020.pdf

³³ Council of European Energy Regulators - CEER

³⁴ European Securities and Market Authority - ESMA

³⁵ Directive 2014/65/EU of the European Parliament and of the Council of 15 May 2014 on markets in financial instruments and amending Directive 2002/92/EC and Directive 2011/61/EU

On 5 November 2019, ESMA, in application of Article 90(1) of the MiFID Directive, launched a public consultation on the impact of position limits on commodity derivatives. Among the questions raised, ESMA queried the market on the need to review the REMIT C(6) *carve-out* by referring to point 6 of Annex I section C of MiFID II, specifically listing products classified as financial instruments (see text box opposite).

On 23 December 2020, CEER responded³⁶ to the ESMA's consultation paper on the potential review of the REMIT C(6) *carve-out*. In its response, CEER stated that it did not share ESMA's analysis and expressed its concern about ESMA's proposal to review the C(6) exclusion clause in a restrictive manner whereby energy regulators could be replaced by financial regulators for supervisory tasks on relevant energy products. CEER considers that this would be inappropriate, inconsistent and ineffective given experience gained in this field by the energy regulators.

As such, CEER recalls that the gas and electricity markets have their own specific regulations to combat market abuse and ensure market transparency in the form of the REMIT regulation. This allows for each national regulatory authority to have the investigative and enforcement powers necessary to prohibit market abuse (Article 13). CEER points out that since the REMIT regulation was introduced in 2011, the energy regulators have gained extensive experience in monitoring the trading of wholesale energy products. Indeed, recent sanction decisions taking into account energy specificities that, by contrast, do not pertain to financial markets.

Finally, CEER states that reconsidering the REMIT C(6) *carve-out* exception in a restrictive way would have unforeseen consequences that could endanger the wholesale energy market integrity and transparency, bringing additional costs for the energy companies and higher prices paid by consumers.

The CRE has been an active contributor to producing this response and fully supports CEER's position.

ESMA published the report³⁷ on 1 April 2020, following its public consultation paper on position limits. With regard to the REMIT C(6) *carve-out* exemption, it should be noted that given the responses received, no revision of the existing regulatory framework appears necessary.

³⁶ CEER response: <https://www.ceer.eu/esma-consultation-response#>

³⁷ https://www.esma.europa.eu/sites/default/files/library/esma70-156-2311_mifid_ii_review_report_position_limits.pdf

Excerpt from Annex I section C of MiFID II: Financial instruments

1. Transferable securities.
2. Money-market instruments.
3. Units in collective investment undertakings.
4. Options, futures, swaps, forward rate agreements and any other derivative contracts relating to securities, currencies, interest rates or yields, emission allowances or other derivatives instruments, financial indices or financial measures which may be settled physically or in cash.
5. Options, *futures*, swaps, *forwards* and any other derivative contracts relating to commodities that must be settled in cash or may be settled in cash at the request of one of the parties other than by reason of default or other termination event.
6. Options, futures, swaps, and any other derivative contract relating to commodities that can be settled by physical delivery, provided that they are traded on a regulated market, a MTF, or an OTF, except for wholesale energy products traded on an OTF that must be settled by physical delivery.
7. Options, *futures*, swaps, *forwards* and any other derivative contracts relating to commodities, that can be settled by physical delivery not otherwise mentioned in point 6 of this Section and not intended for commercial purposes, which have the characteristics of other derivative financial instruments.
8. Derivative instruments for the transfer of credit risk.
9. Financial contracts for differences.
10. Options, futures, swaps, forward rate agreements and any other derivative contracts relating to climatic variables, freight rates or inflation rates or other official economic statistics that must be settled in cash or may be settled in cash at the request of one of the parties other than by reason of default or other termination event, as well as any other derivative contracts relating to assets, rights, obligations, indices and measures not otherwise mentioned in this section, which have the characteristics of other derivative financial instruments, having regard to whether, inter alia, they are traded on a regulated market, OTF, or an MTF.
11. Emission allowances consisting of any units recognised for compliance with the requirements of Directive 2003/87/EC (Emissions Trading Scheme).

3.5. Progress in the implementation of REMIT data exchanges with ACER

Centralised data collection by ACER began in October 2015 for standard data and in April 2016 for non-standard data. ACER transmits the data to the appropriate regulators on the basis that their IT systems meet ACER's security criteria. The CRE met all the security criteria in late 2015 and began receiving the aforementioned data in 2016.

For ACER, as with the CRE, work continues on setting up the databases related to these data flows. As it is essential to have good quality transactional and fundamental data for the conduct of its missions, the CRE is actively involved in ACER's efforts to this effect. As such, the CRE, in conjunction with the main European authorities, has helped define the key components to improve standardisation of data declarations as well as quality and completeness tests.

Several meetings and round table discussions on improvements to *data reporting* were held in 2019 with reporting parties, market participants, energy exchanges, system operators, etc., together with ACER and European regulators, including the CRE. These discussions informed considerations about updates and clarifications to include in non-binding guidance in the *Transaction³⁸ Reporting User Manual (TRUM)*, as well as questions and answers to be added to the *Frequently Asked Questions - FAQ* on transactional data declarations³⁹. The new versions of these documents were published on 30 June 2020.

³⁸ Available on the ACER website at: <https://documents.acer-remit.eu/category/remit-reporting-user-package/transaction-reporting-user-manual-trum/>

³⁹ Available on the ACER website at: <https://documents.acer-remit.eu/category/qas-and-faq-on-remit/>

Furthermore, to be consistent with amendments introduced in section 7 of ACER's non-binding general guidance (see section 3.2), the relevant sections on transaction and fundamental data in the manual of procedures⁴⁰ relating to insider information publication modalities, were updated on 9 July 2019. The CRE reminds market participants that additional information about data declaration compliance can also be found in the *FAQ document on REMIT Fundamental Data and Inside Information*³⁹.

While efforts to improve data quality remain unfinished, the CRE wishes to maintain the national data gathering system for organised marketplaces (exchanges and brokers), to avoid any discontinuity or interruption in data coming under CRE oversight.

Useful references

For suspicions of market abuse

To ensure the best possible market surveillance, any person suspecting market abuse is advised to alert:

- The CRE's departments tasked with market surveillance at the following address: : surveillance@cre.fr;
- or ACER's departments, by visiting the agency's ad hoc notification platform: <https://www.acer-remit.eu/np/home>.

For registering market participants

Market participants may contact CRE's wholesale market surveillance department with any question concerning registration, at: enregistrement.remit@cre.fr.

For REMIT

All public documents concerning implementation of the REMIT regulation can be found on the REMIT Portal provided by ACER at: <https://documents.acer-remit.eu/>.

⁴⁰ Manual of procedures: https://documents.acer-remit.eu/wp-content/uploads/ACER_REMIT_MoP-on-data-reporting_V6.pdf

SECTION 2
CONTEXT OF THE ENERGY MARKETS

Commodity prices fell in 2019, continuing a trend that began in the last quarter of 2018. Gas and coal prices, in particular, declined, while the electricity price followed the same pattern. Only the oil market bucked the trend. After plummeting in late 2018, Brent Crude quickly rallied and the prices stabilised.

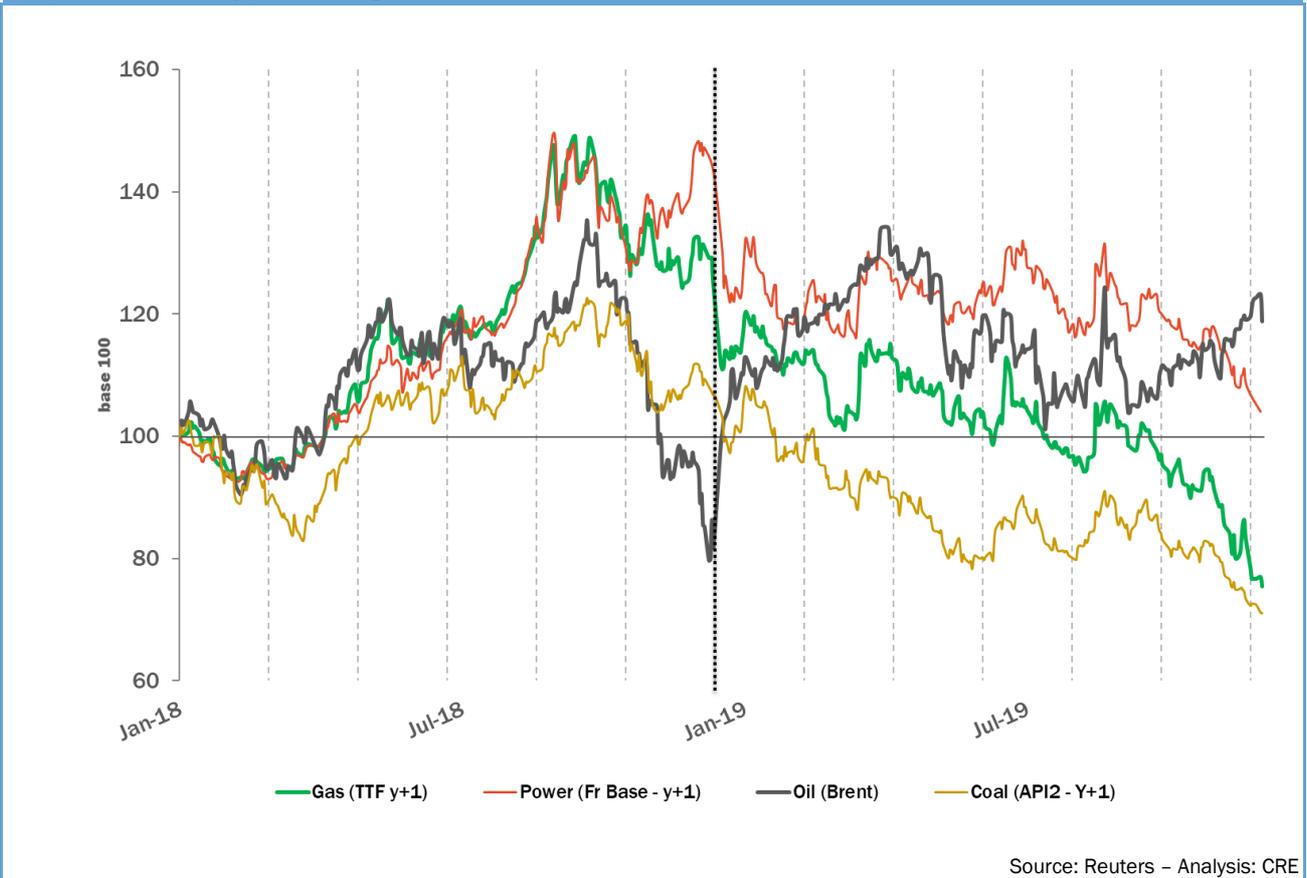
These changes in commodity prices can be linked to geopolitical events. The ongoing trade war between China and the United States disrupted the gas and coal markets. Sanctions imposed by the United States on Iran and Venezuela had a limited impact on oil prices. Also, agreements on production caps agreed by OPEC+ kept supporting Brent Crude.

2019 weather records in France revealed higher temperatures than normal, yet lower than those of 2018 which was a particularly warm year. There were, however, heat waves in June and July 2019 that reached record temperatures, while rainfall levels during the first three quarters remained low. Fluctuating weather patterns influenced seasonal changes in commodity prices but these effects had less impact than those of economic and geopolitical events.

1. THE PATTERN OF COMMODITY PRICE IN 2019

2018 was a volatile year, yet there was a marked rise in commodity prices before most experienced a downturn in the last quarter, apart from electricity, which continued its rise. From the outset, prices continued to fall in 2019, especially for gas and coal, which reached record lows. Although high at the start of the year, electricity prices also followed the same downward trend. Only oil bucked the trend, to regain price levels seen in the second and third quarters of 2018.

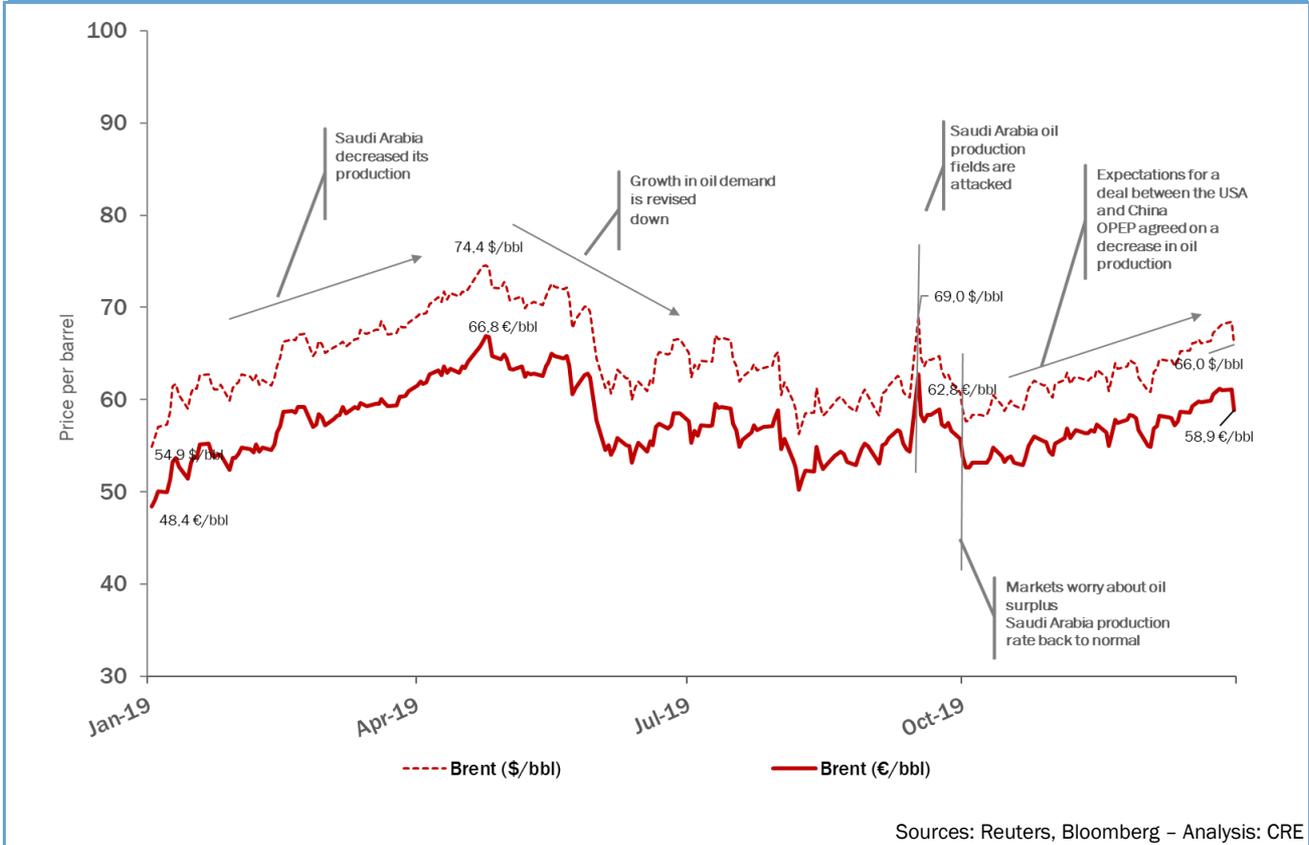
Graph 3: Commodity price changes



1.1. Focus on Brent Crude prices

Oil prices began 2019 with a sharp rise after falling in late 2018 to eventually reach levels last recorded in 2018. The average price of a barrel of Brent Crude for the year 2019 reached €57.3, a 6% drop on 2018. The markets were choppy during 2019 due to the geopolitical situation, especially sanctions meted out by the United States on Iran and Venezuela, as well as attacks on oil facilities in Saudi Arabia, coupled with economic uncertainty.

Graph 4: Oil prices



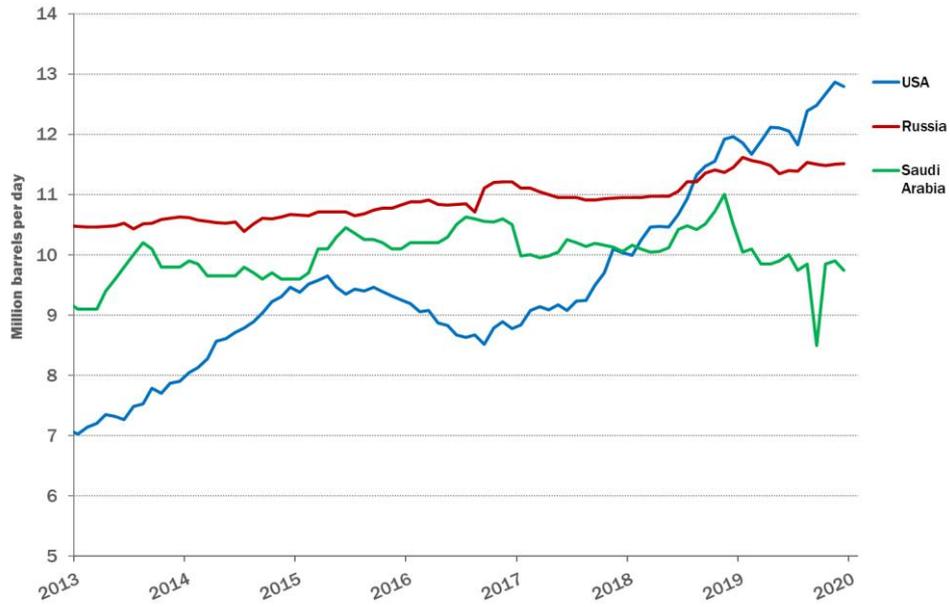
Sources: Reuters, Bloomberg – Analysis: CRE

Global demand for oil in 2019 reached 100.75 million barrels per day (mbd), which was a very slight rise of 0.78 mbd compared to 99.97 mbd in 2018. China fuelled this rise with a 0.49 mbd increase in its demand of oil, while the United States, still the world's biggest consumer, remained virtually unchanged from 2018 levels, recording a slight drop of 0.05 mbd.

In terms of supply, growth here was mainly driven by oil production in the United States and Brazil. Since 2018, the United States has asserted its position as the world's largest crude oil producer, with 12.8 mbd, ahead of Russia and Saudi Arabia. The country owes this position to the shale oil production, which has boomed since the start of the decade. United States export volumes rose by 45% in 2019 compared to 2018, reaching an average of 2.9 mbd. By contrast, OPEC countries, such as Iran and Venezuela continued to register big losses in production due to geopolitical factors, including United States sanctions or economic matters in Venezuela, driven by a lack of infrastructure investment and maintenance.



Graph 5 Monthly crude oil production output for the three largest producing countries



Sources: U.S. Energy Information Administration (EIA), Reuters – Analysis: CRE

1.2. Focus on coal prices

After rising for decades, the share of coal in the worldwide electricity production saw a record fall in 2019. Yet, while this decline appears to have set in in Europe and the United States, the same cannot be said of Asia. Indeed, China alone accounts for half the world's coal-fired power stations and it continues to build new plants.

There are also some differences within Europe. While the closure of remaining coal-fired power stations in France and the United Kingdom has reduced their demand for coal to virtually nil, Poland is one of Europe's biggest coal consumers and still makes heavy use of coal-fired power stations.

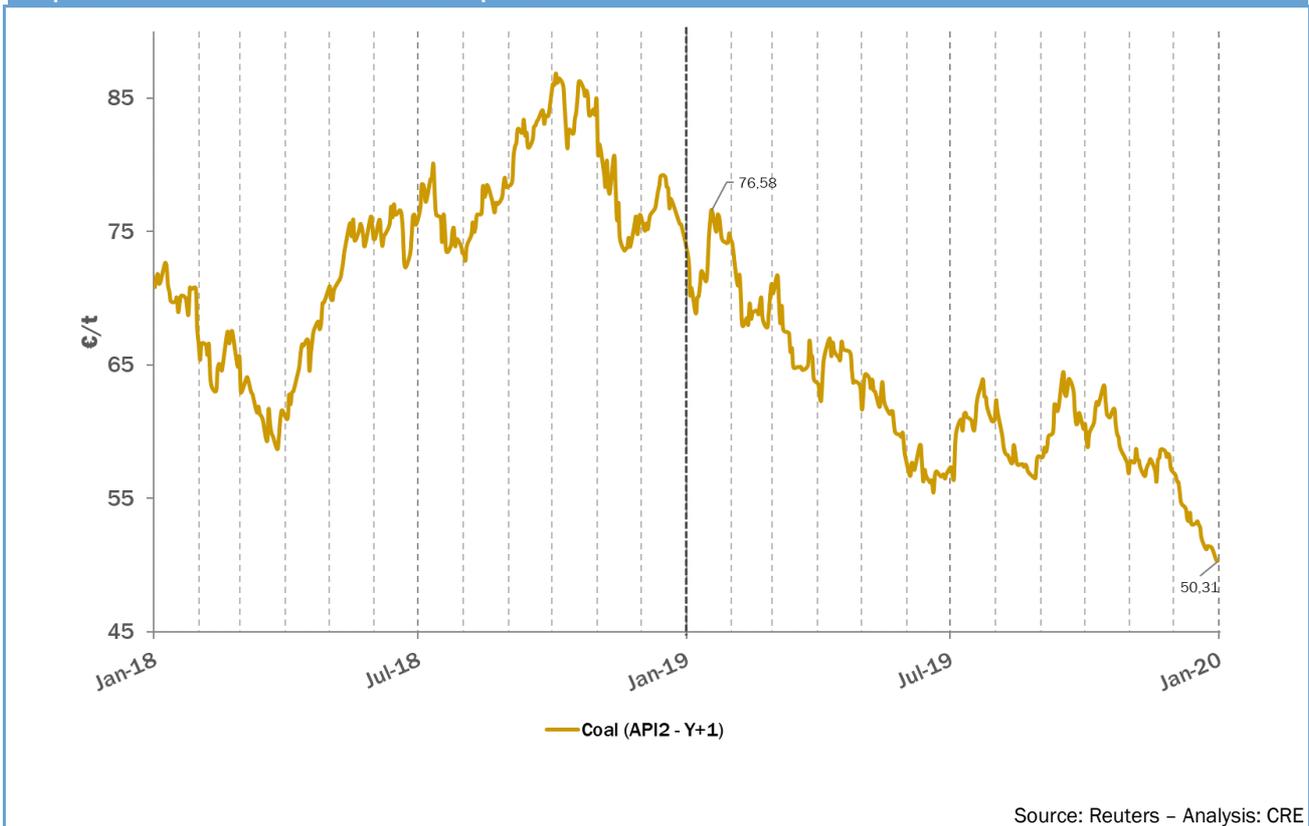
In 2019, the reference price for coal in Europe API2 Y+1 fell from €77.4 per tonne at the start of the year to €50.3 per tonne, i.e. a 35% drop. On average, over the year, the price also fell by 16% on 2018, before rallying to finish at €62 per tonne compared to €74.

These changes in the coal markets were driven by trade in Asia, especially China and India, the first and second largest coal-consuming countries in the world.

The downturn in prices began in 2019 after China took crucial decisions. Indeed, since November 2018, China, which had sizeable stocks of coal at the onset of winter, decided to restrict cargo arrivals given the oversupply of coal. That said, China's economic recovery plan, coupled with its decision to raise coal-fired electricity production, lifted import restrictions on coal in May 2019 to secure stable coal prices and make Chinese companies more competitive. The outcome was that China finally imported 7% more coal than it did in 2018.

Aside from effects in Asia, the repercussions of a turbulent oil market also affected coal prices in the second half of 2019.

Graph 6: Futures API2 Y+1 contract coal prices



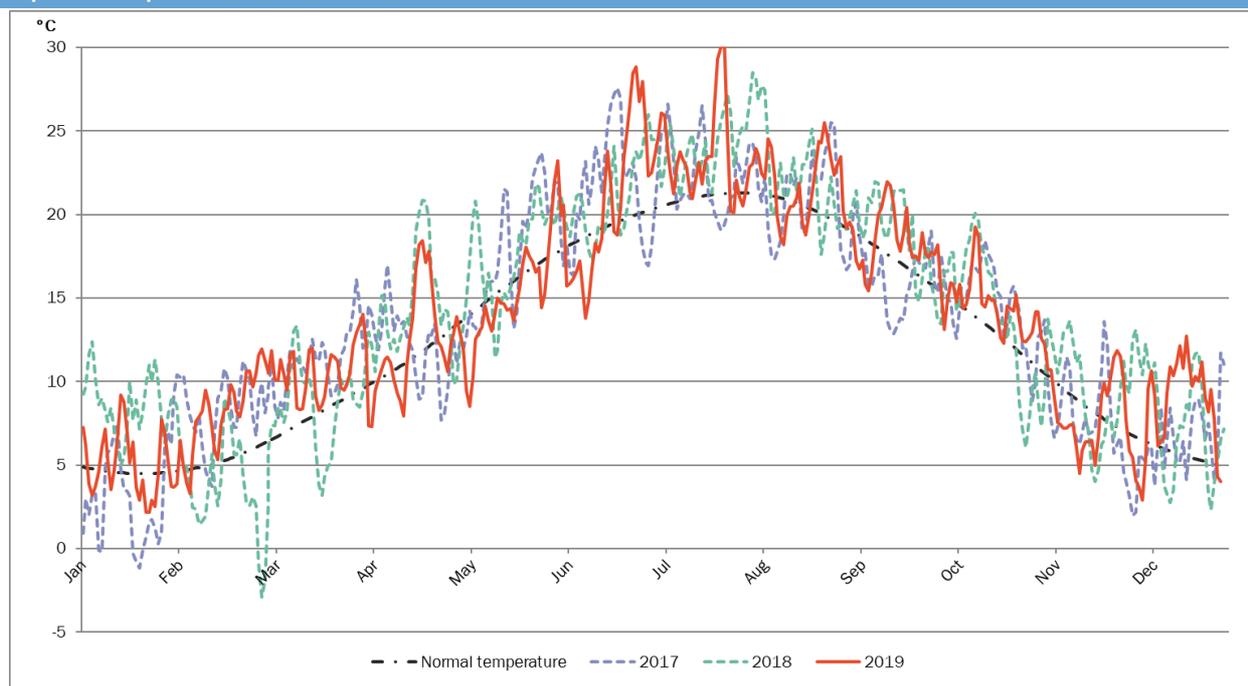
2. 2019 WAS THE THIRD WARMEST YEAR SINCE THE START OF THE 20TH CENTURY

On average, temperatures in 2019 remained higher than normal. The average annual temperature was 0.5°C warmer than normal, i.e. a rise of 3.9%, making 2019 the 3rd warmest year on record since the start of the 20th century, behind 2014 and 2018. There was also low rainfall during the first three quarters on 2019.

After seasonal temperatures in January, the following months were milder, on average 0.38°C higher than usual seasonal variations. Recorded temperatures in the second half of 2019, were significantly hotter, 0.9°C higher than normal. There were two heat waves, in June and July that reached record temperatures, including the highest recorded temperature in France of 46°C on 28 July 2019.

When averaged out over 2019, rainfall was close to normal but contrasted throughout the year. During the first three quarters it was lower than expected and the resulting deficit combined with soaring summer temperatures caused reservoirs to dry up. The final quarter was very wet and helped total annual rainfall regain a level more akin to levels in a normal year.

Graph 7: Temperature curve for France



Source: Reuters - Analysis: CRE

3. THE MARKET STABILITY RESERVE BEGAN OPERATING AND MAINTAINED THE CO₂ PRICES

The *Market Stability Reserve* (MSR) was introduced in 2019. It is a mechanism that maintains the surplus of allowances in circulation on the market between 400 and 883 MtCO₂. As such, if the surplus of allowances exceeds the upper threshold, 12% of the total number of allowances on circulation is moved into the reserve. If, by contrast, the surplus falls short of the lower threshold, 100 Mt CO₂ will be put back in circulation. The initial MSR allowance take-up rate of 12% has since been doubled to 24% for the period 2019-2024.

The MSR absorbed a surplus of 397 MtCO₂ of allowances in circulation in 2019 while 300 MtCO₂ from *backloading*⁴¹ was also transferred to it. As such, in 2019, demand for allowances exceeded the number of allowances distributed. This resulted in the allowance prices holding steady after a spectacular surge in 2018. Indeed, in early 2018, the spot price for allowances was €7.8/t CO₂, while in late 2018 it was €24.6/t CO₂. The average price for 2019 was €24.8/t CO₂, i.e. a 57% rise compared to that of 2018 (€15.5/t CO₂). The year 2019 closed at a price of €24.9/t CO₂, at a level similar to that of late 2018. Furthermore, 2019 also saw a historic surge in allowance prices, peaking at €29.95/t CO₂ on 24 July 2019. Overall, the price was still less volatile in 2019 compared to 2018.

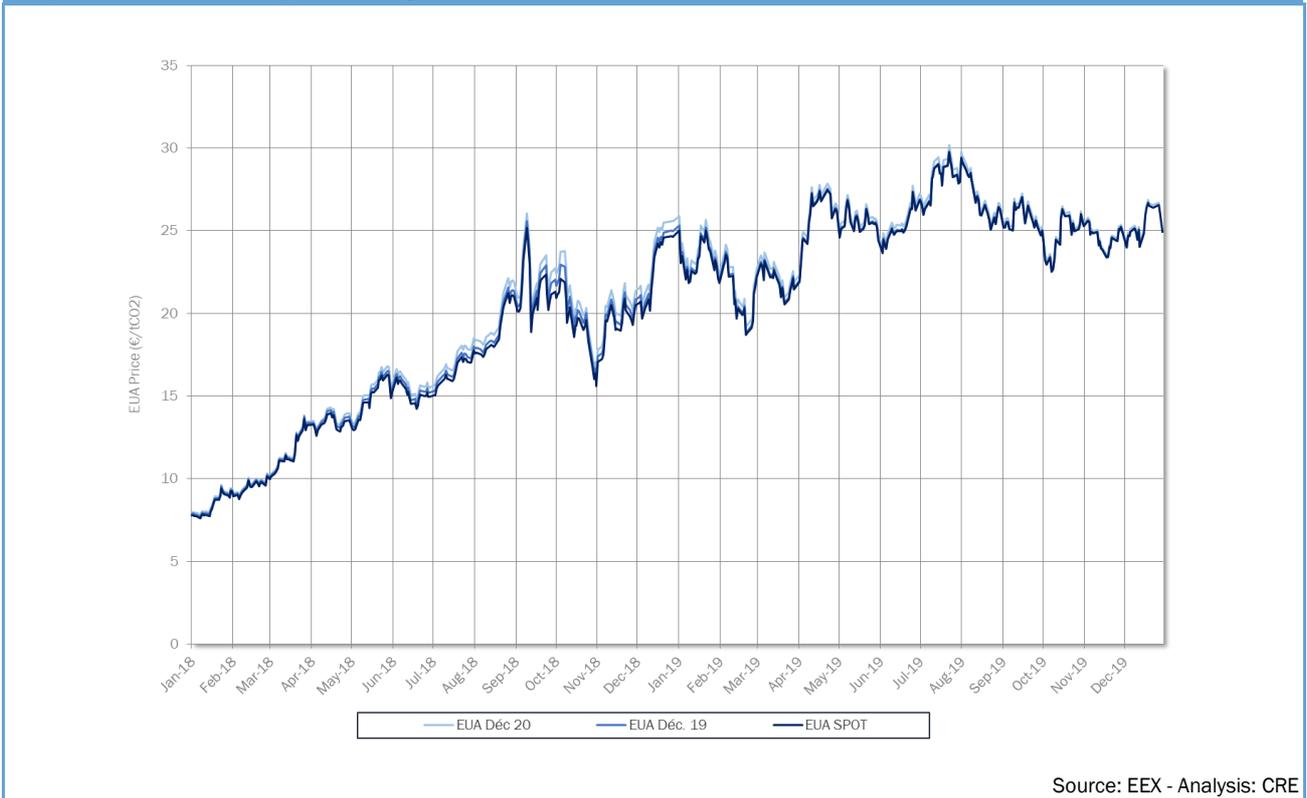
Allowance prices experienced several spasms in 2019, due in particular to uncertainties connected with the UK's exit from the European Union (commonly known as "Brexit"). Indeed, as the initial date for Brexit was 29 March

⁴¹ *Backloading* is a short-term mechanism to manage the surplus of allowances in circulation. It led to the temporary withdrawal of 900 mt of CO₂ from the market between 2014 and 2016 (400 mt CO₂ in 2014, 300 mt CO₂ in 2015, 200 mt CO₂ in 2016).

2019, the UK was not expected to take part in the EU ETS in 2019. During the first three months of 2019, prices were subsequently at their lowest levels of the year, reaching on average €22.1/t CO₂. Negotiations on exit arrangements and a postponement to the deadline finally saw the UK sign up for 2019 and 2020. As such, throughout 2019, the price fluctuated according to the ongoing negotiations. A "no deal" Brexit would have meant the sale of surplus allowances for the UK and a resulting drop in prices.

The market also reacted to European climate negotiations while the European Union welcomed in its new President, Ursula von der Leyen, who supports the combat against climate change. In February 2019, Germany also announced a plan to phase-out its coal-fired power stations without initially saying if the resulting surplus in allowances would be withdrawn, thus fuelling uncertainty in available supply for the coming years. Germany finally announced that the surpluses would be withdrawn at COP 25, in Madrid, in early December 2019.

Graph 8: CO₂ allowance price changes



Source: EEX - Analysis: CRE

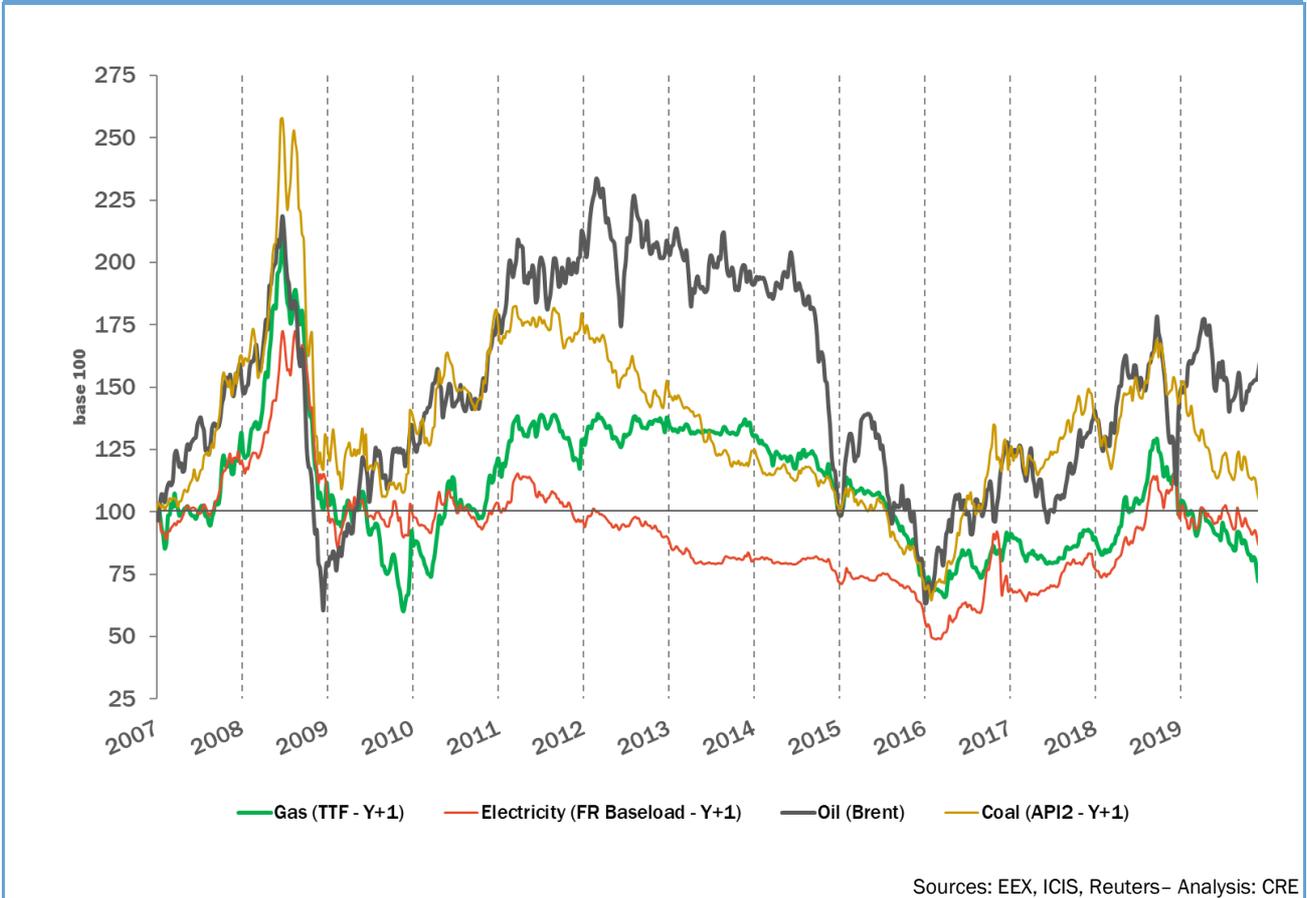
4. 2019 COMMODITY PRICES FROM A HISTORICAL PERSPECTIVE

The year 2019 was marked by a drop in gas, coal and electricity prices. From January to December 2019, the price of gas fell from €19.8 to €13.3/MWh, while that of electricity followed the same downward trend, from €54.5 to €43.5/MWh.

That said, although absolute price levels for electricity kept within historic averages for the last thirteen years, gas, by contrast, finished the year close to its lowest ever recorded level (Graph 9). Since 2007, the average price of electricity had been €47.2/ MWh, close to the average for 2019, which was €50.8/MWh. For gas, the average price reached €22/MWh for the period 2007 to late 2018. As such, while the average price for 2019 of €18/MWh, is still relatively close to the average, prices seen at the end of the year were among the lowest on record. From an historical perspective, the year 2019 bucked the trend of continually rising commodity prices since 2016. In terms of electricity, prices in late 2019 also reached their lowest level recorded during the 2008-2009 crisis, at around €43.9/MWh, although still far from the historic low of €25.6/MWh in 2016.

Although a certain correlation between the price of commodities and oil continued in 2019, they were in stark contrast to that of Brent Crude. Gas prices, in particular, evolves autonomously at a time of less gas contracts tooil indexes, the increase in the flexibility of the gas market gained thanks to massive LNG exportations, new facilities to store the volumes of gas, new pipelines and lower demand from the main customer.

Graph 9: Record of commodity prices (current prices)

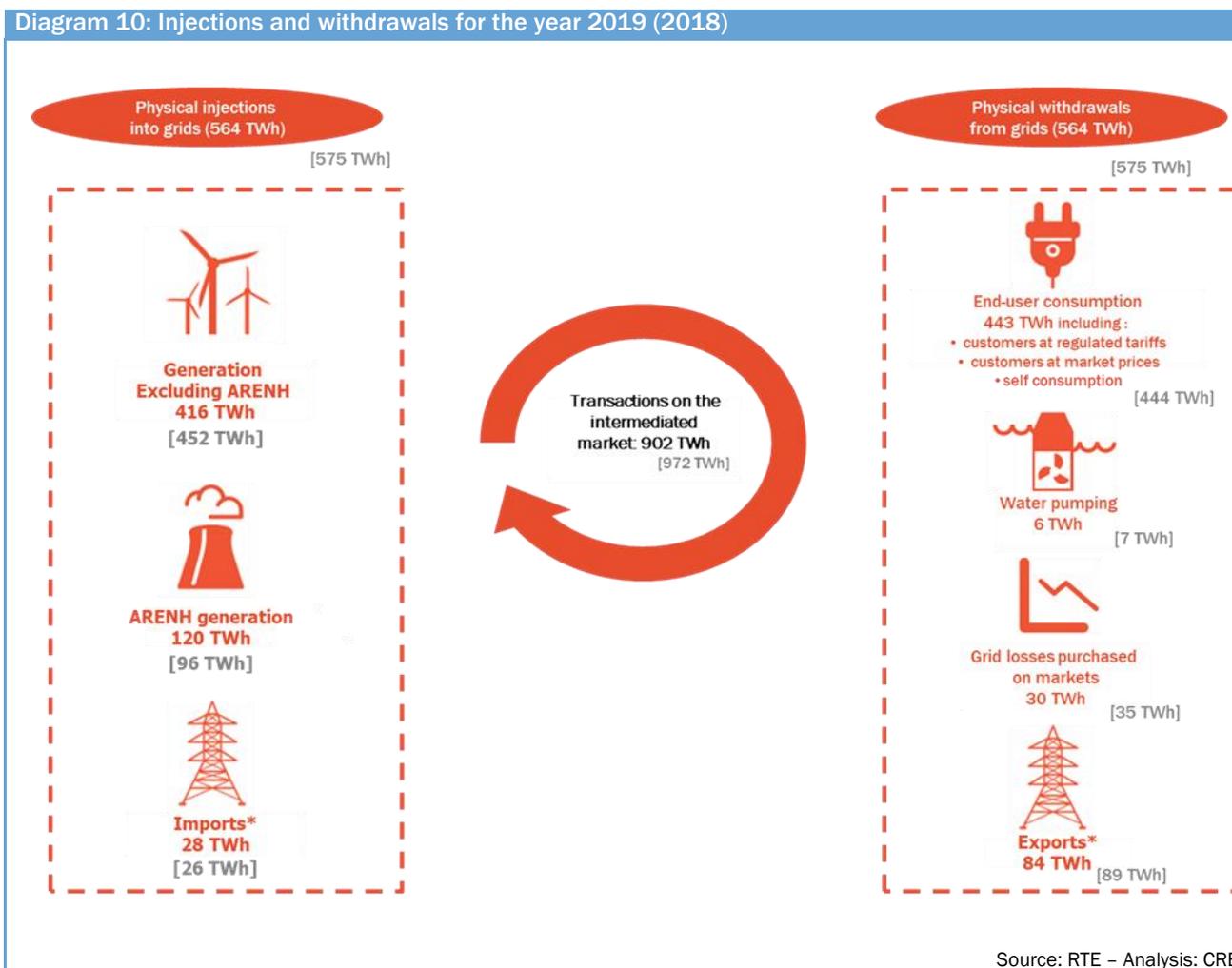


**SECTION 3
WHOLESALE ELECTRICITY MARKETS**

1. CHANGES TO SUPPLY AND DEMAND IN FRANCE, IN 2019

The year 2019 saw rather stable consumption patterns compared to 2018, with weather conditions that favoured the use of renewable energy resources but also gas-fired power plants, making the most of low gas prices and reduced nuclear and hydropower availability rates.

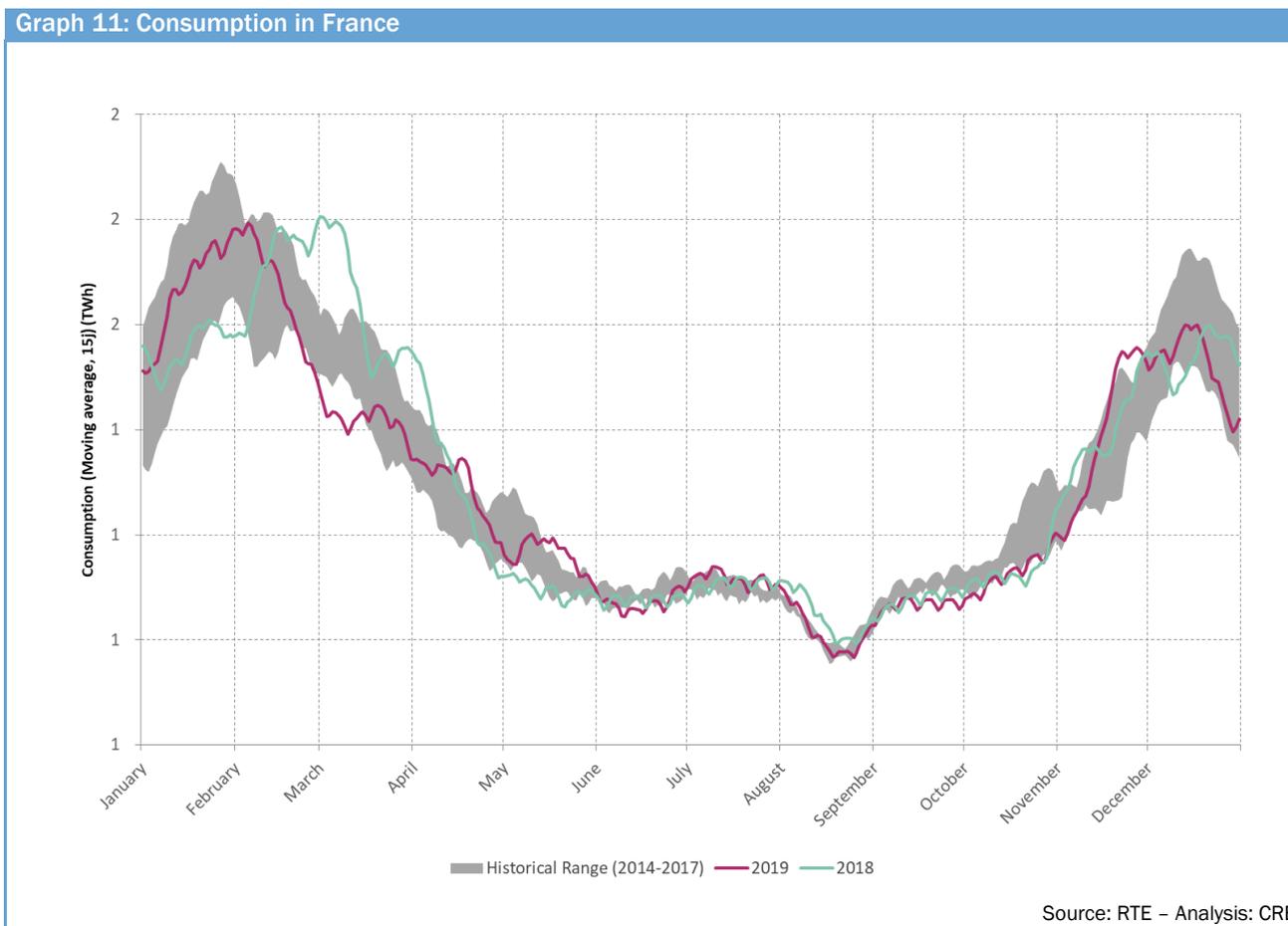
Diagram 10 presents a simplified version of the main flows for 2019 in the French electricity system and compares them to 2018 figures (in brackets).



1.1. Focus on changing consumption patterns

Total consumption in France, in 2019 was virtually stable compared to 2018 levels, with 444 TWh, amounting to a slight drop of 0.5% (Graph 11). Temperatures in 2019 were very mild and, on average higher than normal, just as 2018. Comparisons between consumption patterns adjusted for weather events reveal a drop of roughly 1% on the previous year. 2019 saw the lowest energy consumption levels in the last decade, this stems from energy efficiency measures over previous years and the tertiary economy shifting to become less electricity-intensive. This trend towards controlling consumption patterns are also observed in many other European countries.

Overall, consumption throughout the year kept within the historical tunnel average. However, some periods when consumption figures fell short of the historical tunnel limits were observed, notably in early March, June, October and November. These periods tended to coincide with mild temperatures.



Physical injections into the grid were slightly down between 2018 and 2019, dropping by 1.6% from 575 to 564 TWh. ARENH⁴² subscriptions in 2018 for delivery in 2019 rose from 96 to 121 TWh (including 21 TWh to offset transmission system losses) due to the competitiveness of the ARENH product. The ARENH volume allocated for 2020 during 2019 windows was 26.2 TWh for transmission system losses and 100 TWh for end customers.

Total installed capacity of French production facilities rose by 1.7% in 2019, from 132.9 GW to 135.3 GW. This rise is due to renewable energy installed capacity, which increased from 25.3 GW in 2018 to 28.1 GW in 2019 (an 11.1% increase).

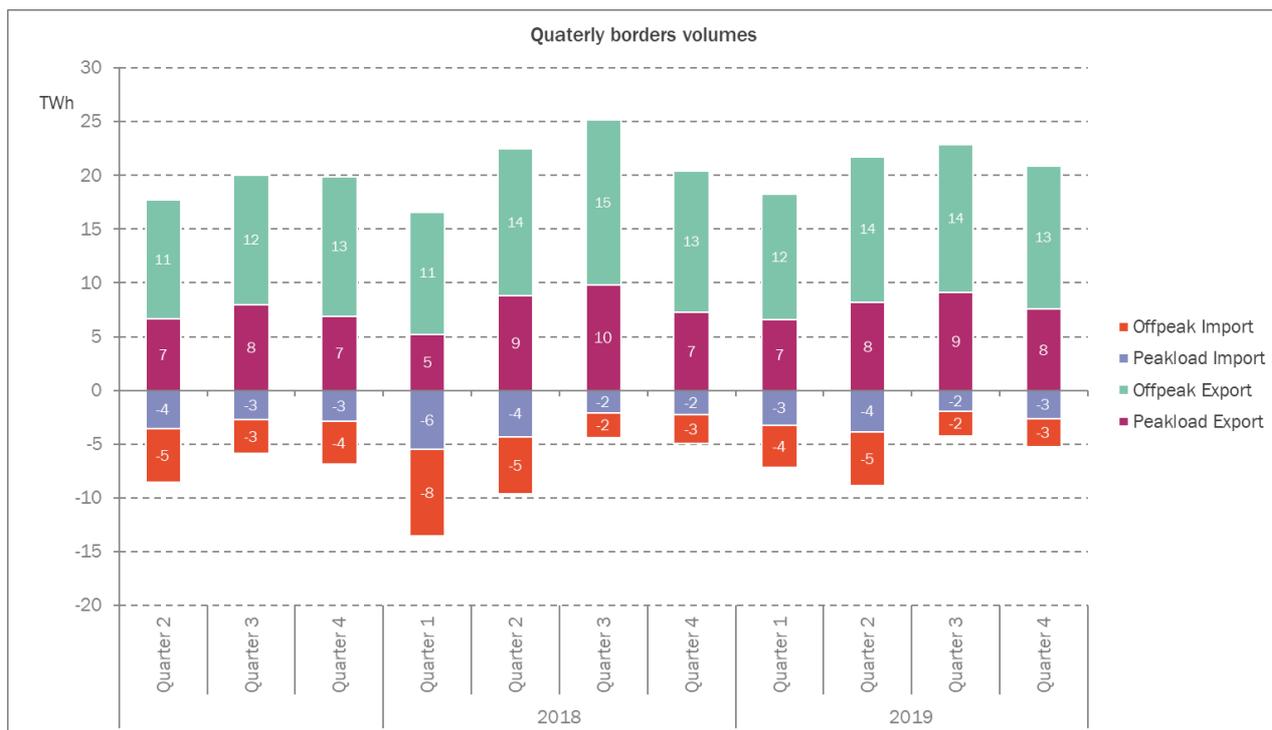
Total electricity production in 2019 fell by 2% after recovering in 2018. As such, French production fell from 548.6 to 537.7 TWh over the year. There was less call for nuclear and hydropower plants compared to 2018, resulting in a 3.5% and 12.1% drop respectively. By contrast, gas-fired power plants contributed more (23.8% rise) while coal-fired power plants production plummeted by 71.9%. Renewable energy production rose in line with associated renewable capacity. There was also a 21.2% rise in wind power production.

France has maintained its high export trade balance in 2019, amounting to 55.8 TWh. This was however slightly down on 2018 (-7%), especially during the last quarter of 2019 (Graph 12). This position reflects lower nuclear and hydropower plants availability.

⁴² The ARENH product corresponds to baseload energy delivered in the year, but also at a guaranteed capacity. The arbitrage takes place between the sum of the calendar and capacity prices, together with the ARENH price set at €42/MWh.



Graph 12: Quarterly volumes traded at borders



Source: RTE – Analysis: CRE

1.2. Nuclear fleet availability remains low in 2019

Nuclear power availability declined in 2019, dropping from 74.78% to 72.8%. The year began with nuclear power availability within the bounds of the historical tunnel average although it did drop below historical levels at the end of January. Then, in March and June, capacity returned to the high end of the historical range, displaying good availability levels. However, it dropped from June and the year ended with levels once again lower than historical tunnel averages.

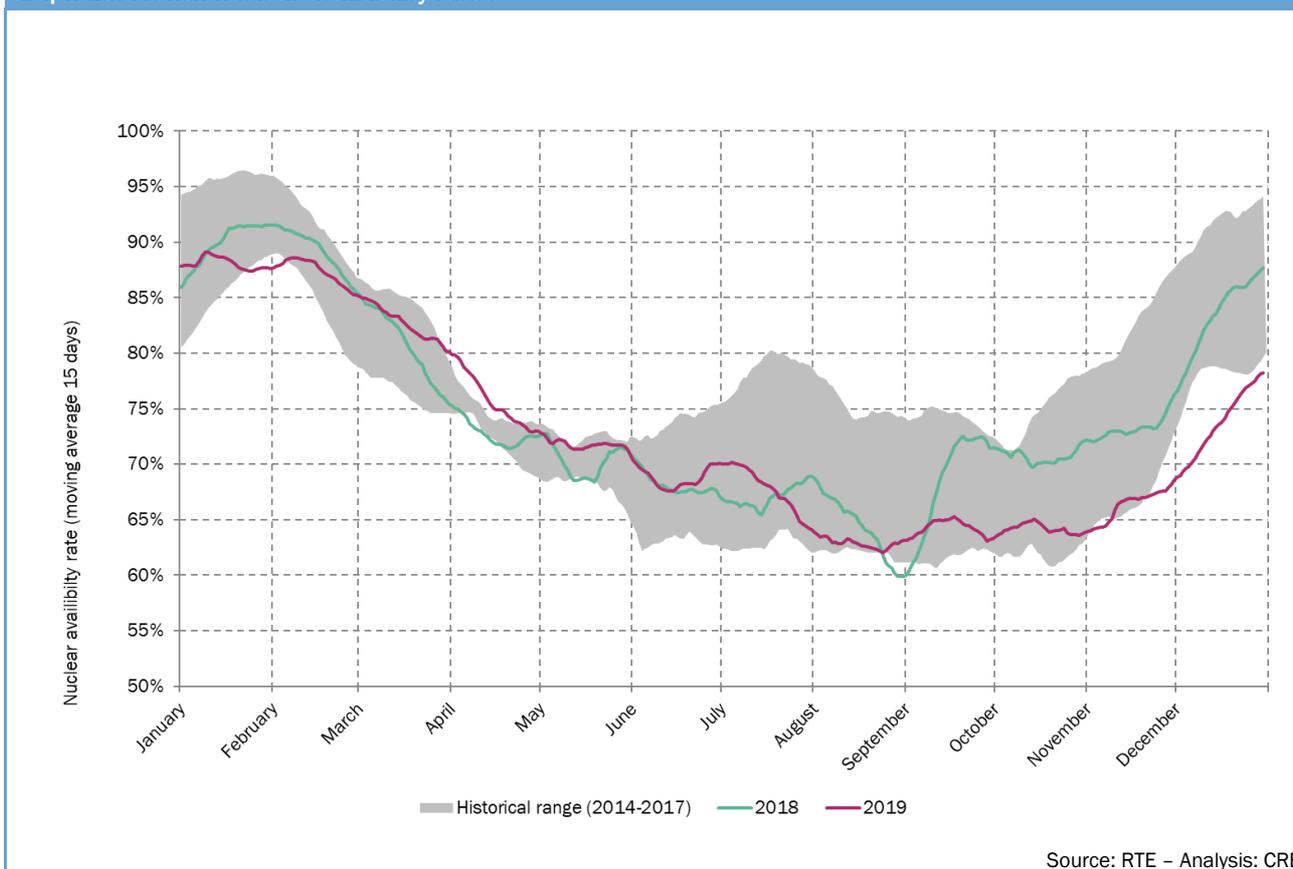
Some events effected this downturn in 2019. The heat wave of 24 and 25 July during the second quarter led to six nuclear power stations lowering their output; in line with environmental restrictions concerning water temperatures. Later, on 11 November, following an earthquake in the Ardèche that registered 5.4 on the Richter Scale, some reactors in the local area were temporarily shut down for standard safety checks connected with these event. This cut available nuclear power capacity by 2700 MW.

Finally, the largest drop in nuclear production availability occurred in December 2019 due to strike action and technical difficulties that extended certain downtime periods for maintenance until 2020, exceeding the initial re-commissioning dates.

The drop in nuclear power availability had a detrimental effect on nuclear energy production in 2019, bringing it to 379.5 TWh, 3.5% lower compared to 2018. The nuclear power sector remains France's main source of production, accounting for 70.6% of the energy mix. However, this is the lowest level in the last 30 years.



Graph 13: French nuclear availability rates



1.3. Installed renewable energy capacity (excluding hydro power) is rising whereas that of fossil fuel production is falling back, due to the growth in wind power.

Installed capacities in the renewable energy sectors (excl. hydraulic) continues to grow reaching 28 GW. In 2017, the government made clear its intention to close coal-fired power plants by 2022. Since then, eight plants have been shut down while the French Parliamentary Act 2019-1147 of 8 November 2019 on energy and climate confirmed end of coal-fired electricity production by 2022. The wind and solar power sectors have been growing strongly for several years, with average annual growth rates of 13% and 12% for the period 2014 - 2019 for wind and solar power respectively (Table 2).

Production in renewables (excluding hydropower) rose by 15% compared to 2018 reaching 54.7 TWh. Wind power production rose from 21.2% to 34.1 TWh, which is due to additional facilities and weather conditions that benefited this sector in 2019. Solar power also grew by 7.8% compared to previous year, reaching 11.6 TWh of production in 2019.

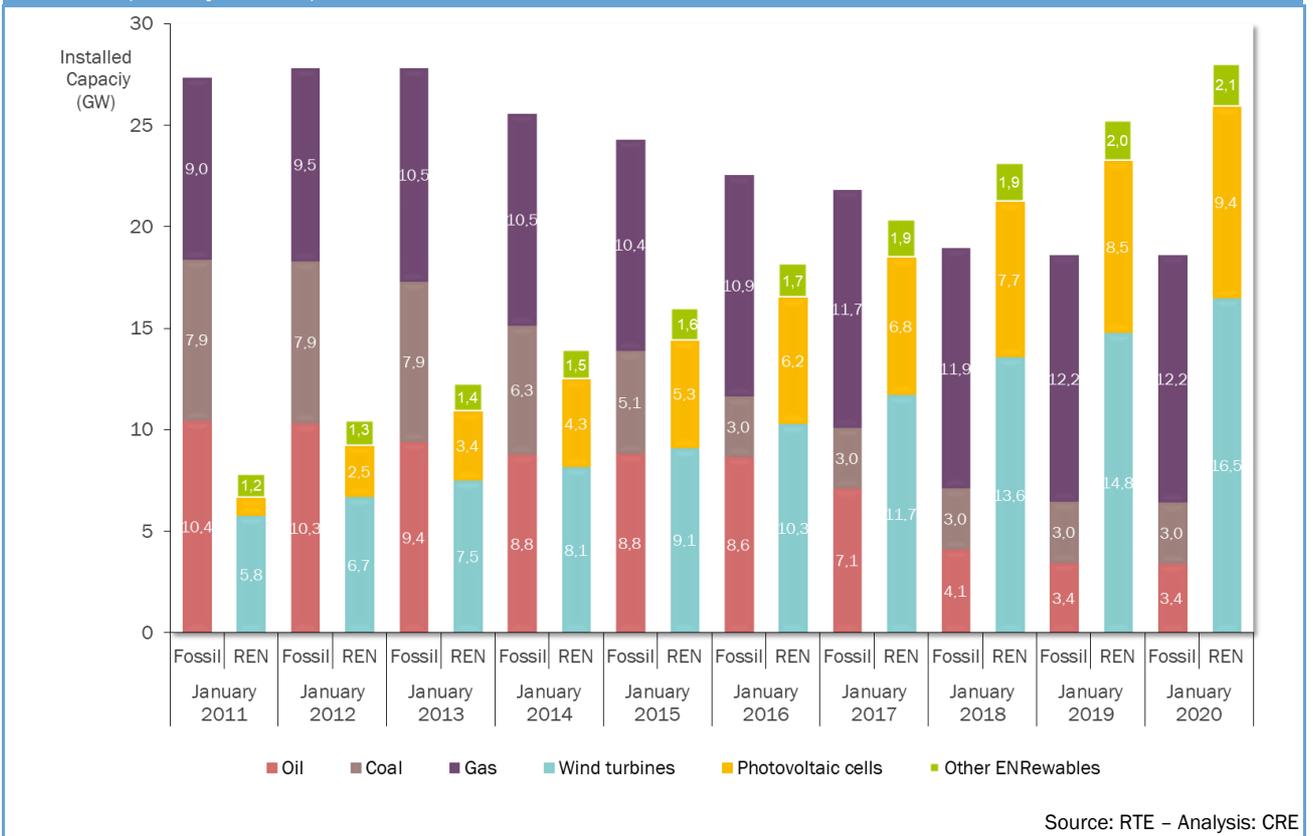
Table 2: Growth in installed capacity in the renewable energy sector

	2014	2015	2016	2017	2018	2019	AAGR ⁴³ 2014/2019
Wind (GW)	9.1	10.3	11.7	13.6	15.1	16.5	+13 %
Solar (GW)	5.3	6.2	6.8	7.7	8.5	9.4	+12 %

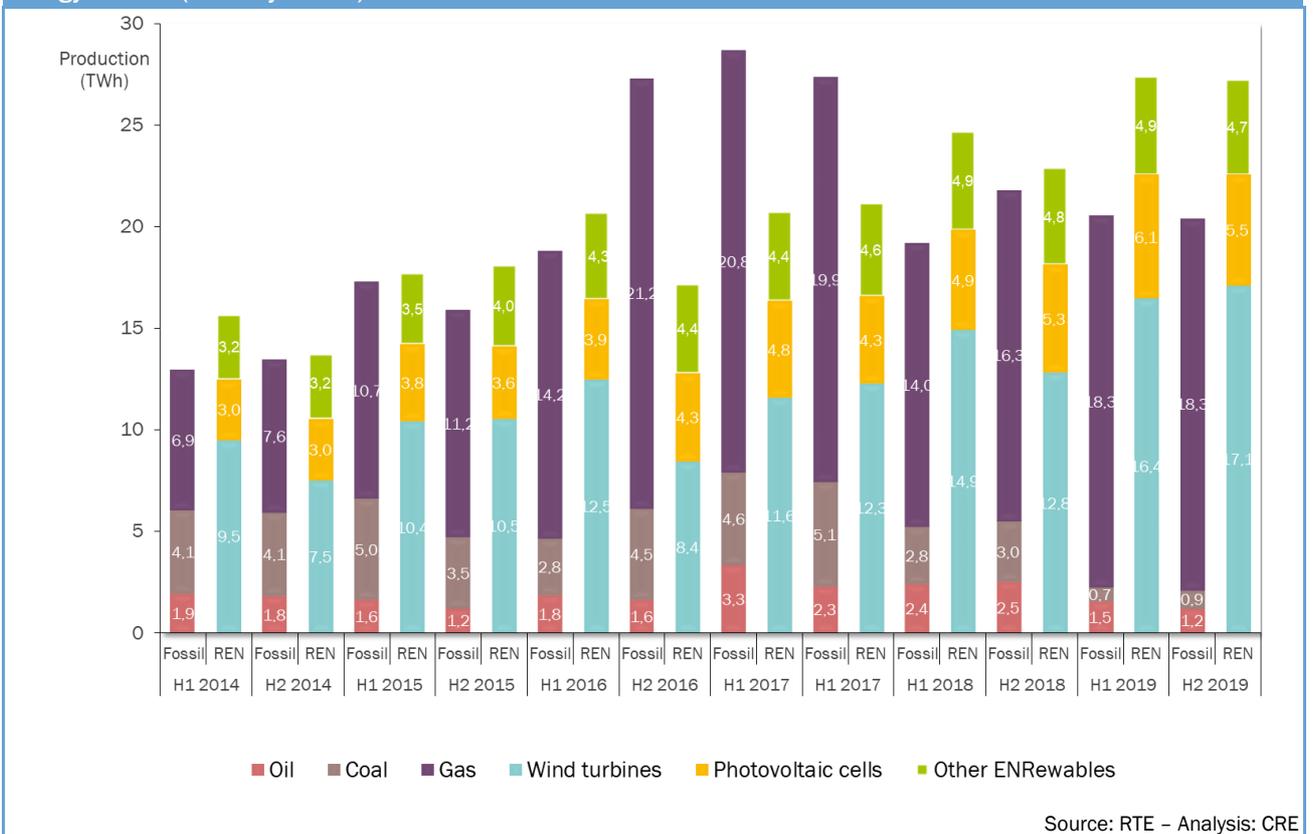
⁴³ Average annual growth rates.



Graph 14: Comparison of installed capacities of fossil fuel resources (excl. nuclear power) and renewable energy resources (excl. hydraulic)



Graph 15: Comparison of six-monthly production of the thermal fossil (excl. nuclear power) and renewable energy sectors (excl. hydraulic)

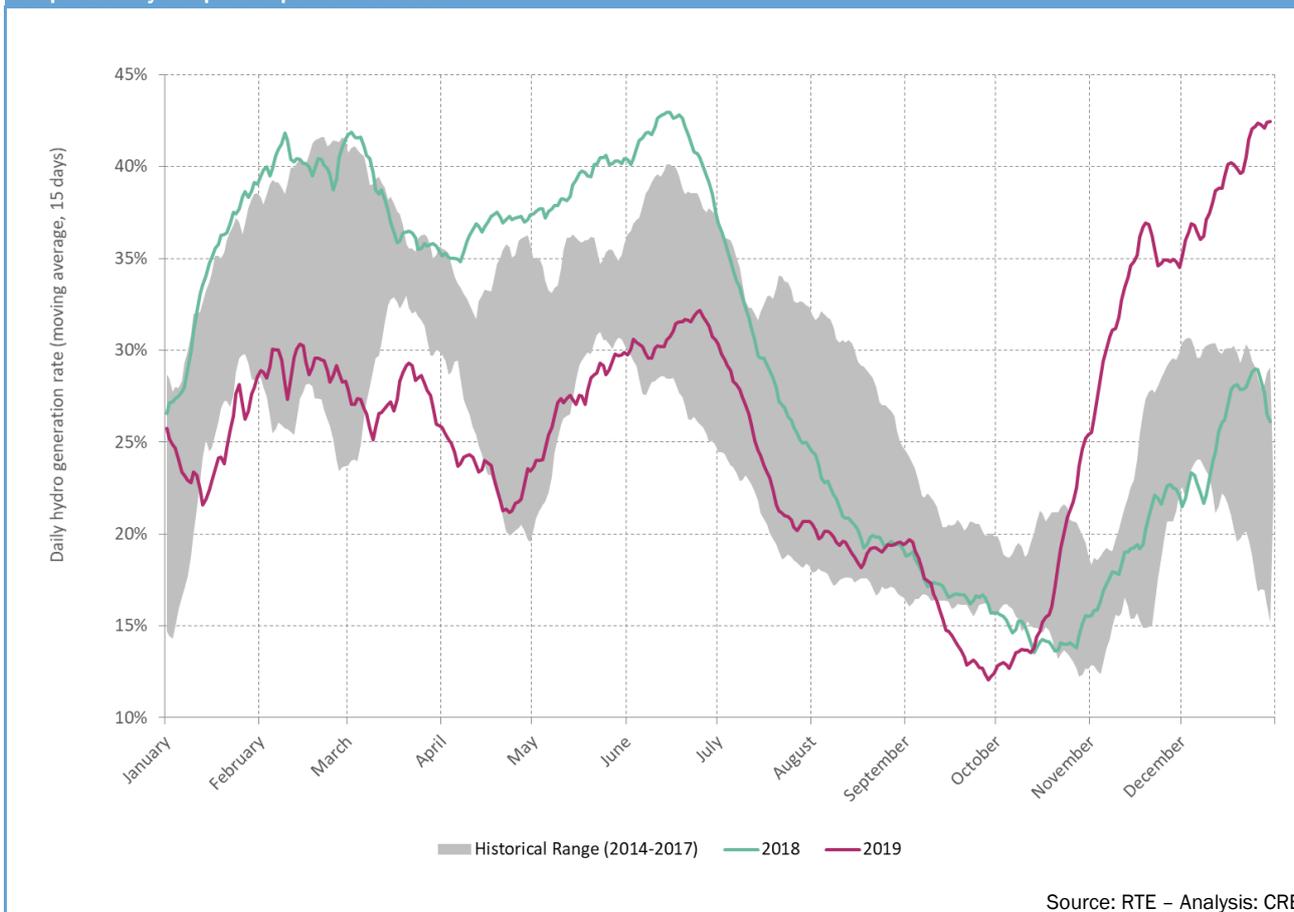


1.4. The low rainfall at the beginning of the year led to a moderate demand on the hydraulic sector

Average production rates in the hydropower sector fell by 4% in 2019 compared to 2018. Given the lack of rain and relatively mild temperatures during the first three quarters of the year, production levels were in the lower reaches of the historical tunnel, with a minimum take-up in late September of 12%. In total, hydropower production in 2019 reached 60 TWh, 12.1% lower than the previous year of 68.3 TWh.

Although the year 2019 started with relatively high hydropower stocks for the season, the sector was not much used given low rainfall figures and the need to safeguard water for use during the summer. Hydro power stocks recovered in September with the return of heavy rainfall, to replenish reserves adequately by the end of the year. This also had a knock-on effect on use rates which spiked during the last part of the year.

Graph 16: Hydro power production rates



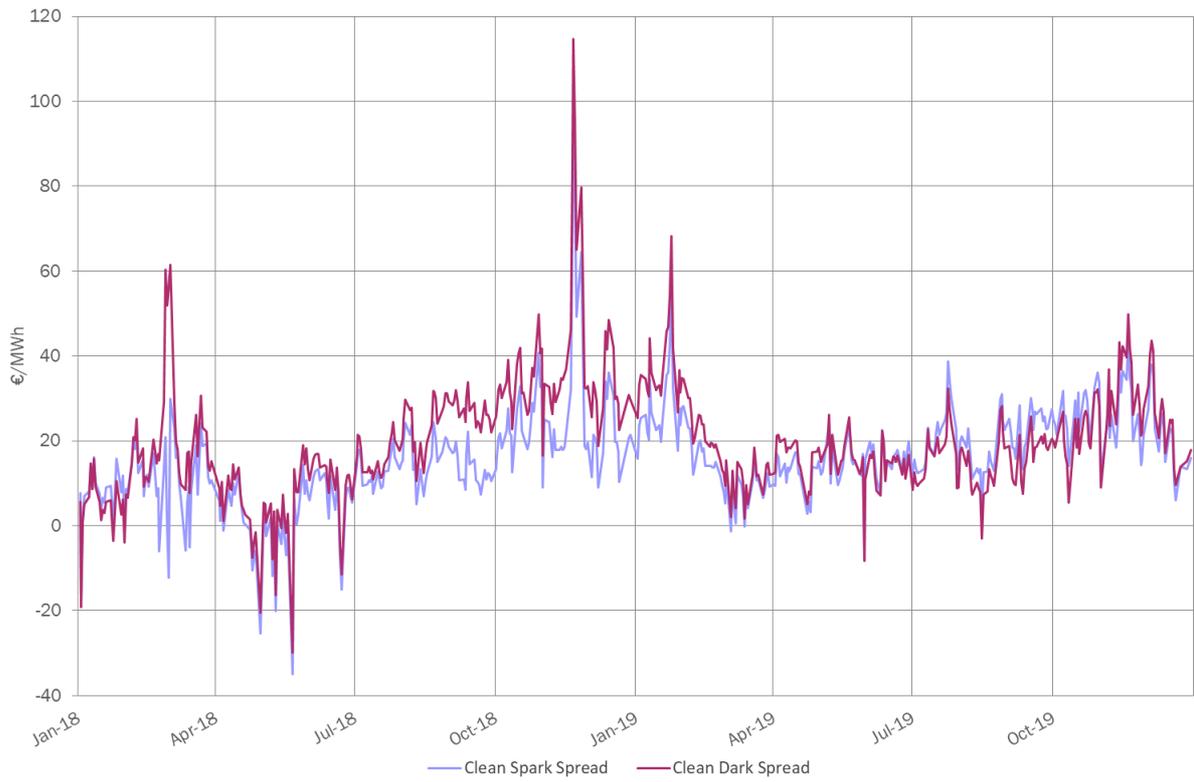
1.5. While the gas sector grew at the expense of its nuclear and hydropower counterparts, coal power dropped sharply

Thermal fossil-fuel production rose in 2019, from 39.4 TWh in 2018 to 42.6 TWh in 2019, a 9.8% rise.

The contribution of the gas sector during the year 2019 (Graph 18) was higher than the historic range, with an average production level of 35%, a 6-point rise on 2018. Peak production coincided at the start of the year and from May to July when various heat waves limited the use of nuclear power and also triggered conservation measures for hydropower stocks. The rest of the year followed a modulated pattern and production rates remained within the average range of historic levels.

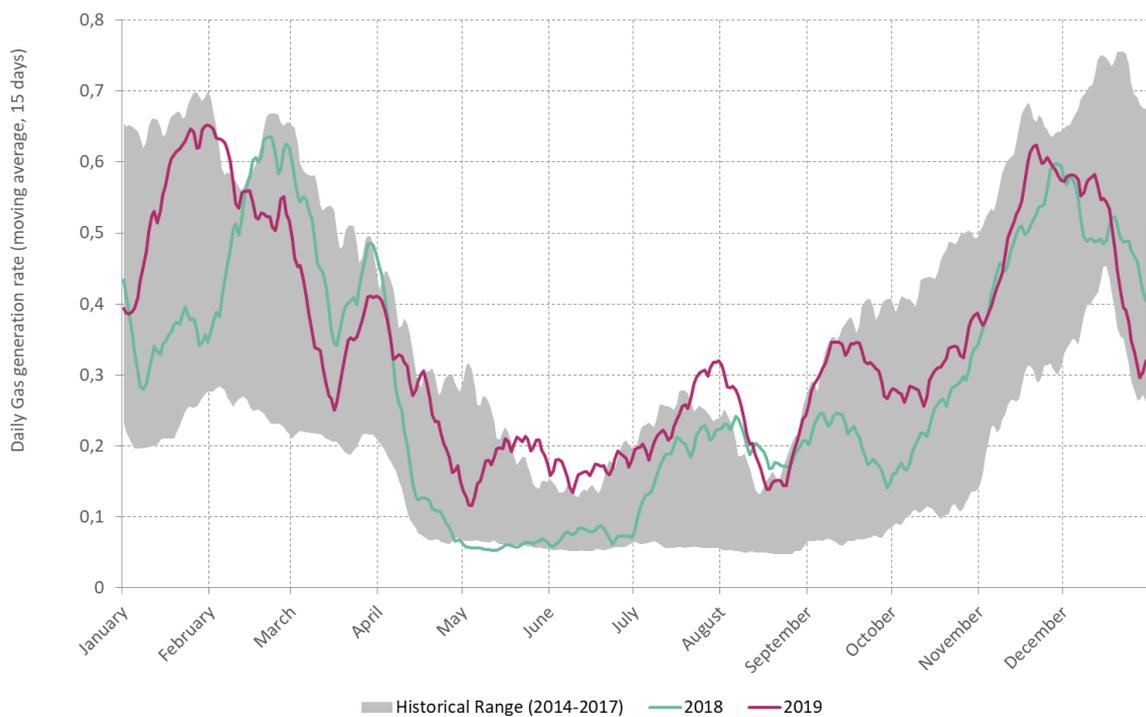
The production rate in the coal sector fell sharply in 2019 to 6% from 21% in 2018 (Graph 19) and went unused for extended periods. Production settled at 1.6 TWh and remains negligible compared to that of gas which reached 38.6 TWh after being given a boost by a rise in CO₂ allowance rates. Production in the coal sector only started up during the winter months of January, November and December, while remaining very marginal during the rest of the year, especially during the late July heat wave.

Graph 17: Peak spot clean dark and clean spark spreads



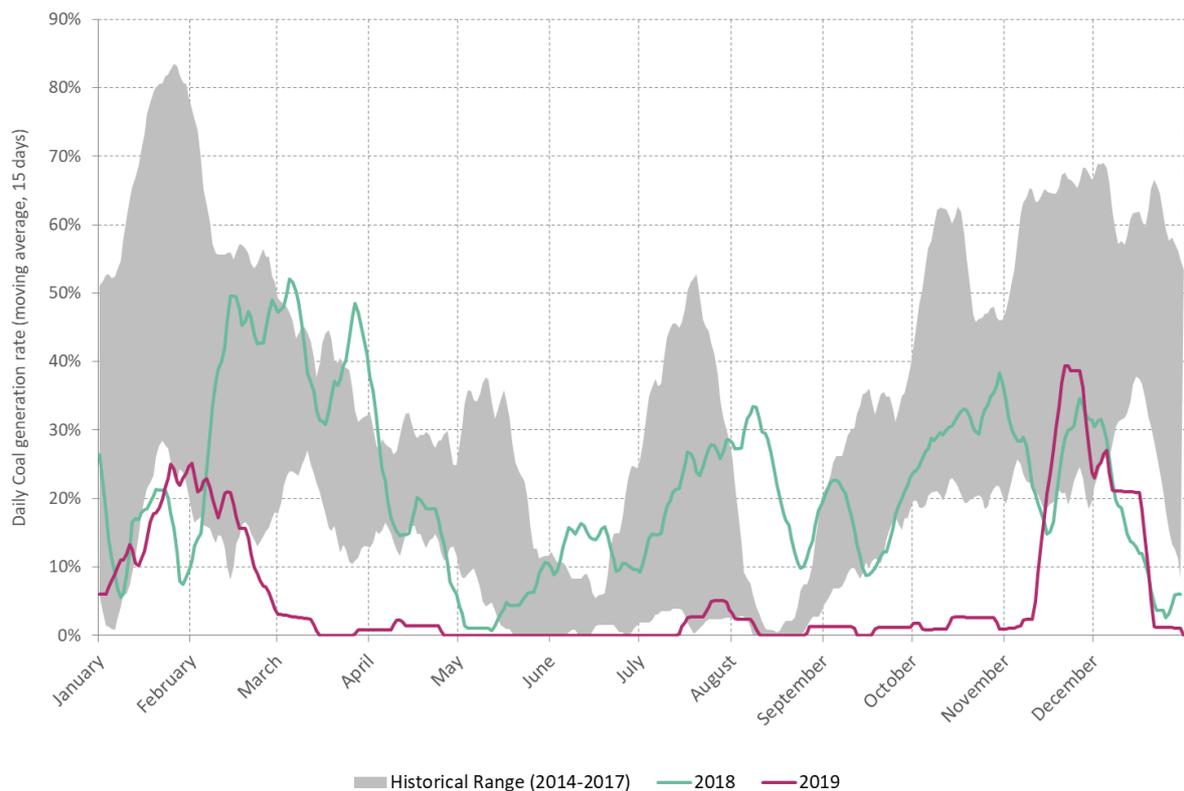
Sources: ECX, Heren, Powernext, EPEX Spot – Analysis: CRE

Graph 18: Gas sector production rate



Source: RTE – Analysis: CRE

Graph 19: Coal sector production rate



Source: RTE – Analysis: CRE

1.6. Marginality of the various production sectors in 2018 and 2019

An energy production sector is referred to as "marginal" when the last production unit required to meet demand belongs to that sector. Its marginal production cost therefore theoretically determines the market price in the *day-ahead* auction. As such, the marginality of a production sector can be very different from its share of annual production. The CRE estimates the marginality of production sectors by considering the marginal cost of power plants and offers executed during *day-ahead* auctions.

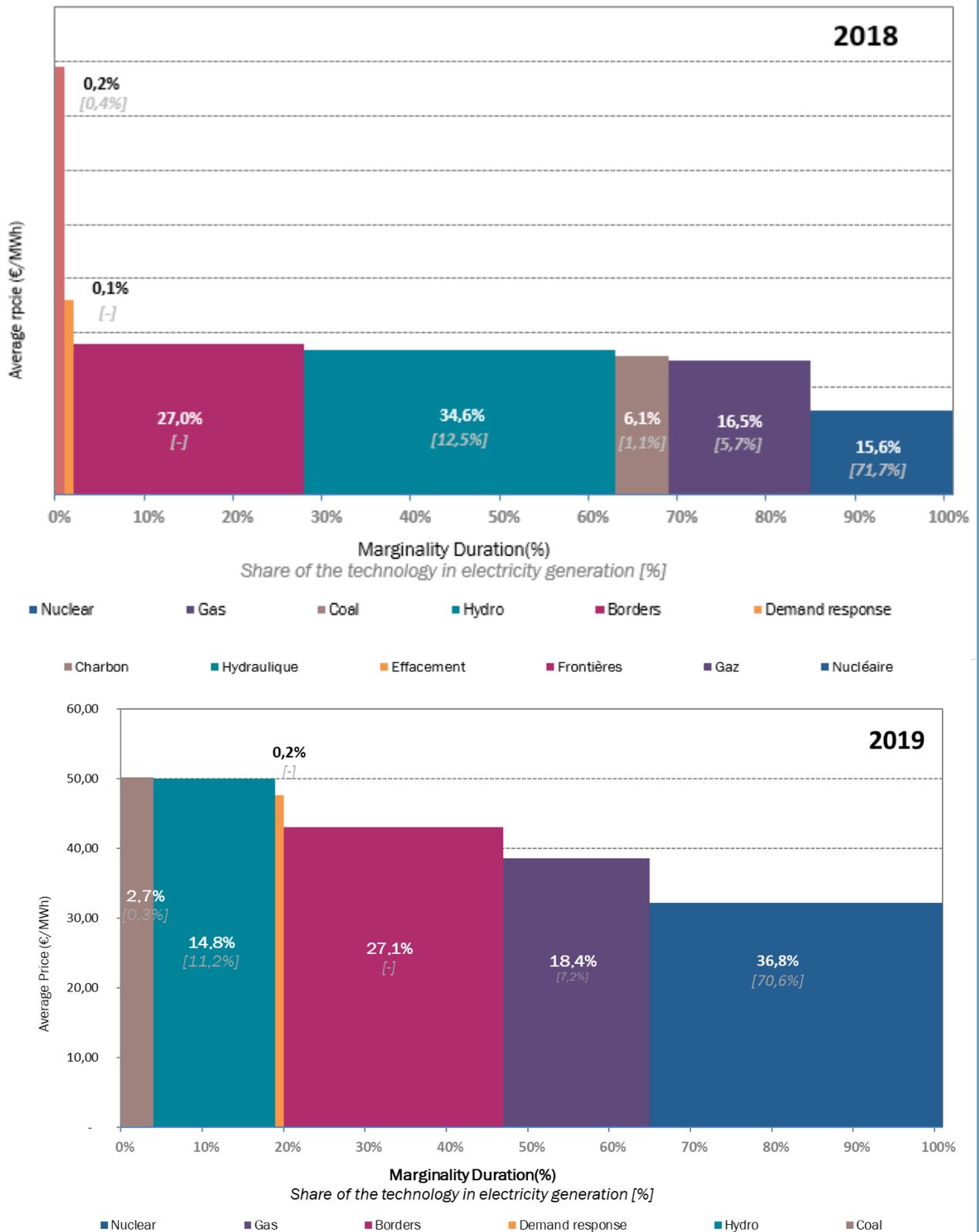
The share of marginality in the production sectors has evolved in 2019. Firstly, fuel oil, which is gradually disappearing from the French energy mix, was never marginal in 2019. Coal has become the sector with the highest average cost, with marginality at 2.7% compared to 6.1% in 2018.

When hydropower is marginal, average costs is similar to that of coal. In 2019, the sector was marginal 14.8% of the time compared to 34.6% in 2018. This drop of almost 20% occurred even though there was not much use of hydropower during the first half of 2019, given low rainfall and the need to safeguard stocks. As such, the sector replaced coal in the *order of merit* but not that of gas. Indeed, the gas sector reported a far lower average marginal cost, with its marginality rising by 2% compared to 2018.

The nuclear sector with the lowest average marginal cost, saw strong growth, with its marginality shifting from 15.6% of the time in 2018 to 36.8% in 2019, matching a drop in *spot* prices in 2019.

Finally, as in 2018, trading at borders provided a key element on price formation in France as it set them 27.1% of the time in 2019.

Graph 20: Marginality on the various production sectors in 2018 and 2019



Sources: EPEX SPOT, RTE, Producers - Analysis: CRE

2. WHOLESALE ELECTRICITY PRICES

2.1. Spot prices fell by an average of 21.5% in 2019

The average baseload spot price for 2019 fell sharply to settle at €39.4/MWh, a 21.5% drop compared to 2018. Intraday prices followed the same pattern as baseload spot prices to reach an average of €39.4/MWh for hourly products, which corresponds to a 23% reduction compared to 2018 (Table 3).

Following rising prices in 2018, the year 2019 began with relatively high spot prices. They did, however, fall sharply thereafter. This pattern was driven by milder temperatures that put the electricity system under less pressure, but mostly by lower commodity prices, especially gas.

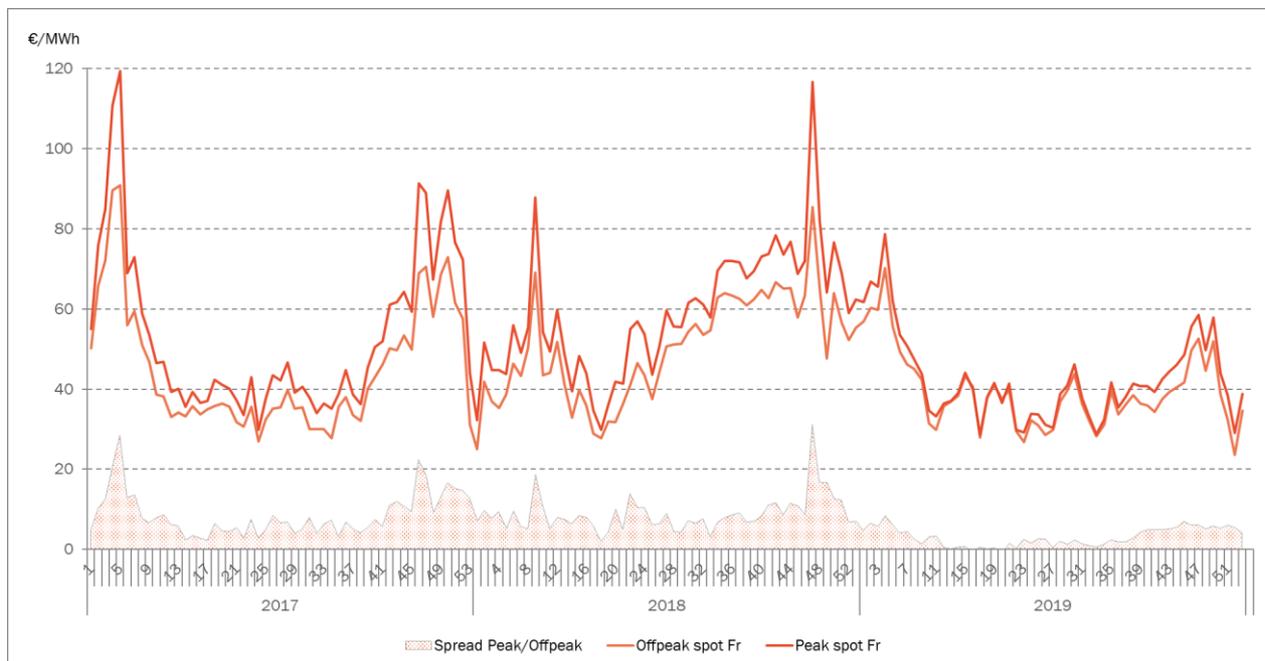
The market was relatively calm although there were some price spikes. A first spike came in late January with a cold snap that caused consumption and prices to reach their highest levels, averaging 88.5 GW and €86/MWh respectively at 7pm on 24 January 2019. There was a sharp drop after this spike that mirrored the fall in coal and gas prices. The situation stabilised somewhat with little change and small spikes in prices related to the heat waves. The year 2019 closed with another sharp drop in December from the effects of strikes and protests that cut demand, especially in the transport sector.

Table 3: Average day-ahead and intraday prices

Period	Average day-ahead price	Average Intraday price
2017	€44.98/MWh	€45.05/MWh
2018	€50.20/MWh	€51.19/MWh
2019	€39.45/MWh	€39.4/MWh

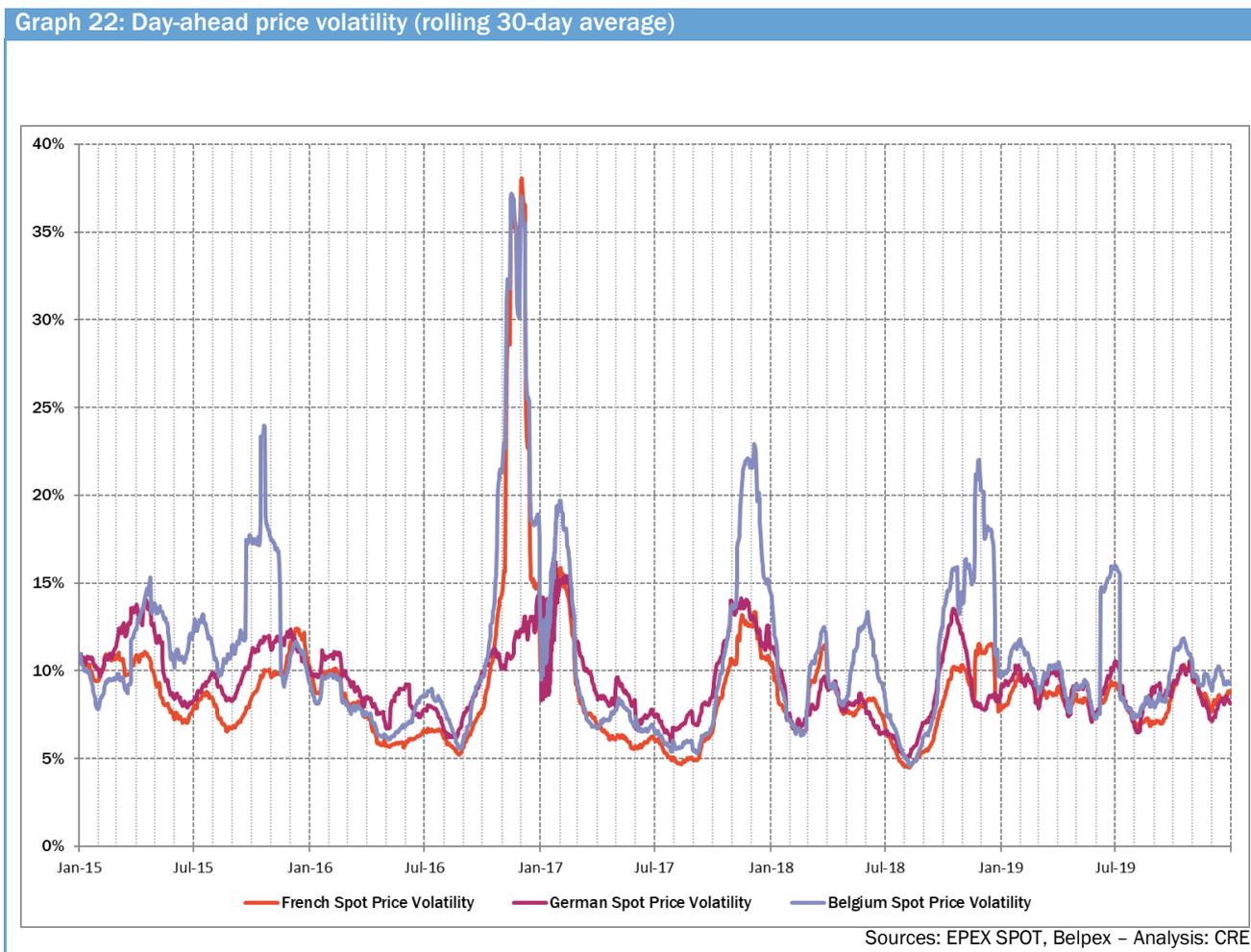
Source: EPEX SPOT

Graph 21: Change in day-ahead prices in France (average weekly prices)



Source: EPEX SPOT

Volatility in the French market during 2019 was relatively subdued compared to previous years. The market's cyclical pattern mirrors weather events but does not reveal spikes due to cold snaps and heat waves. (Graph 22).



2.2. Difference between spot prices and EDF marginal costs in 2019

In terms of the formation of *spot* prices, the CRE reviews differences between the *spot* market prices and the marginal costs of EDF power generation facilities using calculations from its daily optimisation models. On average, the price/cost difference in 2019 was 1.5%, i.e. lower than that of 2018, which was 3.5% but identical to that of 2017 (see 2017 and 2018 surveillance reports). CRE has been measuring this indicator since 2008 and it has never exceeded 6.5%. The various differences published in successive surveillance reports are presented in the table below.

Table 4: Changes in prices and EDF marginal costs

Year	Price/cost difference
2008	6.0%
2009	6.5%
2010	3.2%
2011	5.0%
2012	2.2%
2013	4.5%
2014	5.5%
2015	5.3%
2016	2.9%
2017	1.5%
2018	3.5%
2019	1.5%

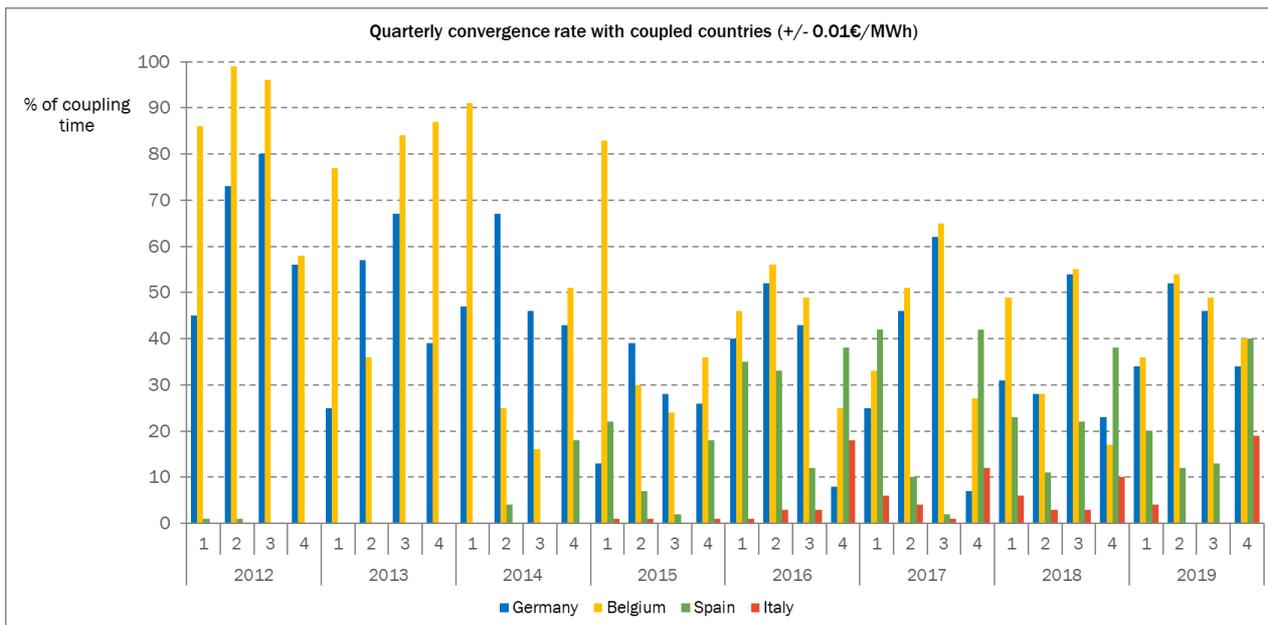
Without pre-empting additional checks, the CRE considers that the average difference measured in 2019 is not indicative of the exercise of market power by EDF.



2.3. Contrasting convergence rates for hourly prices with coupled countries according to volatile periods in French spot prices

In 2019, convergence rates in *Central West Europe (CWE)*⁴⁴ rose while the price spread with France reduced. After unstable prices during 2018 in Belgium that were generally higher than in France, the Belgian average spot price for 2019 was slightly less than that for France. Coupling rates (defined as the proportion of hours during which spot prices are equal) between France and Belgium rose to 44.8%, higher than the average coupling rate with Germany, which also rose but settled at 41.5%. For some years now, Spain has had a relatively high coupling rate with France, although its 2019 level, at 21.3%, was down on 2018. On average, Spanish spot prices remained more expensive than their French counterparts, at €8.1/MWh. Apart from a few one-off incidents, Italian and UK spot prices remained higher than those in France, with average annual differences of €12.7/MWh and €9.4/MWh respectively.

Graph 23: Quarterly convergence rates for hourly prices with coupled countries

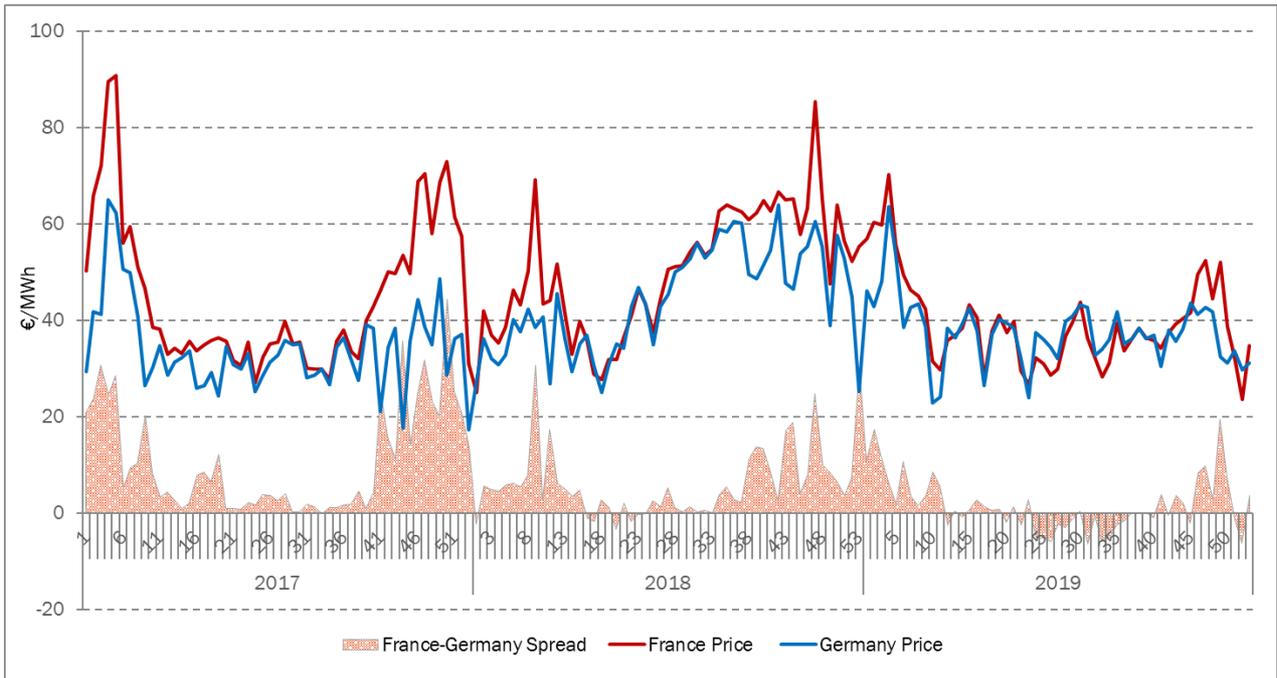


Sources: EPEX SPOT, Belpex, OMEL, IPEX

⁴⁴ The Central West Europe, zone includes France, Belgium, Germany, Luxembourg and the Netherlands. Market prices for electricity here are coupled.

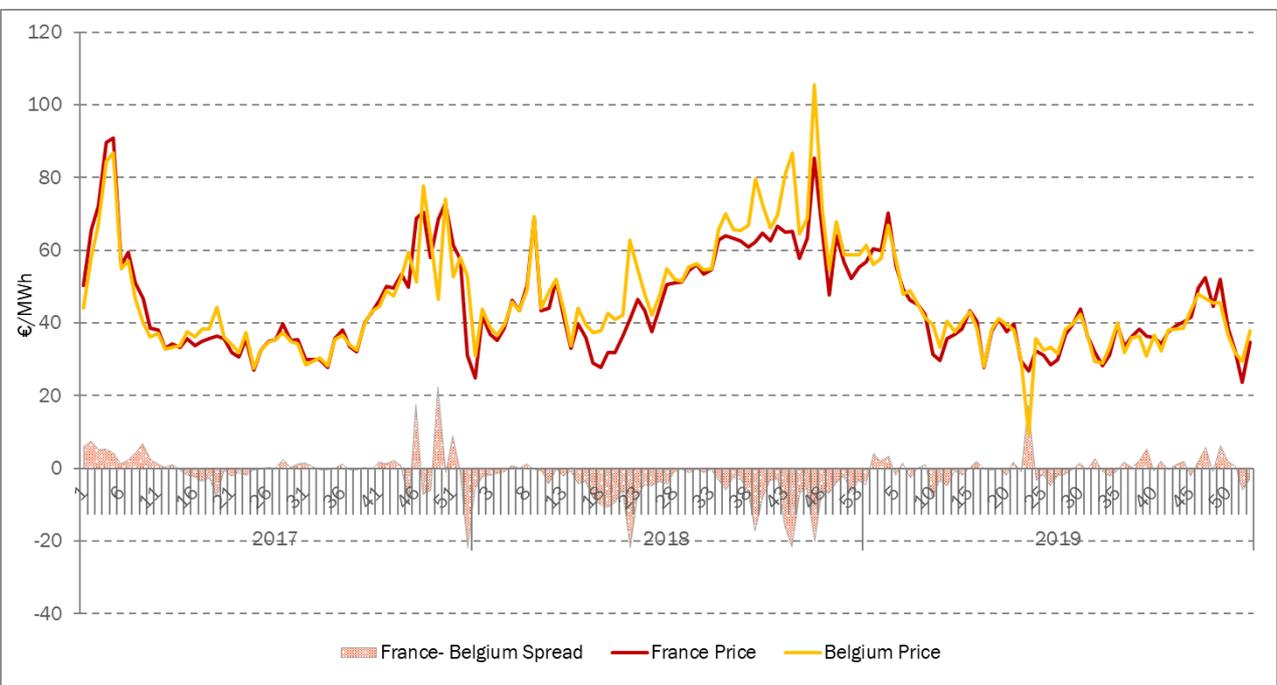


Graph 24: Spot price for France and Germany (weekly averages)



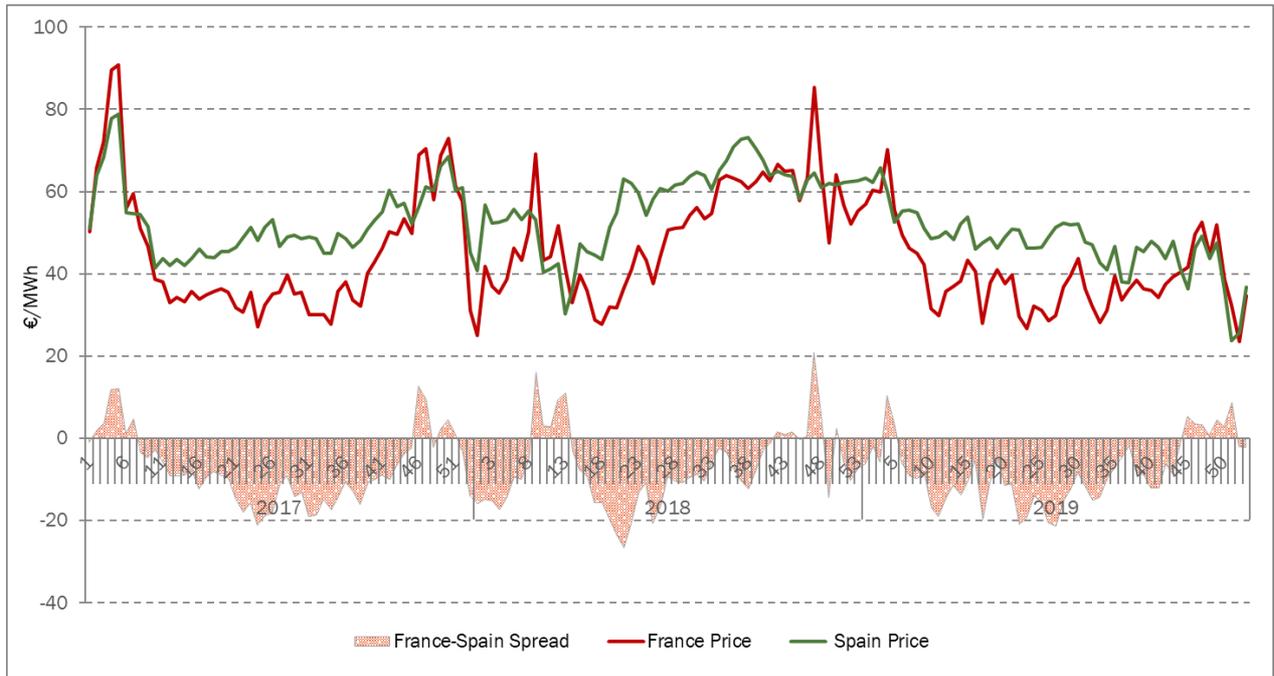
Sources: EPEX SPOT

Graph 25: Spot price for France and Belgium (weekly averages)



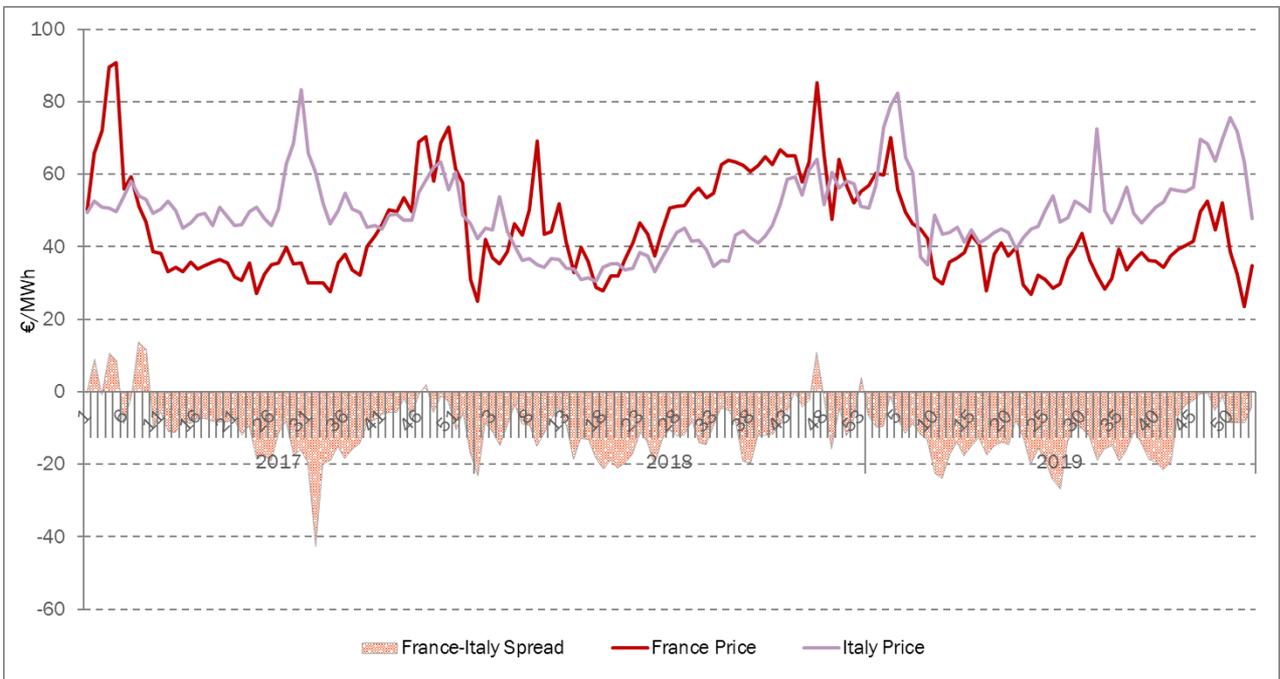
Sources: EPEX SPOT, Belpex

Graph 26: Spot price for France and Spain (weekly averages)



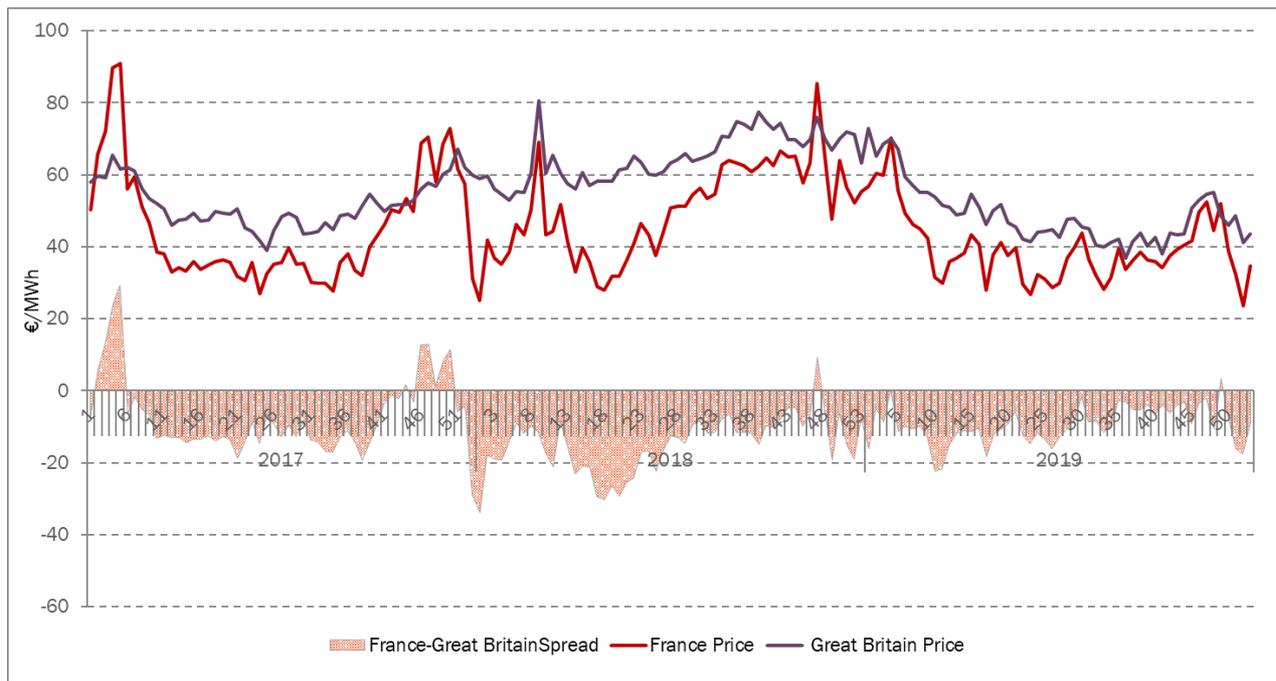
Sources: EPEX SPOT, OMEL

Graph 27: Spot price for France and Italy (weekly averages)



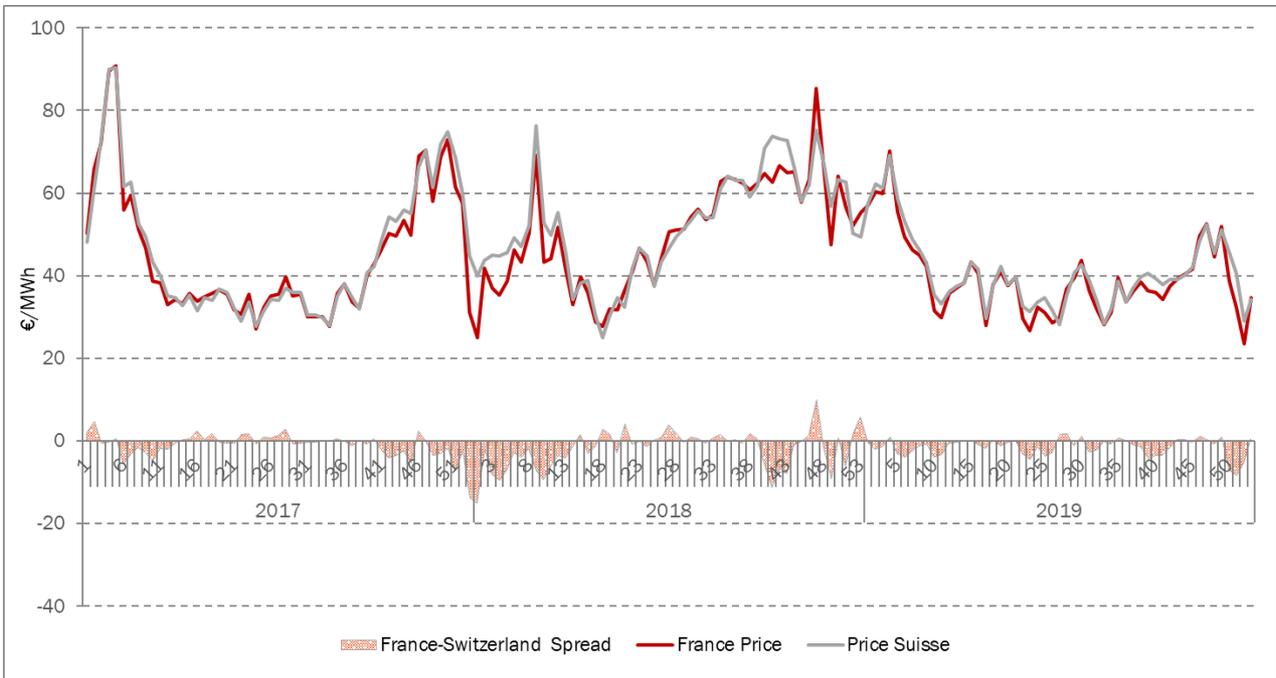
Sources: EPEX SPOT, IPEX

Graph 28: Spot price for France and the UK (weekly averages)



Sources: EPEX SPOT, APX

Graph 29: Spot price for France and Switzerland (weekly averages)

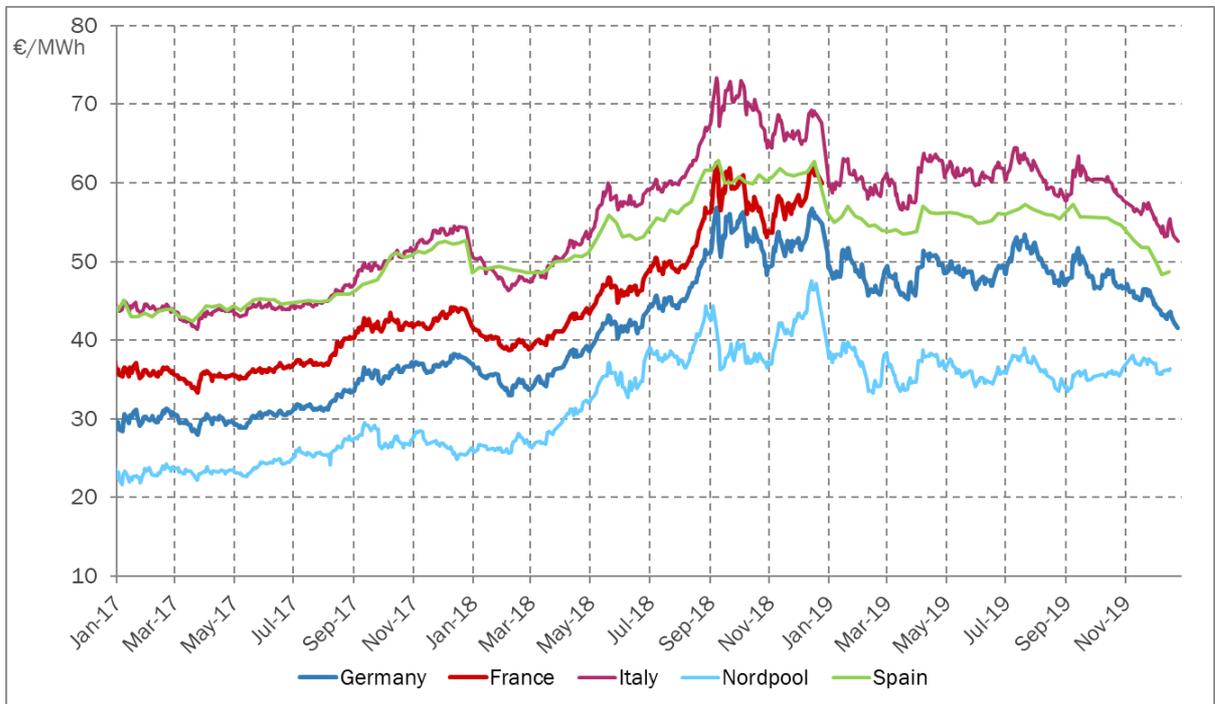


Source: EPEX SPOT

2.4. Futures prices in France and Europe

The prices of futures products for Y+1 delivery in Europe fell in 2019 after surging in 2018. Apart from the Northern countries, this decline is linked, in particular, to tumbling fuel prices (gas and coal).

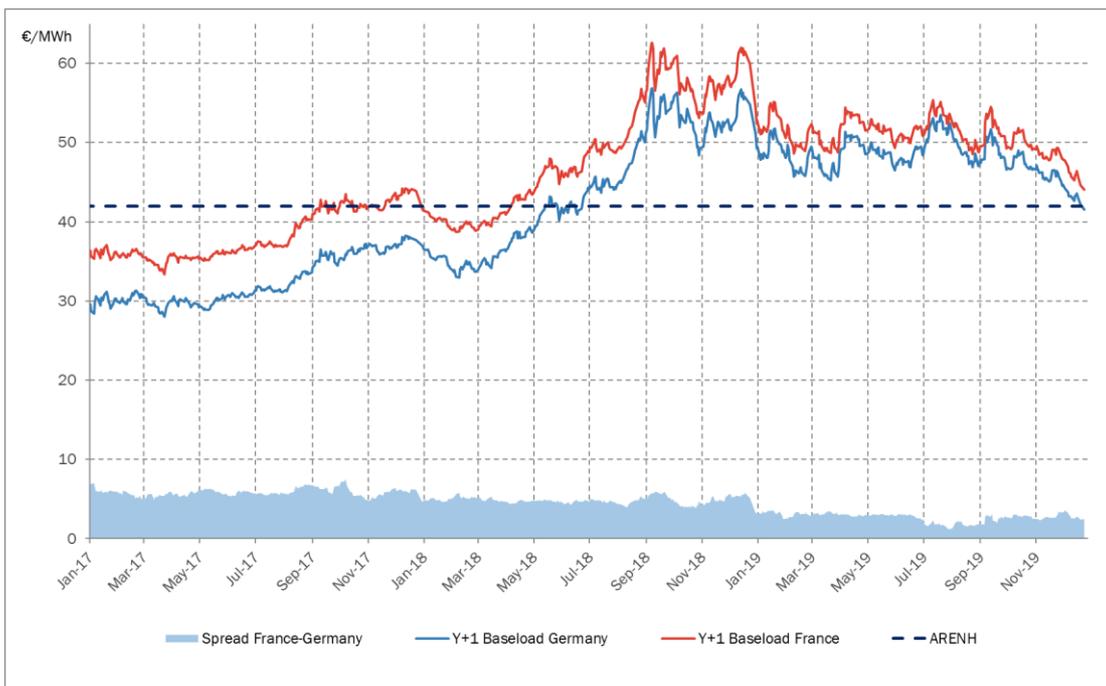
Graph 30: Y+1 product prices in Europe



Sources: EEX, EPD, ICE Endex, Heren

The spread in futures product prices between France and Germany fell sharply by 44% compared to the previous year, to an average of €2.7/MWh in 2019 compared to €4.8/MWh in 2018 (Graph 31). Y+1 French calendar products traded above the ARENH price all year long, at an annual average of €50.9/MWh.

Graph 31: Differences in French and German calendar product prices



Source: EPEX SPOT, EEX

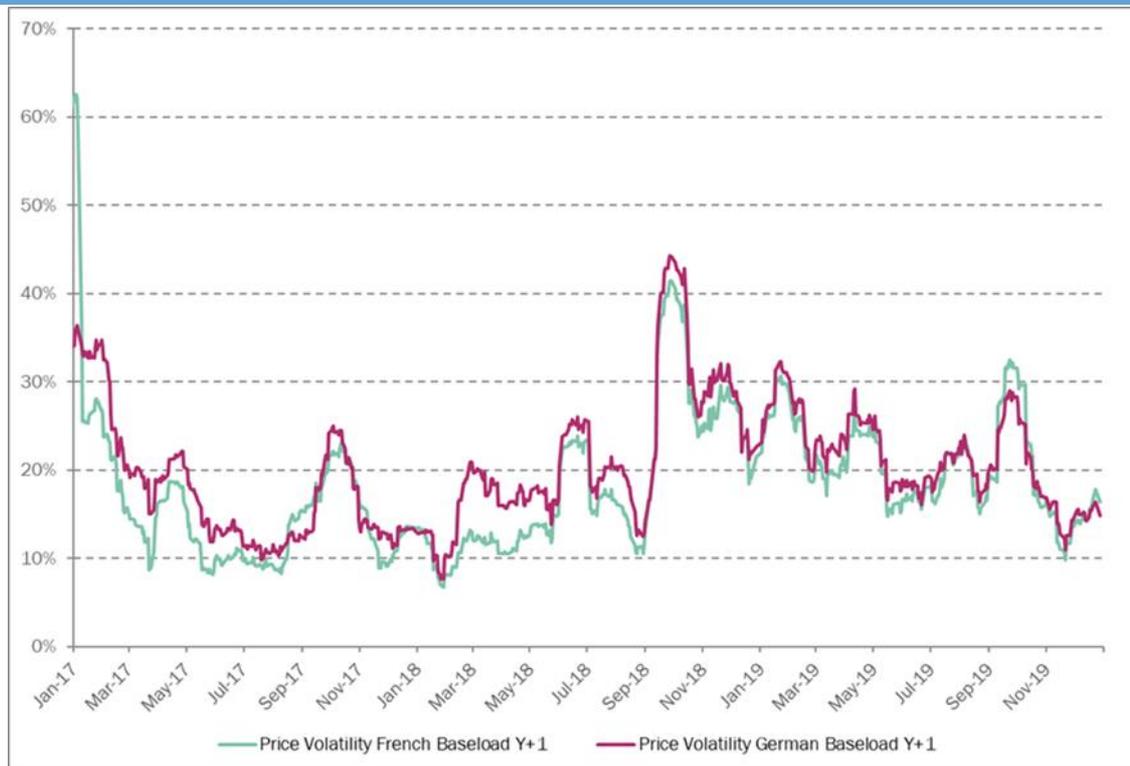
Calendar product prices in France for one to three-year timeframes were relatively stable throughout the year (Graph 32). Y+2 and Y+3 calendar product volatility remained low and settled in the price range at €47-49/MWh for the last three quarters of 2019. There were significant differences between one and two to three-year timeframes, right up until the last quarter when the Y+1 product price dropped sharply, actually reversing spread direction.

Graph 32: Calendar product price changes in France for the next 3 years



Source: EEX

Graph 33: Price volatility of calendar products

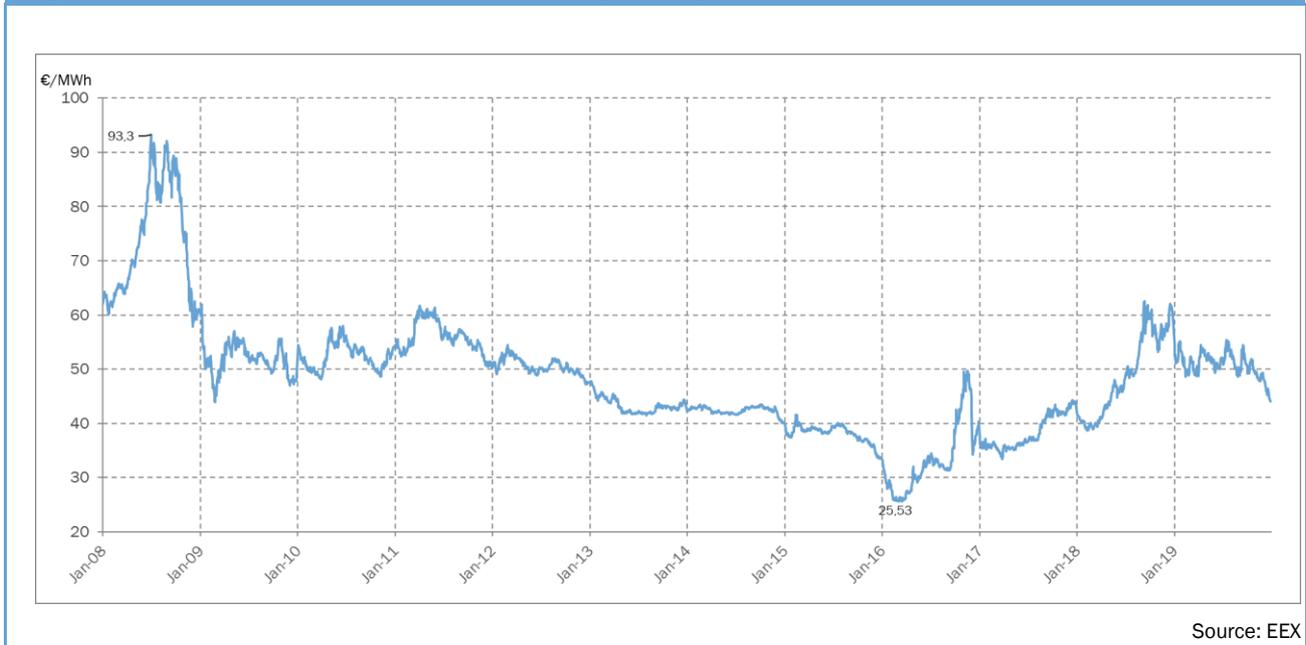


Source: EEX, analysis: CRE

Y+1 calendar product price volatility in France (20.6%) and in Germany (21.5%) was much the same mostly all the yearlong with notable differences around mid-March, mid-May and late September. The biggest difference appeared in September when the French calendar product peaked at 31.6% compared to 28.3% for its German counterpart.

To put the prices for 2019 into perspective, a record of quoted prices for the French baseload Y+1 calendar product since 2008 is shown in Graph 34. The average price of electricity for the period 2008-2019 is approximately €48.4/MWh, with a maximum of €74.12/MWh on average over the year, for 2008 and a minimum of €33.33/MWh on average for 2016. The average for the year 2019 was roughly €50.9/MWh. The higher prices follow a period of low prices over the year 2016.

Graph 34: Record of French baseload Y+1 calendar product prices



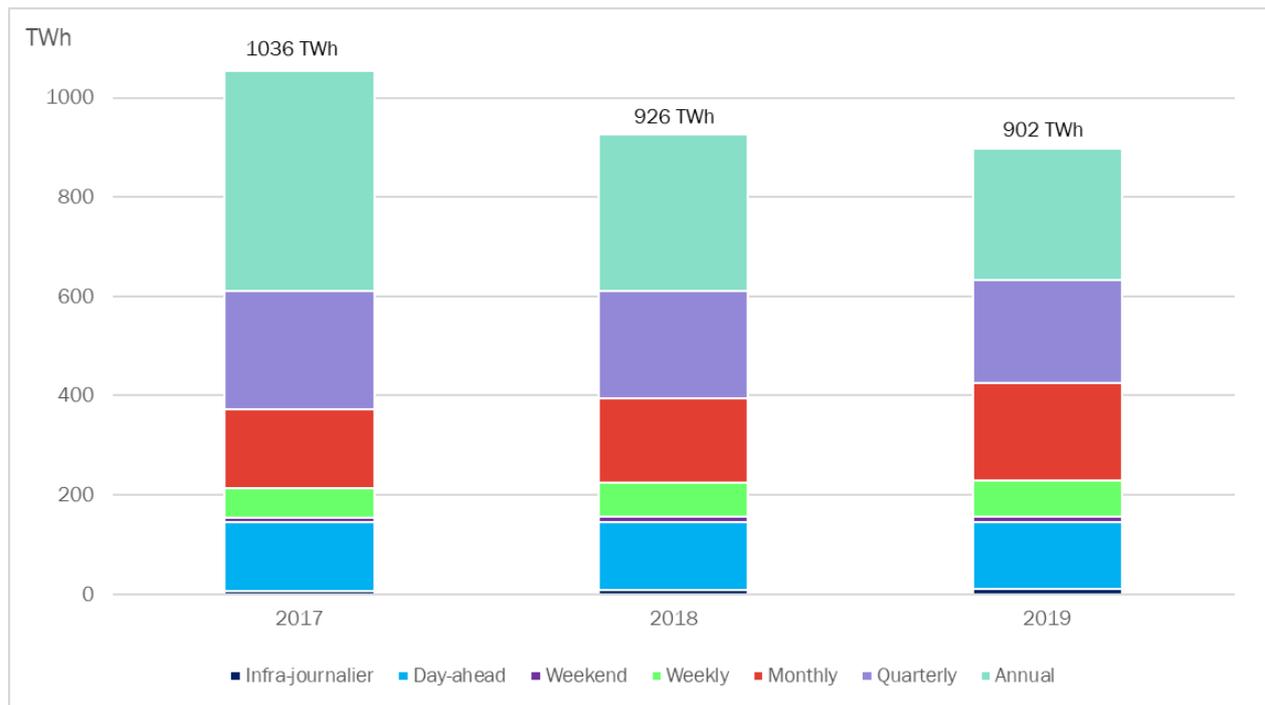
3. CHANGES TO VOLUMES TRADED ON THE WHOLESALE MARKET

Volumes traded on the wholesale market fell for the 2nd year running (Graph 35), mainly due to the drop in annual products whose share in volumes traded fell from 34% to 29%. This is related to the increase in ARENH demand, which substitutes purchases in the wholesale markets

Intraday product volumes remained marginal (roughly 11 TWh) compared to other products but increased once again in 2019 by more than 27% compared to 2018. The introduction of XBID in June 2018 is encouraging trade and contributing to French intraday market liquidity. The booming trade picture is also supported by the application of "multi-NEMO" agreements concluded between NEMOs and TSOs which have enabled several NEMOs to operate in the same *trading* zone. There has also been an increase for the *day-ahead* product and an even bigger one for monthly products, which rose by 15%.

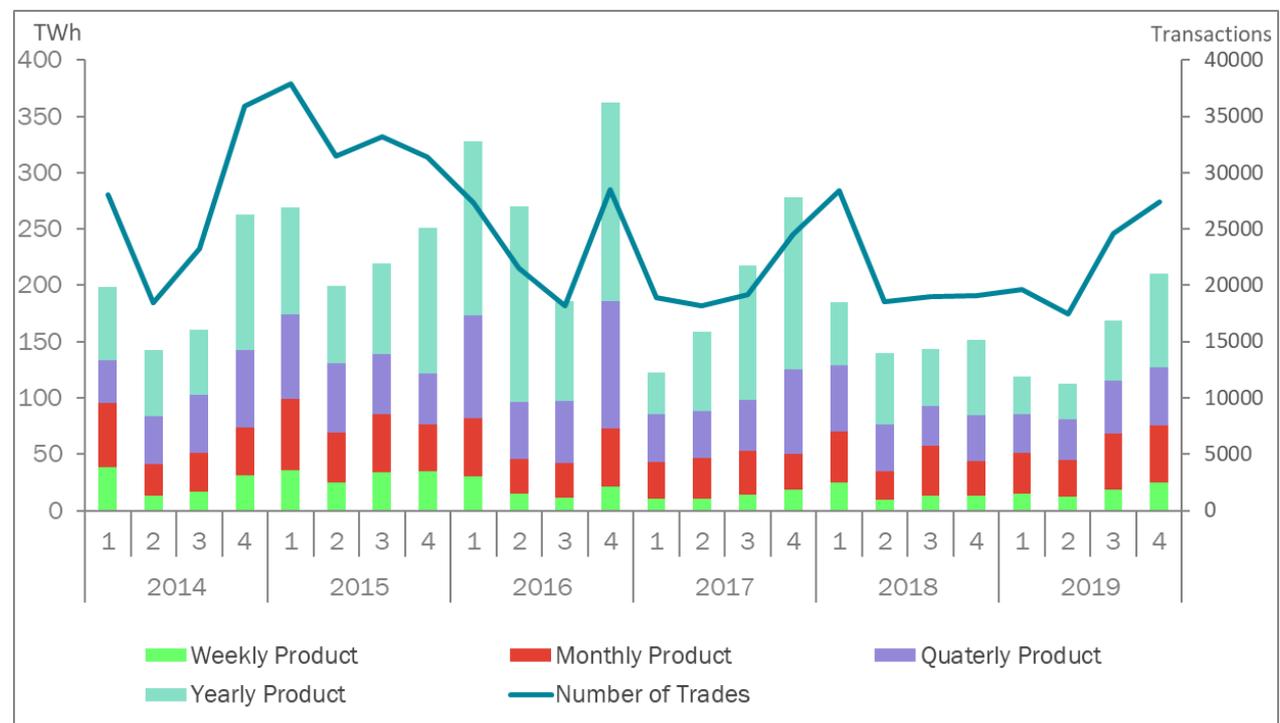
Volumes traded on the futures exchange were lower than 2018, finishing at 130.5 TWh, with an ever-increasing demand during the 2nd half of 2019 (Graph 36), but the number of transactions rose, reflecting greater market liquidity. Volumes traded in the futures intermediated market also fell compared to 2018, by 2% (Graph 37) to 641.6 TWh. Despite this, the futures intermediated market was still the best place for futures trading in 2019.

Graph 35: Volumes traded in the wholesale markets



Sources: EPEX SPOT, EEX, Courtiers

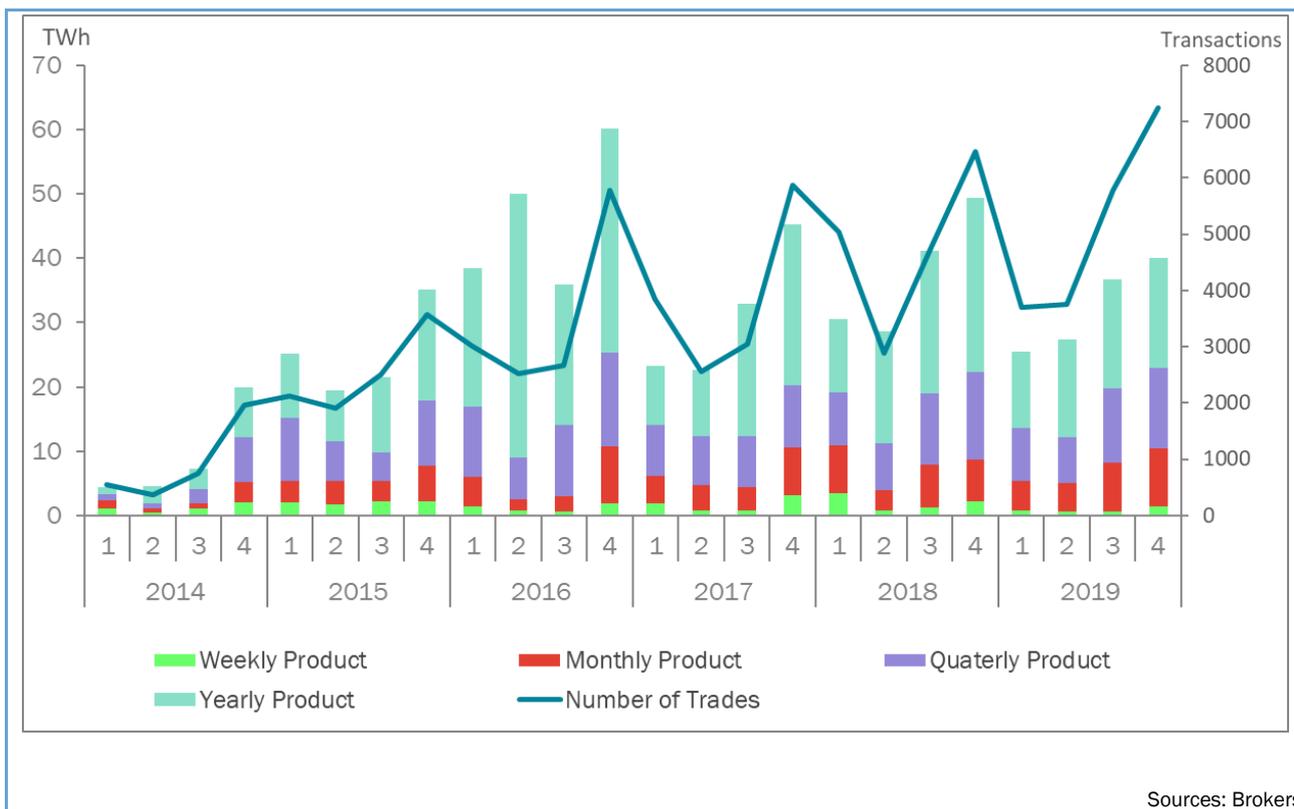
Graph 36: Volumes traded in the futures exchange



Source: EEX

Graph 37: Volumes traded in the futures intermediated market





4. BALANCING MARKETS AND SURVEILLANCE BY THE CRE

According to the REMIT regulation, products traded on the balancing markets can be viewed as wholesale energy products. As such, the CRE has the task of monitoring these markets. Furthermore, in accordance with the European regulation on balancing⁴⁵ and Article 321-11 of the energy code, the CRE approves the operating rules for these markets.

4.1. Recap of the general operating principles for balancing markets and changes to come

RTE is responsible for the stability of the electricity system. To instantaneously balance consumption and production, it seeks out services from balancing service providers to adjust electricity consumption or production. RTE has various types of reserves that it can use to secure this balance. These can be balancing reserves with automatic activation comprising frequency containment reserve and automatically activated frequency restoration reserve as well as manually activated frequency restoration reserve. In addition, balancing responsible parties also have financial incentives to balance their injections and withdrawals ahead of real-time to limit imbalance volumes.

The European grid frequency is synchronised every split second within the continental European synchronous area (normally at 50 Hz). Any deficit in production compared to consumption results in a drop in the Continental Europe synchronous area grid frequency, while a surplus will cause the frequency to rise. As with all Transmission System Operators (TSO) in the continental zone, RTE has a dual responsibility:

- to help stabilise frequency by contracting frequency containment reserve: This reserve rapidly alters the power supplied based on frequency differences in the network that deviate from 50 Hz and subsequently kicks in regardless of the reason for the imbalance;
- to ensure a balance between production and net consumption from trading at borders in its zone: To achieve this, RTE uses the Balance Responsible Parties system (BRP) to provide market participants with financial incentives ahead of real-time, as well as frequency restoration reserves close to real-time.

For example, if a generation facility suddenly trips, the frequency containment reserve rapidly rises output of all participating power generation units in the continental zone to limit the frequency deviation. Thereafter, frequency restoration reserves raise production in the zone where the incident took place, to make up for the lost energy.

⁴⁵ Regulation (EU) 2017/2195 of the Commission of 23 November 2017 establishing a guideline on electricity balancing



Market mechanisms are rolled out for activating and contracting balancing reserves, especially given the process of European integration of balancing markets. The CRE is heavily involved in these developments with the aim of improving system performance for the benefit of consumers and ensuring that these new markets operate properly.

4.1.1. Frequency Containment Reserve (FCR)

RTE contracts FCR with French and foreign balancing service providers through the FCR Cooperation that RTE joined in early 2017. This cooperation results in calls for tenders jointly run by TSOs in 6 countries (Germany, Austria, Belgium, France, the Netherlands and Switzerland)⁴⁶.

Only FCR capacity is subject to a market mechanism. Due to the activation method for this reserve (based on frequency deviations), there is no competitive tendering for energy activations. Furthermore, exchanges between countries resulting from FCR activation are never restricted by cross-border capacities as these are provided for in the safety margins for the interconnections.

4.1.2. Frequency Restoration Reserve with automatic activation (aFRR)

aFRR are activated by RTE through a signal sent to all production facilities contributing to this reserve. Its aim is to reabsorb differences between scheduled exchanges at interconnections and actual physical exchanges. Currently, this reserve is activated by a single signal sent to all participants without competitive tendering for balancing energy activations.

RTE splits its entire aFRR capacity needs between producers on a pro rata basis based on the power plants mandatory capacities. This contracted capacities are paid for at a regulated price of roughly €19/MWh. This prescription is split freely within a market participant's portfolio, or between different participants, through privately agreed exchanges of reserves, with notification to RTE.

From the 2nd half of 2021, capacity contracting and activation will be subject to two market mechanisms. Capacity contracts will be concluded with French market participants through a system of daily, day-ahead auctions. Market participants will submit bids for balancing energy activations close to real time. RTE will optimise bid selection France while the European aFRR platform will cater for Europe by considering all bids submitted in Europe, each TSO's real-time needs and available exchange capacity at borders.

4.1.3. Frequency Restoration Reserves with manual activation (mFRR) and Replacement Reserve (RR)

RTE activates mFRR and RR through the adjustment mechanism that it has been operating since 2004. Balancing service providers submit offers to RTE from contracted or non-contracted capacities. These offers set out technical conditions for activation, a price for the activated energy and, if required, a start-up cost. RTE activates mFRR and RR based on its needs and in accordance with a "technical and economic" priority that considers bid prices as well as their technical characteristics. RTE activates bids to balance supply and demand in France but also to resolve potential network congestion, boost FCR and aFRR provision or to restore the margin of available flexible balancing capacity in the system.

RTE contracts part of mFRR and RR through an annual tendering process (and partially daily from 2021). This allows it to have reserves with specific technical characteristics called rapid and complementary reserves. All production facilities connected to the transmission network are also obliged to offer the available upwards flexibility via tenders submitted to the adjustment mechanism. RTE uses the adjustment mechanism to gather bids from balancing service providers, producers, consumers or participants or network operators based abroad, through interconnections.

In the second half of 2020, RTE will use the European RR platform. This platform will enable it to exchange bids for "standard" complementary energy reserves with other European TSOs. In this case, "standard" refers to specific predefined technical characteristics that are standardised between TSOs participating on the platform. Thereafter, RTE will join the mFRR platform, once it has been introduced in 2022, to exchange mFRR energy bids. As yet, RTE has no cooperation projects to jointly contract these reserves.

4.1.4. The Balance Responsible Parties system

Through the balance responsible parties system (BRP), RTE provides market participants with incentives to do their utmost to balance power produced and consumed within their perimeters, based on each connection point to the

⁴⁶ Previously, primary reserves were contracted by RTE as a secondary reserve, i.e. based on a prescription settled at an administered price, with the option of trading by private agreement.

network being attached to the perimeter covered by a balance responsible party. Imbalances (deficit or surplus of energy for a given 30-minute period) are subject to a settlement price based on the value of the balancing energy activated by RTE, if required, to resolve the imbalance.

Up to one hour ahead of real-time, market participants can change generation schedules and can import or export energy via cross-border markets to adjust the BRP balance and the "physical" balance of the French load-frequency control area. Beyond this point, and up to 5 minutes before real-time, French market participants can continue to exchange energy between themselves on the French intraday market, without adjusting generation, import or export schedules. These final exchanges subsequently affect the balance of the concerned BRP but not the physical balance in the French load-frequency control area. During this period, RTE is the sole entity instituting "physical" balancing actions.

4.2. Review of balancing markets in 2019

4.2.1. Overview

Table 5 below presents details of balancing capacities contracted by RTE, together with figures on balancing energy activated.

Table 5: Balancing reserves contracted by RTE and balancing energy reserves activated

Year 2019 Reserve	Contracting			Activations			
	Direction	MW (av.)	€m	Upwards		Downwards	
				GWh	€m	GWh	€m
FCR	Upward and downwards	527	47.9	487	57.4	504	-55.7
aFRR	Upward and downwards	645	111.7	1262		1219	
mFRR	Upwards	1504	18.3	1607	219.9	1324	-112.1
RR				1747		2614	
Total		2676	177.9	5103	277.3	5661	-167.7

AFRR, which is always contracted on the basis of a prescription with an administered price for 2019, is the most expensive contracted reserve (€111.7 m). This is due, in particular, to a steep drop in the cost of the other reserves over the last few years, contracted through auctions. These contracting costs are covered by grid tariffs.

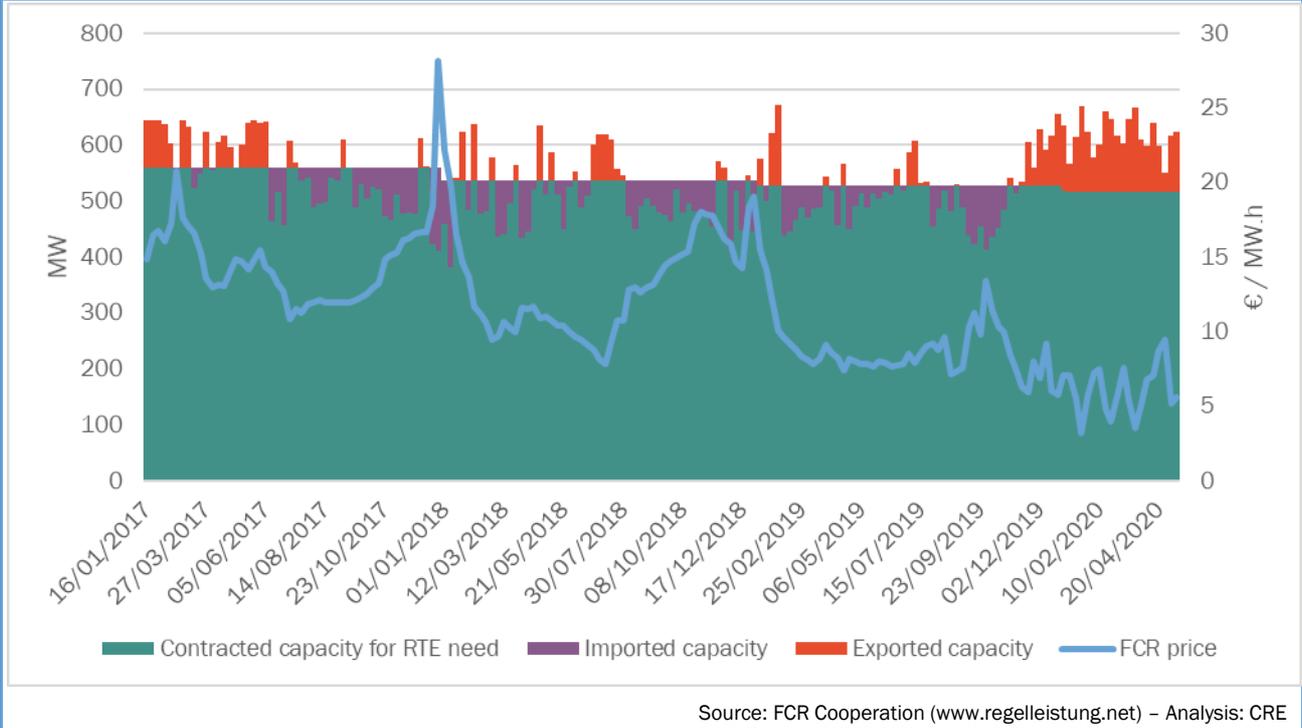
Activations of balancing energy incur a lower cost. The net value of activated FCR and aFRR is low as, on average, the activations are centred on zero. The net cost of activations on the adjustment mechanism is higher (€108 m). This is due, in particular, to differences in the prices of upward and downward energy bids. These costs are covered by the BRP and paid for through the imbalance settlement scheme, apart from surcharges for activations for reasons other than balancing, which are covered by the grid tariffs.

4.2.2. The FCR cooperation

The year 2019 saw a rise in the frequency of FCR cooperation auctions from July 1st. Weekly calls for tenders for weekly products switched to a daily bidding system (working days only) for daily delivery periods, starting from D+2 in relation to the auction. A marginal pricing scheme also replaced the previous bid settlement scheme on the July 1st.

Graph 38 features weekly averages for the costs and volumes of FCR contracted, imported and exported in France. RTE demand is constant for a given year. The actual volume contracted in France corresponds to the total RTE demand and the balance of exports to and imports from other countries within the FCR cooperation.

Graph 38: FCR prices and volumes in France (weekly average)



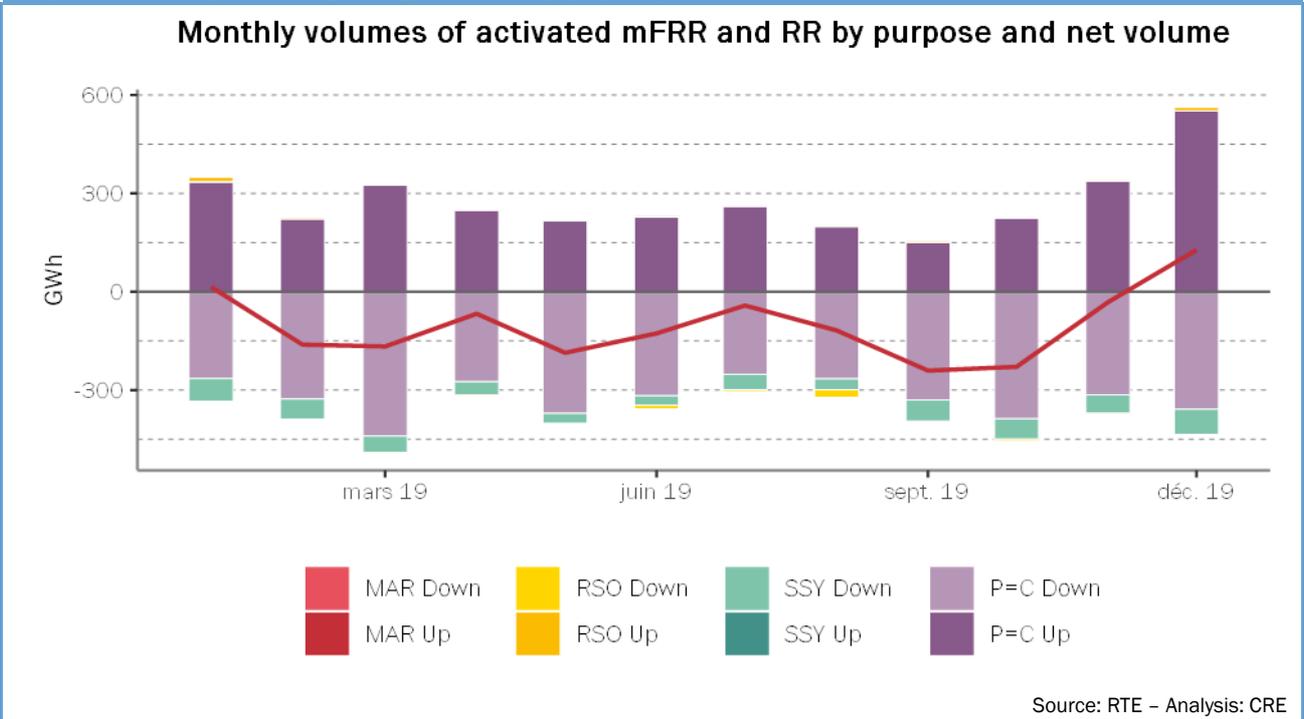
Since RTE joined the FCR cooperation in 2017, FCR prices have followed a downward trend, which has continued with the change to daily products settled at marginal pricing for tenders.

The switch to daily auctions has not resulted in any malfunctioning of the auction process during 2019.

4.2.3. The adjustment mechanism

Graph 39 presents upwards and downwards balancing energy volumes activated by RTE for various purposes in 2019.

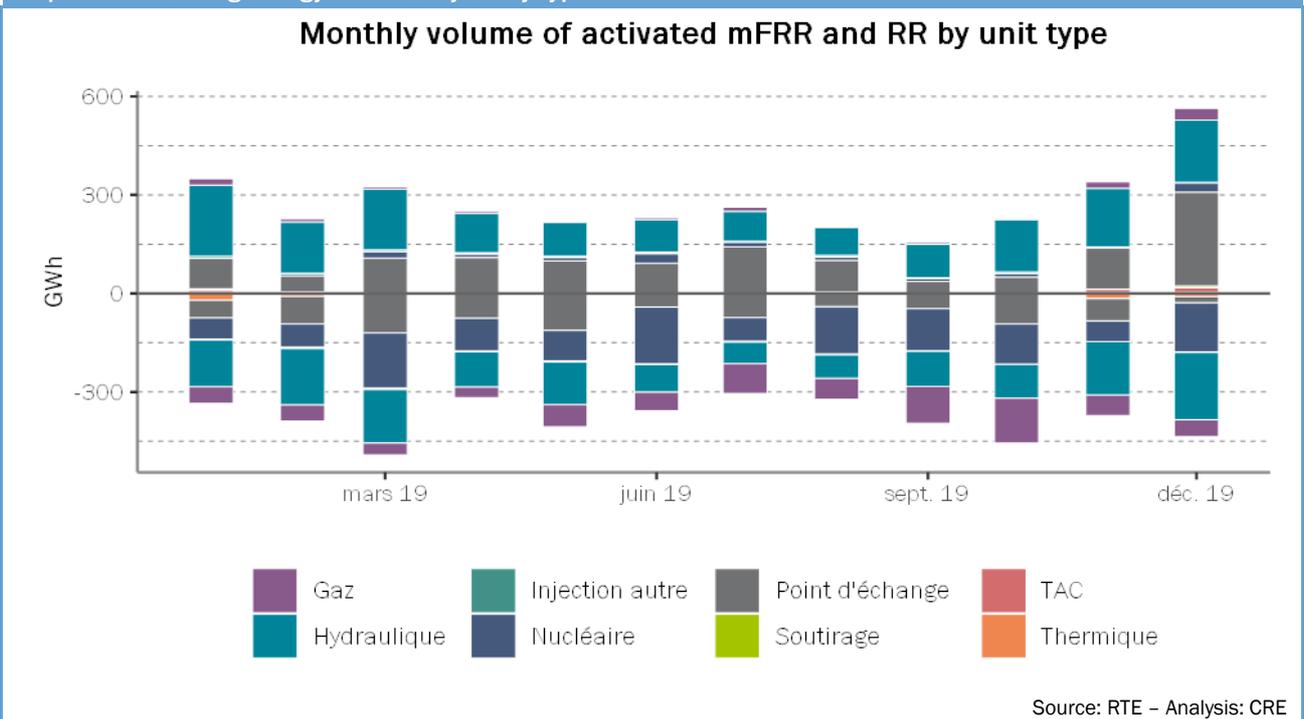
Graph 39: Monthly balancing energy volumes by purpose, and net volume



Activations to keep the system balanced ("P=C" purpose) account for most cases. Replenishing provision of FCR and aFRR ("SSY") also represents a significant volume, though only downwards (approx. 50 GWh/month). Activations to resolve network congestion ("RSO") and system margins ("MAR") account for very low volumes. Net activated volumes are mostly for negative time, which indicates that BRP tend to over-deliver energy.

Graph 40 shows the average monthly value of adjustments broken down by purpose, balancing unit type and activation direction. The size of each rectangle represents the relative size of adjustment for a particular balancing unit type and purpose.

Graph 40: Balancing energy volumes by entity type



The graph shows the hydro power sector takes the lion's share, together with balancing units based outside France ("exchange points"), especially for upwards adjustments.

4.3. Surveillance of the adjustment mechanism

The CRE undertook surveillance activities on the adjustment mechanism (MA) in 2019. Particular attention was given to interconnection capacity nominations at the French-Swiss border by market participants with balancing units located in Switzerland. The CRE notes from its findings that some market participants issue cross-border capacity nominations that do not correspond fully to balancing energy activation orders sent by RTE. These can be related to nominations made at the wrong time, for a different volume than that requested by RTE or nominations made for the wrong BSP or nominations in the opposite direction to that requested by RTE.

The CRE considers that these nominations can constitute an unjustified use of available capacity and deprive other market participants of the capacities they need. This type of practice is also likely to affect the price of wholesale energy products. As such, in certain circumstances, this behaviour could constitute market manipulation under Article 5 of the REMIT regulation.

The CRE firstly sent a letter to the relevant market participants requesting information to examine the circumstances that led them to act without obvious consistency with the balancing energy activation in relation to adjustment orders issued by RTE.

In terms of the aspects mentioned above, the CRE requests greater caution from BSP with balancing units located in Switzerland or Germany, when nominating cross-border capacity to respond to balancing orders from RTE.

5. THE CAPACITY GUARANTEE MARKET AND CRE SURVEILLANCE

After a year-long investigation, The European Commission issued its decision on 8 November 2016, approving the French capacity mechanism under European Union and State Aid rules⁴⁷. The mechanism was actually introduced in December 2016 for a first delivery year (DY) in 2017.

5.1. Reminder of the key principles of the French capacity mechanism

The provisions of articles L-335-1 and thereafter of the French energy code, set out a capacity obligation mechanism. The French regulation stipulates that *"each electricity supplier contributes in mainland France to the security of electricity supply based on the power and energy consumption patterns of its customers"*. Each supplier is therefore obliged to obtain capacity guarantees to cover the consumption needs of its customer portfolio during peak consumption periods in France. These guarantees can be obtained by investing in new production or load-shedding facilities, or by securing them either from capacity operators or on the market. The cost of the obligation, introduced to ensure security of supply for consumers, is passed on by the suppliers to their customers.

Those market participants under obligation, as well as operators, can bilaterally exchange capacity guarantees on the OTC market ("Over-The-Counter") or on the market organised by EPEX SPOT, in the form of auctions. 15 such auctions will be organised on a rolling basis prior to the given delivery year.

During the year 2016 and following numerous exchanges with the European Commission, the French government pledged to make three key changes to the mechanism:

- introduce a series of measures designed to prevent any market manipulation;
- allow foreign capacities to take part in the French capacity mechanism by 2019;
- create a specific scheme for new capacities enabling them to benefit from a revenue stream for 7 years, thus raising their profile for new investment and facilitating the arrival of new market participants by 2019.

Based on these commitments, the European Commission concluded, in its decision of 8 November 2016, that the French capacity mechanism was compatible with European Union State Aid rules and approved it for delivery for a 10-year period.

These commitments were enacted by French Council of State decree 2018-997 of 15 November 2018 on the capacity obligation mechanism in the electricity sector, to which the CRE gave its opinion on 27 September 2018. Operational arrangements were then defined within the capacity mechanism rules referred to in Article R 335-2 of the energy code.

⁴⁷ The operating principles for this market were reiterated in the surveillance report for the functioning of the wholesale electricity and natural gas markets 2016-2017 (Section 3, page 45: 2.5 First capacity guarantee exchanges in 2016).

5.2. The cross-border contribution to securing supply has now been subsequently enhanced by the capacity mechanism

To secure European Commission approval for the French mechanism, France pledged to "explicitly take into account foreign capacities using a hybrid model, which remunerates both interconnections and foreign production and demand-side response capacities"⁴⁸.

To achieve this, France's proposal to the European Commission involves developing a mechanism in which "foreign production and demand-side response capacities should acquire interconnection tickets to be able to become certified and subsequently offer their capacity certificates on the French capacity market. Tickets will be distributed per border based on the contribution of cross-border Member States to securing electricity supply in France. The tickets will then be auctioned "border by border". All production and demand-side response capacities of the country connected to France by a given interconnection will be able to take part in the auction of tickets corresponding to that interconnection"⁴⁸.

This target model will enable all foreign capacities to take part in the French mechanism so long as they have "French mechanism admission tickets" auctioned at each border.

The global value of cross-border contributions to securing supply and distribution coefficients for this value per State with an interconnection to mainland France, will be set by RTE for a given delivery year, four years before the start of that delivery year. They are then frozen for the delivery year in question.

The conditions of eligibility for these auctions and participation in the mechanism (agreement to be available during French peak periods, inspection procedures, etc.) require the involvement of neighbouring TSOs as the French capacity mechanism rules cannot be applied without being transferred to foreign capacities. These tasks allocated to foreign TSOs require agreements to be signed with RTE, in the form of conventions approved by the CRE.

The procedure described above is universally called the "hybrid model" procedure. If the aforementioned conventions are not signed by specific foreign TSOs, France has pledged to introduce a "safeguard" procedure which explicitly targets the participation of interconnections only.

Explicit consideration for foreign contributions to reduce the risk of failures in France will clearly be an effective measure on all France's borders, with the exception of Switzerland which is not subject to any commitments made with the European Commission and whose system may be subsequently reviewed.

The purpose of explicitly taking into account the contribution of interconnections is to create a new offer on the capacity guarantee market. The volume of this supply is equivalent to the additional obligation now incumbent on suppliers and reflects the share of demand that was previously covered by unpaid foreign capacity.. Introducing this system subsequently coincided with an increase in the market participants' obligation, of roughly 7%.

5.2.1. The hybrid model procedure remunerates foreign capacities and interconnection operators, thus addressing issues raised by implicit consideration procedures in relation to investment signals.

Foreign capacities eligible for the French mechanism are selected via auction

Auction participants must pre-certify their capacities to justify their future eligibility for the French capacity mechanism by declaring their provisional level of availability over the peak period for the year in question. Once the relevant transmission system operators have signed the agreement, RTE issues a volume of "admission tickets to the French capacity mechanism" for a given border and delivery year. This volume corresponds to the contribution, assessed by RTE, of foreign capacities in the peak period, based on pre-certification. RTE allocates these "tickets at auction" to capacity operators in the participating interconnection country.

Eligible foreign capacities are treated in exactly the same way as French capacities

Capacities that have secured "tickets" at auction are subsequently treated as French capacities. As such, they must inform RTE that they commit to a contracting process and are subject to the same terms and conditions (pledge to be available during the PP2 period, sanction levels).

The only difference is that RTE allocates inspection procedures to foreign TSOs, in accordance with aspects to be defined in an agreement to be signed by both parties.

When an interconnection exempt from access by third parties is present on the border, the income related to that border is shared pro rata between the regulated interconnection and its exempted counterpart on the basis of the maximum capacity.

⁴⁸ Decision of the Commission of 8 November 2016 on State Aid scheme SA.39621 2015/C (ex 2015/NN)

Income generated by the auctions and allocated to regulated interconnections is only shared between RTE and the foreign TSOs when French capacities in the capacity mechanism of the country concerned are reciprocally taken into account.

Revenue arising from this auction is recovered by RTE then redistributed, as required, to the various exempted or regulated interconnections⁴⁹. Revenue allocated to regulated interconnections is shared between RTE and the relevant transmission system operators as long as there is a "market-wide" capacity mechanism⁵⁰ in the country concerned and that it includes similar principles for sharing interconnection-related revenue⁵¹.

The proportion of revenue paid to RTE is used according to procedures defined by the CRE.

5.2.2. The safeguard procedure explicitly takes into account interconnection capacities alone while an agreement between RTE and the TSOs has not been concluded

When no agreement between the TSOs has been signed, it is still possible to have interconnections directly certified based on terms and conditions similar to those introduced for the British capacity mechanism. This states that instead of foreign capacities, the interconnection operators themselves certify and commit to informing RTE to consider differences in the event of an interconnection outage.

Interconnection certificates

Interconnection operators certify their capacities and guarantee that their interconnections will be available during PP2 peak periods. They subsequently receive capacity guarantees corresponding to their certification level, that they then dispose of on the French capacity mechanism.

This certification level uses an estimation of the interconnection contribution calculated by RTE using a probability-based method and the interconnection's technical availability level during the PP2 period. The interconnection operator is then penalised for any eventual differences in availability at the interconnection.

Capacity guarantees between regulated and exempted interconnections are distributed following specific procedures.

Distribution of related revenue

Capacity guarantees for regulated interconnections are disposed of using transparent, public procedures approved by the CRE. As with the hybrid model procedure, the sharing of revenue between RTE and the transmission system operators in the neighbouring country is based on a reciprocal arrangement.

The proportion of revenue paid to RTE from the sale of guarantees is used according to procedures defined by the CRE.

Exempted interconnections are treated according to production capacity and are free to dispose of their capacity guarantees directly on the market.

5.2.3. The safeguard procedure currently applies to all borders

In late 2019, RTE was unable to sign agreements with foreign TSOs. The safeguard procedure subsequently applies at all borders and for all currently open delivery years (until delivery year 2022).

It should be noted that these agreements will be signed when the principles defined in the "Clean Energy Package"⁵² will be implemented. The package provides for ACER's approval of a methodology to consider cross-border participation in the capacity mechanisms for 5 July 2020. Concluding these agreements may therefore be slightly delayed given the future guidance for rules governing cross-border participation.

⁴⁹ In accordance with Article R 335-1 of the French energy code, regulated interconnections (i) are those that do not benefit from an exemption to obligations imposed on transmission system operators under Article 17 of Regulation (EC) 714/2009 and Directive 2009/72/ EC and (ii) exempt parties benefiting from an exemption.

⁵⁰ Mechanism enabling all the capacities of a State and directly interconnected States to participate. This type of mechanism contrasts with the "strategic reserve" scheme, whereby just a small part of capacities selected from tenders receive capacity revenue.

⁵¹ Article 19 of the draft decree: "Other revenue secured by the French transmission system operator from admission ticket auctions for the capacity mechanism of a given participating interconnected State is shared with the transmission system operator(s) of the State only when this State has also introduced a capacity mechanism that attributes a value to all contributions to its security of supply and, in particular, French contributions, and proceeds to share capacity revenue related to the interconnection on similar principles".

⁵² The 4th legislative package on energy, called *Clean Energy for all Europeans*, proposed by the European Commission in November 2016.

As interconnection operator, RTE has received all capacity guarantees related to the cross-border contribution for deliveries years 2019 and 2020 (6,319 MW and 6,500 MW respectively). For 2021, RTE should share part of the

In MW	DY 2019	DY 2020	DY 2021	DY 2022
Germany	1,733	1,700	2,000	1,800
Belgium	272	400	800	700
Spain	1,969	2,000 (initially 2,200 then downgraded due to damage)	2,000	2,000
Great Britain	1,386	1,500	3,000	3,800
Italy	959	900	800	900
Total contribution	6,319	6,500	8,600	9,200

capacity guarantees connected to the British border with the interconnection operator, ElecLink.

Table 6 below highlights the contribution of participating interconnection State per border.

Table 6: Overall contribution by participating interconnection State

5.2.4. As interconnection operator, RTE offers its capacity guarantees for auction based on a strategy approved by the CRE

Article R. 335-20 of the French energy code states that capacity guarantees secured by operators of regulated interconnections "are disposed of using transparent, public procedures approved by the French Energy Regulatory Commission on the basis of a proposal by the French transmission system operator".

These disposal procedures for the year 2019 were the subject of a deliberation by the CRE of 18 April 2019. Delivery year 2020 and thereafter subsequently refer to CRE deliberation of 20 June 2019.

The preferred method to secure the most representative price for capacity values is to offer all RTE's capacity guarantees at the last auction prior to the delivery year, which also helps fix the settlement price for capacity differences. This method could not however be used for delivery year 2019 as publication of the capacity mechanism rules was delayed.

The auction on 16 May 2019 was therefore the first sale of capacity guarantees for regulated interconnections on the market for the same delivery year, 2019. Auctions during the course of the delivery year have little liquidity as the market participants usually secure capacity beforehand. In these circumstances, this auction did not manage to sell all⁵³ the capacity guarantees and set a balancing price of €0/MW as RTE offered the guarantees at any cost.

The second auction for interconnection capacity guarantees was held on 12 December 2019 for delivery year 2020. In this case, all RTE's volume was sold at the auction balancing price of €16,483/MW. This result appears to indicate that the large volume of unsold capacity guarantees for 2019 was mainly due to them going to auction too late. This should not reoccur in future years.

5.3. The first auctions for the multi-annual contract process were held on 12 December 2019

As part of its in-depth investigation, the European Commission expressed doubts about whether "the mechanism, in its current form, is able to attract new investment" due to the inadequate exposure it had to develop new production capacity.

France consequently pledged to introduce a system to secure revenue for new production capacity over a seven-year period. The system works on an annual call for tenders with the aim of selecting new capacities if they are economically "worthwhile" to the community. The selected capacities then benefit from a set "capacity revenue"⁵⁴ for a seven-year period.

The price and volume contracted at each auction are determined by comparing the supply and an "administered demand curve" devised to select new capacities by including all aspects to measure the economic benefit that they

⁵³ 1.9 GW unsold

⁵⁴ i.e. separate from their "energy revenue" secured, for example, on the wholesale electricity market.



deliver for the collective. This involves estimating future needs to ensure security of supply, the economic case to build new capacity and the addition of cost assumptions for the various sectors, etc. The effectiveness of the multi-annual contract scheme consequently relies on this curve.

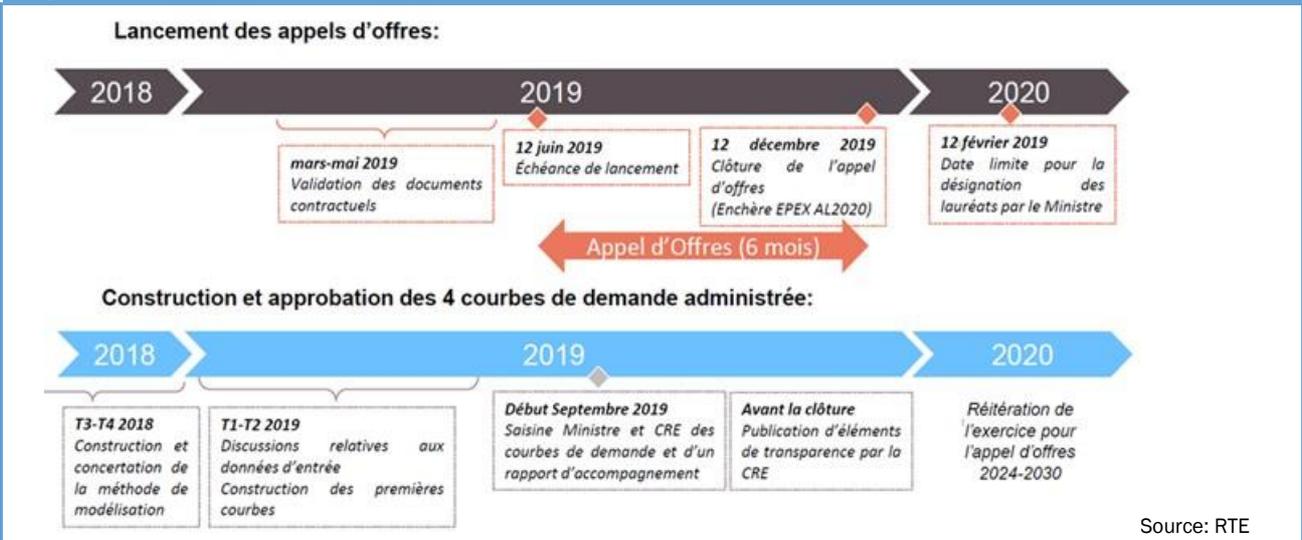
In its long-term format, a long-term call for tenders (AOLT) is launched each year for a minimum period of 4 years, after the successful bidders have been chosen.

5.3.1. Timetable of auctions launched in 2019

The Minister for Energy published the launch of four long-term tenders for new capacities for the periods 2020-2026, 2021-2027, 2022-2028, 2023-2029 on 12 June 2019 in the Official Journal of the European Union, as provided for under regulatory framework of the capacity mechanism. The closing date for the four calls was **12 December 2019**.

The administered curves proposed by RTE for the four periods were approved by the CRE on 14 November 2019⁵⁵.

Graph 41: Timetable of auctions launched in 2019



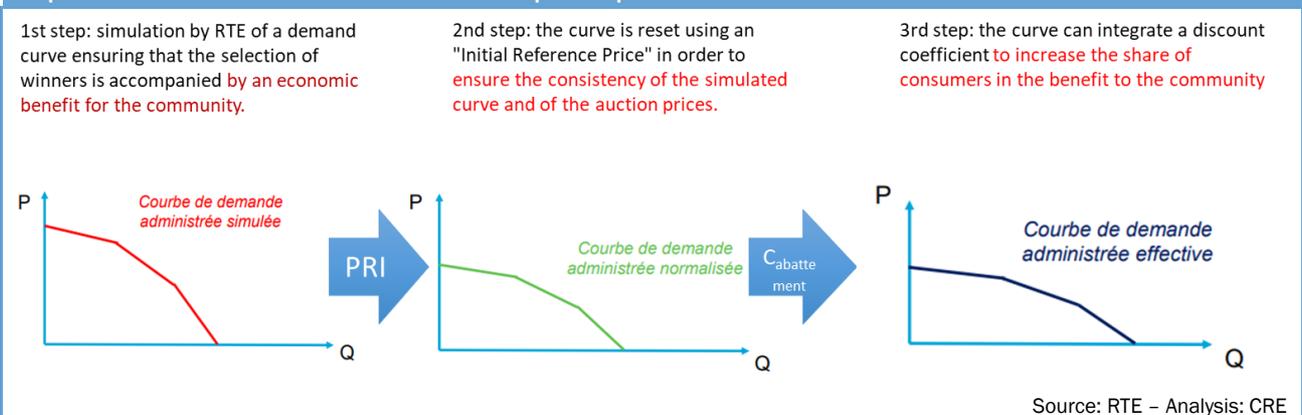
Source: RTE

5.3.2. Administered demand curve

As indicated above, the demand curve reflects the interest for the collective of adding additional capacity to the system. The curve is based on modelling and a supply and demand balancing simulation run by RTE. A description of the modelling process is appended to the CRE deliberation of 14 November 2019 on the approval of administered demand curves for the multi-annual contract process.

Before selecting bids, the administered demand curves are adjusted in compliance with capacity mechanism rules, to adapt RTE price simulations to actual market prices.

Graph 42: Administered demand curve development process



Source: RTE – Analysis: CRE

The administered demand curve simulated by RTE is corrected using the following formula:

⁵⁵ Deliberation of the CRE of 14 November 2019 on the approval of administered demand curves for the multi-annual contract process for the capacity mechanism



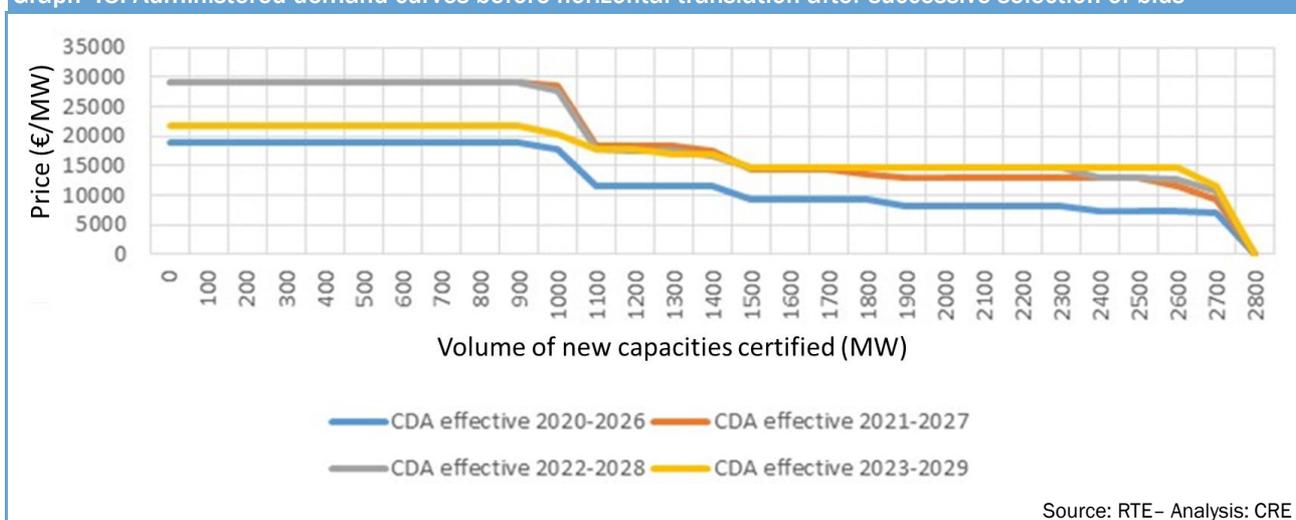
$$CDA_{standardized} = \frac{PRI_{real}}{PRI_{modeled}} \times CDA_{modeled}$$

The exact detail of the "Initial Reference Price" calculation (PRI) is given in the capacity mechanism rules. The calculation uses results from the organised auctions.

With reference to the auctions held on 12 December 2019:

- the demand curves for the four calls for tenders were multiplied by a ratio [real PRI ≈ €19 k/MW] / [modelled price ≈ €22 k/MW] equal to 85.32%. This coefficient takes into account differences between the RTE theoretical model and market price realities;
- for the 2020-2026 call for tenders, the period between announcing the successful bidders and the delivery of capacities did not fit with the construction deadlines for these new capacities. As a result, the Minister for Energy requested a 65.53% reduction rate to be applied. The CRE approved this reduction;
- The administered demand curves (CDA) were successively translated to the left, from the number of successful MW bidders from the tendering process for earlier delivery periods.

Graph 43: Administered demand curves before horizontal translation after successive selection of bids



5.3.3. Storage and load-shedding capacities are the leading forms of technology for long-term tendering procedures.

Table 7 summarises the results of the auction on 12 December 2019⁵⁶.

Table 7: Summary of the selection of successful bids for the long-term call for tenders in 2019

	AOLT 2020-2026		AOLT 2021-2027		AOLT 2022-2028		AOLT 2023-2029	
	MW offered	MW selected	MW offered	MW selected	MW offered	MW selected	MW offered	MW selected
TOTAL	221.8	0	699.2	151.1	1148.6	225.7	1058.8	0
Clearing price (€/MW)		N/A		29,000		28,000		N/A
Including battery	122	0	421	93	772.4	159.7	624.2	0
Including load-shedding	127.8	0	278.2	58.1	375.1	66	434.1	0
ENR	0	0	0	0	1.1	0	0.5	0

⁵⁶ It should be noted that certain capacities are offered for several tenders. For example, a capacity that was not selected for the 2020-2026 call for tenders can also be offered in the 2021-2027 call for tenders.



Only calls for tenders for the periods 2021-2027 and 2022-2027 were successful, selecting 151.1 and 225.7 MW respectively. The mechanism was used to contract a total of **376.8 MW** of a maximum possible volume of 2.7 GW.

The guaranteed prices for the successful bidders were €29,000/MW and €28,000/MW respectively. Proposals selected for both calls for tenders were solely for battery storage (252.7 MW) and load-shedding (124.1 MW).

Assuming a market price for capacity of €16.5 k/MW that holds for the years ahead, the settlement of additional remuneration could cost the consumer **€5 m/year** from 2022. That said, the AOLT system works on the basis of a contract for the difference between reference prices for organised auctions. Successful bidders are therefore strongly encouraged to offer their capacities for a zero price at conventional auctions, which should help reduce the capacity price.

No capacities were selected for the 2020-2026 auction due to the application of a reduction rate as mentioned previously. The auction for the latest period, 2023-2029, has no capacity offers as the community has less interest in contracting capacity for this is period and the average price of offers is higher (see. *infra*).

Table 8 shows the list of successful proposals

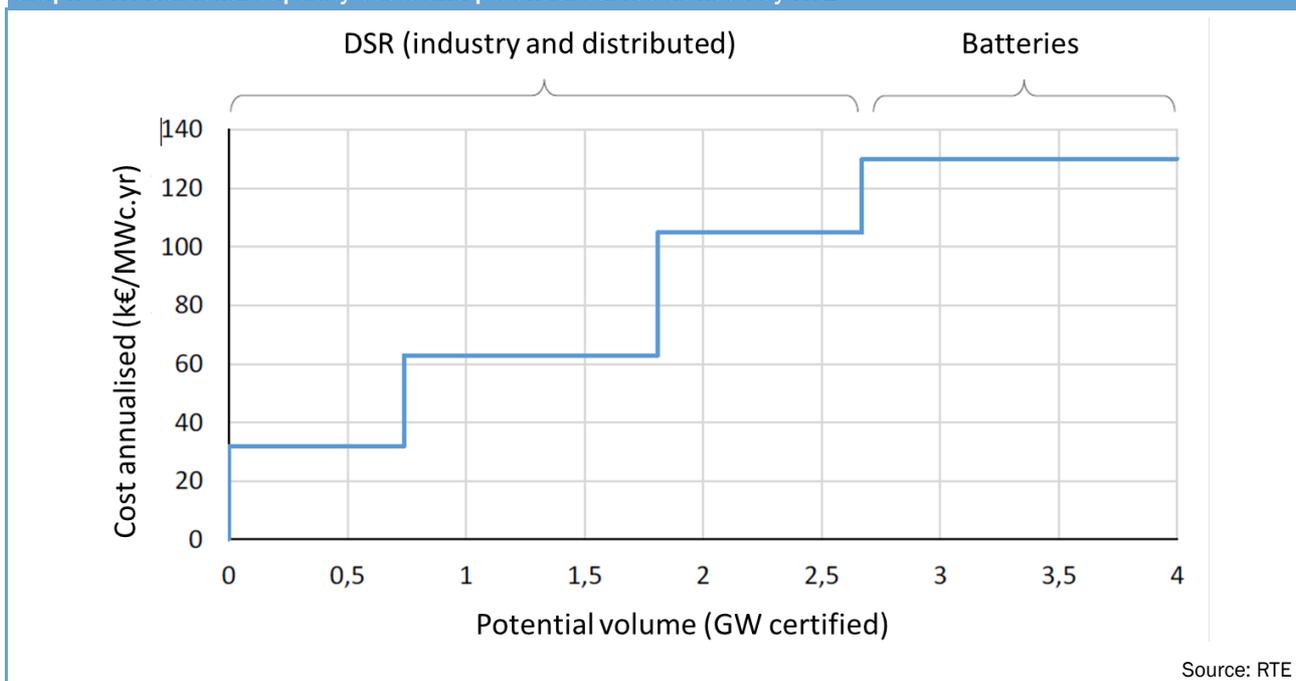
Table 8: List of proposals selected from the long-term call for tenders held in 2019

Company	Sector	MW contracted	Proposal	Guaranteed price	Period
Entech	Battery	2	€17,890/MW	€29,000/MW	DY 2021-2027
ZE Energy	Battery	2	€23,900/MW		
SGE	Load-shedding	5.1	€25,000/MW		
CSE Volta	Battery	24	€25,400/MW		
VALOREM	Battery	1.1	€27,000/MW		
Voltalis	Load-shedding	53	€27,000/MW		
NOEN	Battery	5.9	€28,000/MW		
BHC	Battery	58	€29,000/MW		
AFD7	Battery	75	€18,800/MW	€28,000/MW	DY 2022-2028
ALOE ENERGY	Battery	1	€18,000/MW		
INNERGEX	Battery	7.6	€19,999.78/MW		
ZE Energy	Battery	2	€23,900/MW		
CSE Coulomb	Battery	24	€25,400/MW		
Voltalis	Load-shedding	66	€27,000/MW		
NOEN	Battery	5.1	€28,000/MW		
BHC	Battery	45	€28,000/MW		

Based, in particular, on ADEME reports⁵⁷, RTE had taken additional cost and capacity potential assumptions to derive the administered curves. These assumptions are illustrated by the curve shown in Graph 44.

⁵⁷ The investment cost of industrial clearing capacities is based on that identified by the ADEME in its 2017 report on load-shedding potential in France. Assumptions of costs and selected potential for distributed load-shedding stem from analyses conducted for RTE's report on Smart-grids, published in 2017. As for battery storage, the cost assumption considered is taken from a report published by ATEE in July 2018, Study PEPS4, on France's electricity storage and power-to-gas potential.

Graph 44: Additional capacity costs and potential curves devised by RTE



Source: RTE

RTE estimates that only load-shedding and batteries were likely to increase under the current regulations. Indeed, in terms of renewable energy, RTE considered that they would not be part of the offer due to their contribution to security of supply per installed MW, which is intrinsically low.

In terms of the technology offered, RTE's assumptions appear sound. Load-shedding and battery storage account for virtually all the available offer. Just one bidder proposed renewable limited power energy offers (0.5 MW and 1.1 MW), which were not selected due their high price (€30,000/MW and €40,000/MW respectively).

By contrast, the volume of proposals and level of bidders differs markedly from the RTE estimation.

As concerns load-shedding, while the study on potential assessed load-shedding predicted offers comprising volumes of 2,500 MW, including 700 MW with prices consistent with the administered curves, just 124.1 MW were actually selected from the 400 MW finally offered. This volume corresponds to a 5.1 MW industrial load-shedding proposal for 2021-2027 and two further proposals for distributed load-shedding for each of the two calls for tenders (53 MW and 66 MW for 2021-2027 and 2022-2028 respectively). By comparing offers from load-shedding operators between the AOLT and the AOE (load-shedding calls for tenders), it appears that the AOLT has not resulted in the emergence of new industrial load-shedding offers whereas it has fostered distributed load-shedding, which is currently not part of the AOE procedure.

In terms of batteries, while prices in the range of €130,000/MW were expected, the offers actually made reached far lower levels and vary widely (from €15 to €94 k/MW) for technically similar features (one hour storage). In all likelihood, bidders selected supplementary revenues related to system services participation when putting together their offers⁵⁸. As a result, more than 13 battery proposals were selected, amounting to an overall volume of 252.7 MW.

No offers were selected at the corresponding auction for the latest period, AOLT 2023-2029, even though the offer was plentiful (1 GW). This outcome is due to lower demand and a higher average weighted price for offers as the period lengthens (€41 k/MW, €45 k/MW, €47 €/MW and €51 k/MW). This suggests that the risk of financing battery or load-shedding proposals rises over time.

5.3.4. The outcome of the AOLT auctions queries the design of the process

The key points to note from launching the multi-annual contract scheme are as follows:

- the mechanism mainly focuses on distributed load-shedding and batteries as new gas-fired power stations are banned in France and renewable energy is uncompetitive;

⁵⁸ Average prices in 2019 on primary reserves were €6.7/MW/30 min, or more than €110,000/MW if it is selected every day. In practice, batteries cannot easily be part of secondary reserves as they are in heavy demand and require large stocks of energy to be available throughout the scheduling period. This contrasts with primary reserves which limit the activation of necessary stocks to 15 minutes in the event of a large difference in frequency. Furthermore, while awaiting changes to secondary reserve contract procedures in 2021, bilateral transactions with obliged producers are required to use this reserve.

- batteries are competitive as they combine revenue from the AOLT process and system services;
- there is a big difference between theoretical potential and offers proposed.

On this last point, the difference could be partly due to the mechanism's characteristics in that the 7-year contract period may be too long for industrial load-shedding operators and the delivery period too distant ⁵⁹(4 years) for distributed load-shedding and battery proposals.

Consideration should therefore be given to the consistency of design rules for the multi-annual contract process, with possible constraints on the offer.

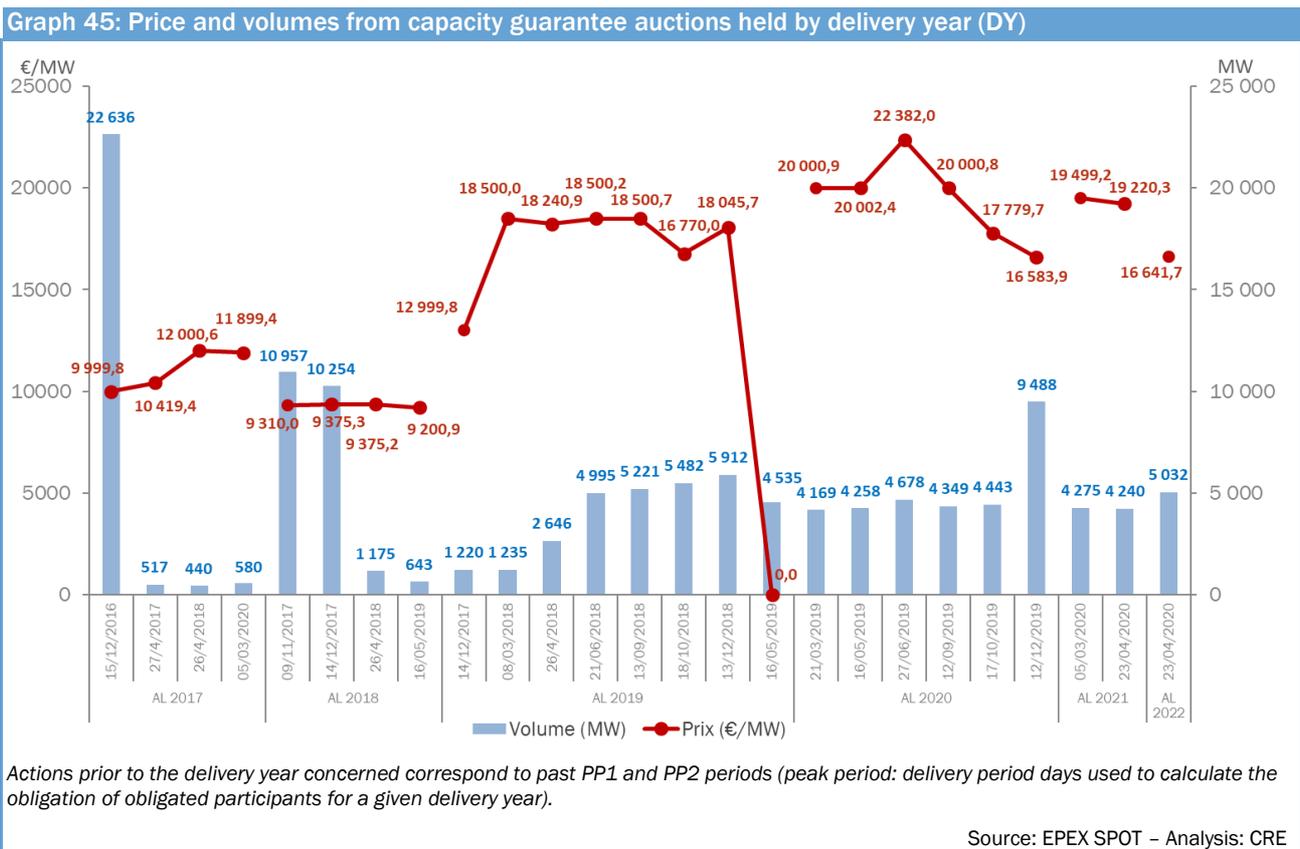
5.4. The capacity auction cycle ended for the first time, for delivery year DY 2017, while prices for DY 2020 vary given amendments to the mechanism operating rules

Graph 45 shows the outcomes of capacity guarantee auctions per delivery year since the mechanism was commissioned. The first auction was held in December 2016 for delivery year (DY) 2017 only.

In 2019, six auctions were held on the EPEX SPOT market for delivery year 2020, as well as one for delivery year 2018 and another for delivery year 2019. To date, two auctions have been held in 2020 for delivery year 2021, as well as one for delivery year 2022 and one for delivery year 2017. This delivery year is the first year to be completed in the auction cycle⁶⁰.

The auctions that were held in 2019 for delivery year 2020 saw a significant rise in capacity guarantee prices during the first four auctions. The auction on 27 June 2019 reached a record-breaking price of €22,382/MW since the mechanism came into operation.

The delayed publication of new operating rules for the capacity mechanism in late 2019, means that there have been only 6 auctions in 2020.



⁵⁹ This point should however be put into perspective as it concerns transitory calls for tenders that also apply to closer delivery periods.

⁶⁰ In the long-term tender format, the current rules allow participants to trade capacity guarantees from a given year for a period of 8 years, starting 4 years before the delivery year and ending 3 years after.



5.4.1. From delivery year 2020 onwards, the price used to calculate penalties in capacity will refer to a single auction

In accordance with the CRE's deliberation of 28 February 2019⁶¹, the capacity difference reference price (PREC) is defined as the price revealed by the last auction held on exchange platforms before the delivery year. This new reference price applies from delivery year 2020 onwards.

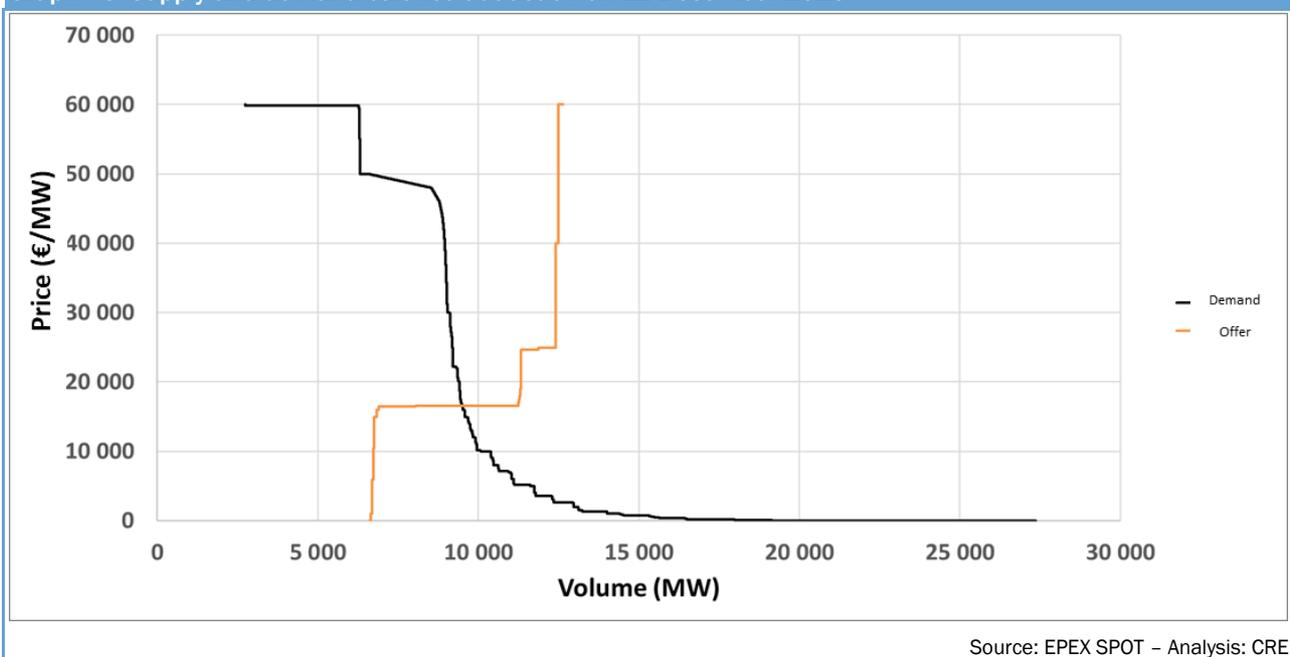
Due to the application of new rules for the capacity mechanism that came into force in late 2018, only six auctions have been held in delivery year 2020.

Furthermore, in accordance with the CRE's deliberation of 20 June 2019⁶², all capacity guarantees for regulated interconnections will be proposed by RTE for auction and serve as a reference for the PREC at a zero price (6.5 GW).

The auction held on 12 December 2019 was therefore of particular interest as it was the first to combine interconnections and the new definition for the capacity difference reference price. It demonstrated significant liquidity, with an average of 9.5 GW compared to 4.5 GW at previous auctions for the delivery year 2020. Demand is clearly focused on the last auction.

Nevertheless, this rise in volume can be explained by the additional sale of interconnection capacity guarantees at auction, amounting to 6.5 GW. Consequently, the effect on the participants' strategy of adjusting the PREC calculation formula is not clear.

Graph 46: Supply and demand balance at auction on 12 December 2019



5.4.2. Market for delivery year 2020 has been altered by a lower contribution from the nuclear sector to security of supply

An estimation of the theoretical capacity price for delivery year (DY) 2020 has been produced using a methodology similar to that of the previous wholesale markets⁶³ surveillance report. The theoretical capacity price was obtained by triggering a single auction combining the entire demand and the offers curve reflecting the "missing money" from each capacity in France.

As a reminder, the CRE has developed a tool to assess "missing money" from the French electricity system capacity, which requires having for each capacity:

- fixed costs;

⁶¹ Deliberation of the CRE of 28 February 2019 deciding on methods to calculate the reference price to determine differences in the capacity mechanism

⁶² Deliberation of the CRE of 20 June 2019 approving procedures to dispose of regulated interconnection capacity certificates from delivery year 2020

⁶³ The 2018 surveillance report for wholesale electricity and gas markets

- marginal costs, which depend on the price of commodities (CO₂, gas, fuel oil and coal), output and emission factor;
- a method for evaluating revenue obtained in the energy markets.

Production cost assumptions used are taken from public data, in particular those used in RTE's forecast report. Marginal costs have been assembled on the basis of public commodity quotations. Several supply scenarios have been studied using different commodity cost assumptions.

The method to assess revenue in the energy markets is based on a "mark-to-market" approach. This shows that revenue is gradually secured by smoothing sale volumes over a 24-month period. The "mark-to-market" value of a capacity corresponds, for a given day before the delivery year, to a projection of future revenue in the electricity market calculated from available quotations at this date in the futures market.

In comparison to 2019, future products for the year 2020 were marked by a relatively stable price for electricity and a rise in CO₂ prices. Also, widespread social protests and campaigns in late 2019, which particularly affected coal-fired power stations, may indicate a drop in availability from these production facilities in 2020.

These combined factors have contributed to altering the theoretical profitability of coal-fired power stations, as the results presented in Table 9 indicate. As a reminder, the findings from the assessment of pure, theoretical "missing money" for delivery year 2019 are presented in Table 10.

Table 9: Assessment of theoretical Missing Money from fossil fuel-fired power stations for delivery year 2020

<u>DY 2020</u>	CCGT 58% output	CCGT 55% output	Coal 35% output	Fuel oil 40% output
Theoretical Missing Money	€0/kW	€0/kW	€[0-26] /kW	€[15-24] /kW

Table 10: Assessment of theoretical Missing Money from fossil fuel-fired power stations for delivery year 2019

<u>DY 2019</u>	CCGT 58% output	CCGT 55% output	Coal 35% output	Fuel oil TC 40% output
Theoretical Missing Money	€0/kW	€0/kW	€[0-20] /kW	~ €26 /kW

In terms of the available capacity volumes, Table 11 and Table 12 illustrate certification levels for various forms of power technology on the capacity register as of 13/06/2019⁶⁴ for delivery year 2020, alongside figures for 2019.

Table 11: Certification levels for various forms of technology on the capacity register as of 13/06/2019 for delivery year 2020

DY 2020								
Nuclear	Lake / STEP	Interconnections	RE + Others	Load-shedding	Gas	Coal	Oil/fuel oil	Total
51.9 GW	9.3 GW	6.5 GW	14.5 GW	2.4 GW	7.2 GW	2.6 GW	1.7 GW	96.2 GW

Table 12: Certification levels for the various forms of technology on the capacity register as of 13/06/2019 for delivery year 2019

DY 2019								
Nuclear	Lake / STEP	Interconnections	RE + Others	Load-shedding	Gas	Coal	Oil/fuel oil	Total
55.2 GW	9 GW	6.3 GW	15 GW	1.7 GW	7 GW	2.4 GW	1.6 GW	98.2 GW

⁶⁴ Register record before the third capacity auction on 27/06/2019 for delivery year 2020

Comparing both situations reveals a substantial difference in the amount of capacity certificates allocated to the nuclear sector. This was due to an amendment made to the reduction rate applicable to this sector to calculate certified capacity. The latter dropped from 1 to 0.95 in the current version of the capacity mechanism rules and, according to RTE, results in a better understanding of the correlation between periods of tightness in the electricity system and nuclear power availability during these periods.

As a reminder, in theory, the volume of capacity guarantees allocated to producers matches average capacity availability during periods of system failure. As these periods are very rare, in practice, RTE measures available capacity during PP2 peak hours⁶⁵ and deducts their contribution to security of supply using a standard coefficient. The results of the RTE simulations showed that, in reality, average nuclear availability during PP2 peak hours was significantly higher than in system failure periods. This observation is mainly explained by past simultaneous events concerning outages in nuclear power plants, with several often stopped at the same time for checks to be made by the safety authority, in particular.

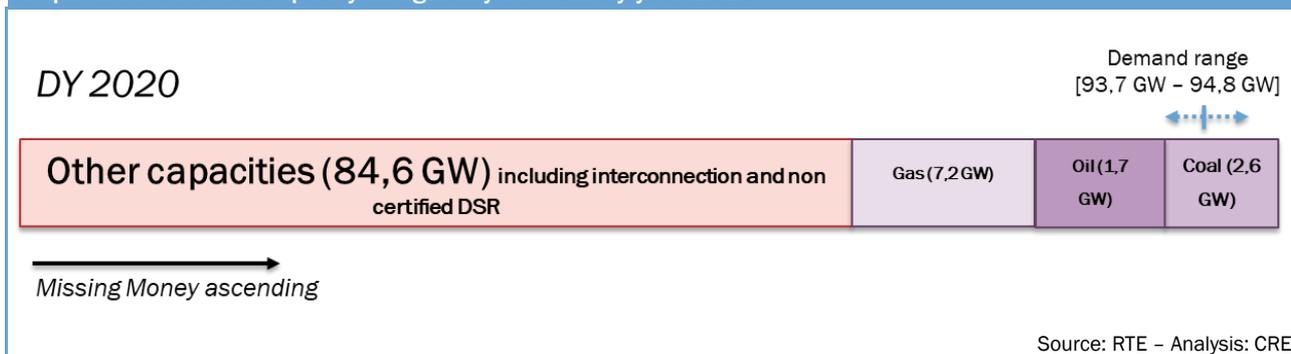
This pattern has a marked effect on overall balance in the mechanism whereby the total capacity certificates available amount to no more than 2 GW, France's maximum global obligation estimated by RTE in its 2019 forecast report (BP 2019).

Table 13: Consumption scenarios for delivery year 2020 based on the RTE forecast report for 2019 (BP 2019)

Consumption variant	Obligation (including the security tariff and load-shedding coefficient)
Low consumption trajectory (No.1 of BP 2019)	93.1 GW
Low scenario: stable consumption	93.7 GW
High consumption trajectory (BP 2019)	94.2 GW

In this regard, analysing the marginality of production capacity from available information in the register shows that, according to the high cost scenario, coal or fuel oil-fired turbines are likely to be the last forms of technology requested by the market (Graph 47).

Graph 47: Production capacity marginality for delivery year 2020



Prices observed in auctions for DY 2020 appear to be consistent with simulations and theoretical fundamentals. However, the CRE reiterates that due to the mechanism's practical design⁶⁶, spot auctions for the French mechanism can set a different price to the theoretical amount.

As such, the CRE notes that the mechanism's architecture does not properly help supply meet demand, resulting in some participants not offering their capacity guarantees at the "missing money" level of their capacity. Based on the findings of a feedback exercise launched by RTE in 2020, the CRE considers that thought should be given to review of the capacity mechanism design for greater centralisation.

⁶⁵ Tightness episodes in the system identified by RTE

⁶⁶ The time-based nature of the mechanism, numerous auctions and supply constraints



5.4.3. RTE has launched a feedback exercise now that the mechanism's first delivery year has been completed

The capacity mechanism has been subject to numerous audits and consultations since it was launched. This work, especially that undertaken in 2018 and 2019, have already provided greater flexibility in the mechanism and helped institute certain corrective steps.

Nevertheless, these corrective measures, including the PREC, did not substantially alter the mechanism's architecture. Market participants continue to campaign for a more in-depth review of its structure in view of its complexity and price formation measures. These demands have been endorsed several times by the CRE⁶⁷.

After three years in operation and the completion of its first full year for delivery year 2017, RTE wishes to organise a feedback exercise to assess the mechanism and consider its architecture and practical implementation procedures. This review will focus, in particular, on:

- the capacity mechanism's contribution to security of supply;
- how the mechanism fits with the climate energy roadmap;
- the behaviour of participants and incentives sent back by the capacity mechanism;
- and the level of complexity regarding accuracy issues.

Discussions began in the first half of 2020 with RTE seeking to publish the findings in the second half of the same year.

5.5. Assessment of capacity market operations

Capacity auction prices in 2019 for delivery year 2020 remained relatively stable, averaging €19,458/MW which was a 12% rise compared to the 2018 figure of €17,365/MW. For example, the capacity share in regulated electricity prices in 2020 was €3.5/MW on average, excl. VAT.

The mechanism continues to improve and all commitments undertaken by the French authorities are now built into the process. This includes the participation of cross-border capacities and the multi-annual contract scheme.

That said, fundamental defects in the mechanism still remain. Having several auctions with the same deadline, as imposed by the European Commission, is no guarantee that supply meets demand at each auction. As a result, some capacity operators take part in auctions by including their reserve price offers whereas most capacities have a zero price for "missing money".

The markets current arrangements make surveillance very challenging. As such, while system fundamentals for 2019 appear consistent with prices, given this difficulty, the CRE cannot guarantee, as a rule, that price formation on the capacity mechanism always reflects the reality of supply and demand.

The CRE is therefore satisfied that RTE has taken the initiative to organise feedback exercises to assess the system and inform debate on any necessary changes. Discussions began in the first half of 2020.

In parallel to the national dialogue, the CRE is closely monitoring the introduction of the European framework for capacity mechanisms defined by the new regulation for the domestic electricity market (*Clean Energy Package*), which could also affect the architecture of the French mechanism.

⁶⁷ Deliberation of the French Energy Regulatory Commission of 27 September 2018 providing its opinion on a draft decree for the capacity obligation mechanism in the electricity sector

6. ASSESSMENT OF ELECTRICITY MARKET OPERATIONS IN 2019

The year 2019 saw electricity prices drop following lower commodity prices. Indeed, despite a large part of electricity produced by nuclear power in France, market prices were also closely aligned to changes in commodity prices that were then passed on as marginal costs from the last units used.

For time being, the electricity markets are mostly national but they are shifting to an increasingly European integrated trading system, especially for short-term markets. The change in electricity prices in 2019 therefore shows some convergence between France and other European countries.

Volumes traded on futures markets were lower in 2019 due to ARENH regaining its appeal for futures product prices traded on the markets. By contrast, short-term market volumes rose as a result of good growth in these markets.

The balancing and capacity markets are also undergoing structural change and becoming increasingly complex. The CRE must closely track these changes to monitor the markets but participants must also demonstrate a sound understanding and consistent use of the operational rules.

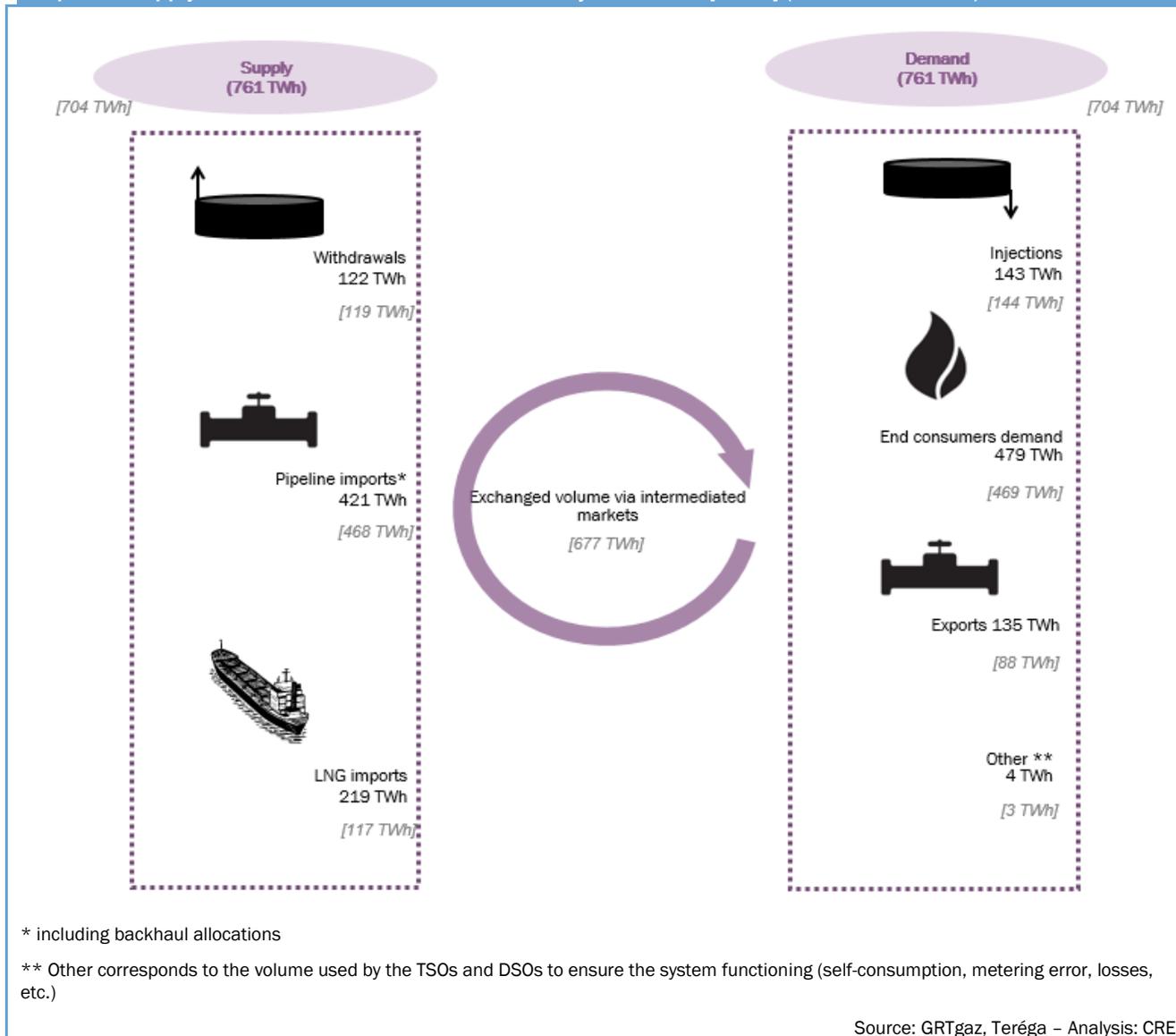
SECTION 4
WHOLESALE NATURAL GAS MARKETS

1. TRENDS IN THE WHOLESALE GAS MARKET IN 2019

1.1. Balance in the French system

In 2019, total quantities transported in France were rising, with supply and demand volumes reaching 761 TWh, nearly 60 TWh higher than in 2018., the main driver in this change compared to last year being the rise in LNG supplies.

Graph 48: Supply and demand balance in the French system 2019 [2018] (commercial flows)



End customer consumption rose by 10 TWh to reach 479 TWh, a 2.1% increase on 2018, although it fell short of 2016 and 2017 levels (490 TWh and 492 TWh respectively). Household consumption remains stable while that of gas-fired power stations has risen due to their heavy use. Indeed, gas-fired power stations were used more than in 2018, particularly during the summer.

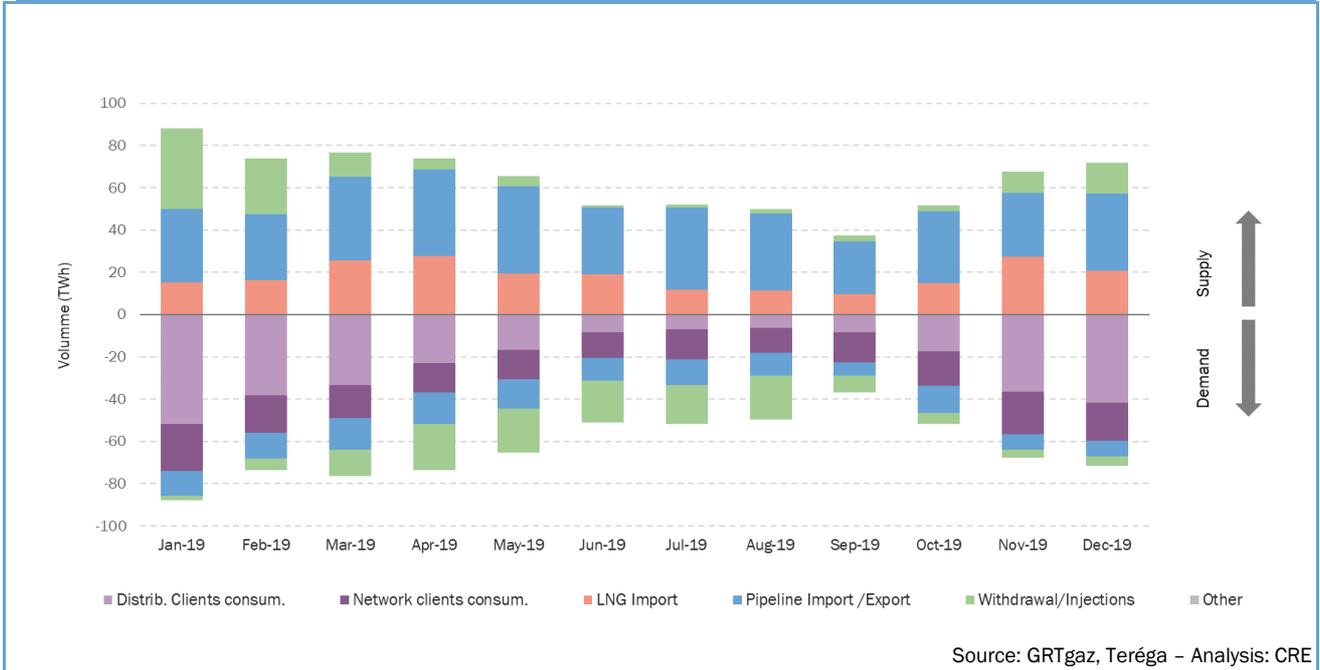
Storage injections remained almost y stable, reaching 144 TWh compared to 143 TWh in 2018, when there was a 45% rise in injections. The storage facilities were therefore once again in great demand during the injection season due to favourable price signals but also because all the capacity of storage facilities had been subscribed. Withdrawals also stayed largely stable, reaching 122 TWh compared to 119 TWh in 2018. It should be noted that injections began very early in 2019, from March, while withdrawals were still ongoing.

LNG imports increased by more than 100 TWh in 2019, reaching a record level of 219 TWh. LNG supplies followed a seasonal pattern, with higher imports in summer than in winter, leaving more room for pipeline imports. However, the latter dropped once again to 421 TWh, which is 10% less than the previous year. LNG supplies amounted to 34% of French imports in 2019, compared to 20% in 2018.

As a result of the significant rise in imports with almost stable consumption, exports rose by 53% compared to 2018, reaching 135 TWh, with large flows exiting to Spain and Switzerland, in particular.

Finally, wholesale market liquidity through energy exchanges and brokers enlarged once again, with roughly 740 TWh traded, meaning 9% more compared to 2018.

Graph 49: Monthly balance in the French system 2019 (commercial flows)



1.2. A slight 2% rise in consumption reflecting a contrasted situation

The French natural gas consumption reached a total of 478 TWh in 2019, which is a 2.1% increase on 2018. This consumption was split between the distribution network, accounting for 288 TWh, and the transmission network, which accounted for 189 TWh of the consumption.

The distribution network-related consumption was relatively stable compared to 2018, when it reached 291 TWh. Its transmission network equivalent rose by 6.2% compared to 2018 when it reached 178 TWh. This rise was largely due to an increase in consumption from highly modulated sites compared to 2018, which has reached 49 TWh. Indeed, gas-fired power plants production rose in 2019, to 38.6 TWh, particularly during summer and autumn, to offset the drop in nuclear availability and low hydro power production, but also throughout the year by replacing coal-fired power following high CO₂ allowance prices.

Graph 50: Consumption at highly modulated sites (gas-fired power plants)



Source: GRTgaz, Teréga – Analysis: CRE

1.3. Record use of storage facilities

Given the high injection levels in the 2018 summer gas season, the winter started in November, with high stock levels of 124 TWh. Storage facilities were on high demand from November to February, with an average withdrawal rate of 855 GWh/day. In March 2019, the withdrawal rate slowed markedly and the first injections already started. Switching between injections and withdrawals maintained steady storage levels during March.

As such, on 1st April 2019, while the summer gas season began, available stock levels were historically high at 38.7 TWh compared to 4 TWh on the same date in 2018. Thanks to an advantageous winter/summer price difference coupled with a low demand, injections began early and at a rapid rate. On average, 439 GWh/day was injected during the season, compared to 553 GWh/day the previous year, and by early September, stocks were 95% full. Consequently, the storage facilities use dropped in September and October.

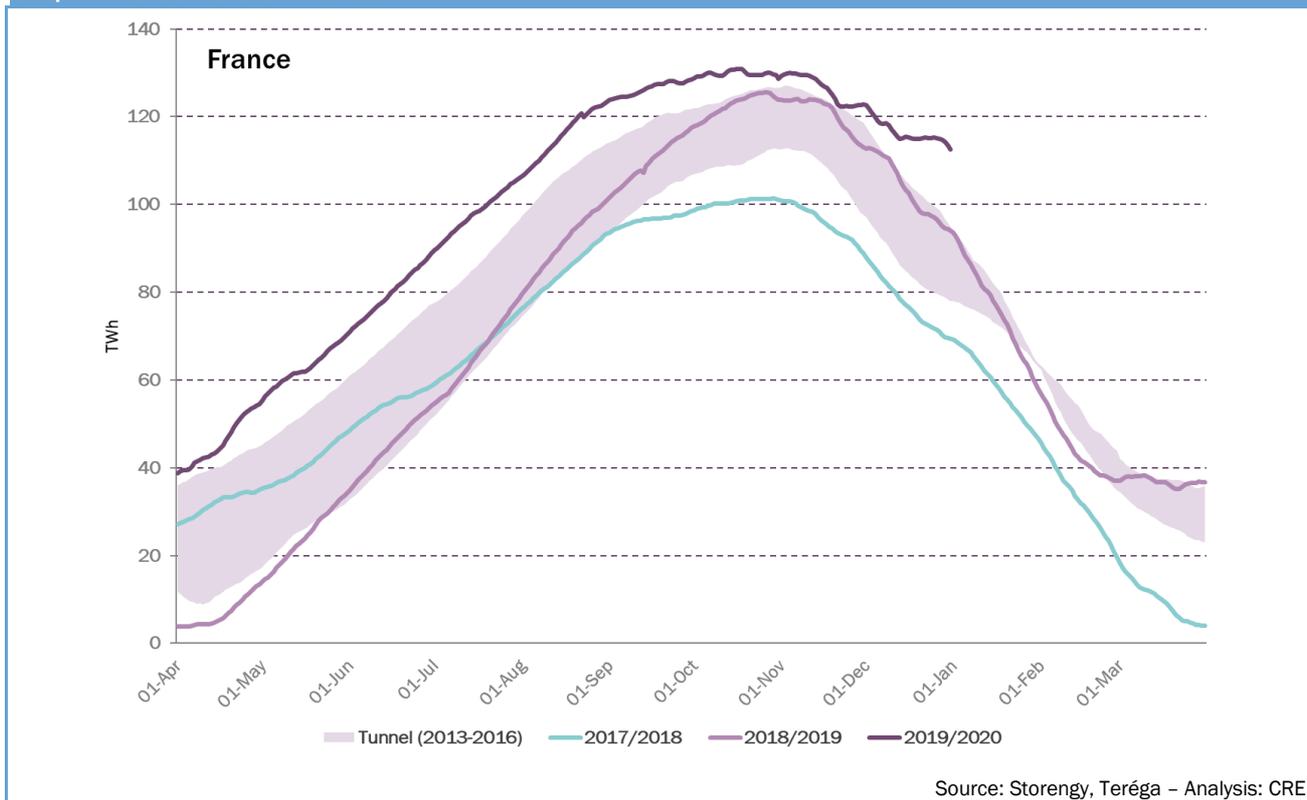
As winter was relatively mild and LNG supplies were high, withdrawals from October to December were subsequently low. The year 2019 closed with a storage level of 113 TWh, the highest level recorded so far.

As such, storage levels remained very high from April to December 2019, higher than the historic range over the last 6 years. This exceptional filling level was due to weather and advantageous price signals but also to the storage capacity allocation reform, introduced by the law of 30 December 2017⁶⁸. This auctioning of storage capacities started since 2018, in accordance with terms and conditions approved by the CRE. As for winter 2018-2019, all storage capacities for winter 2019-2020 were subscribed.

⁶⁸ French Parliamentary Act 2017-1839 of 30 December 2017 ending research and exploitation of hydrocarbons and providing various energy and environmental measures.



Graph 51: Stock levels in France



1.4. An 87% rise in LNG supplies

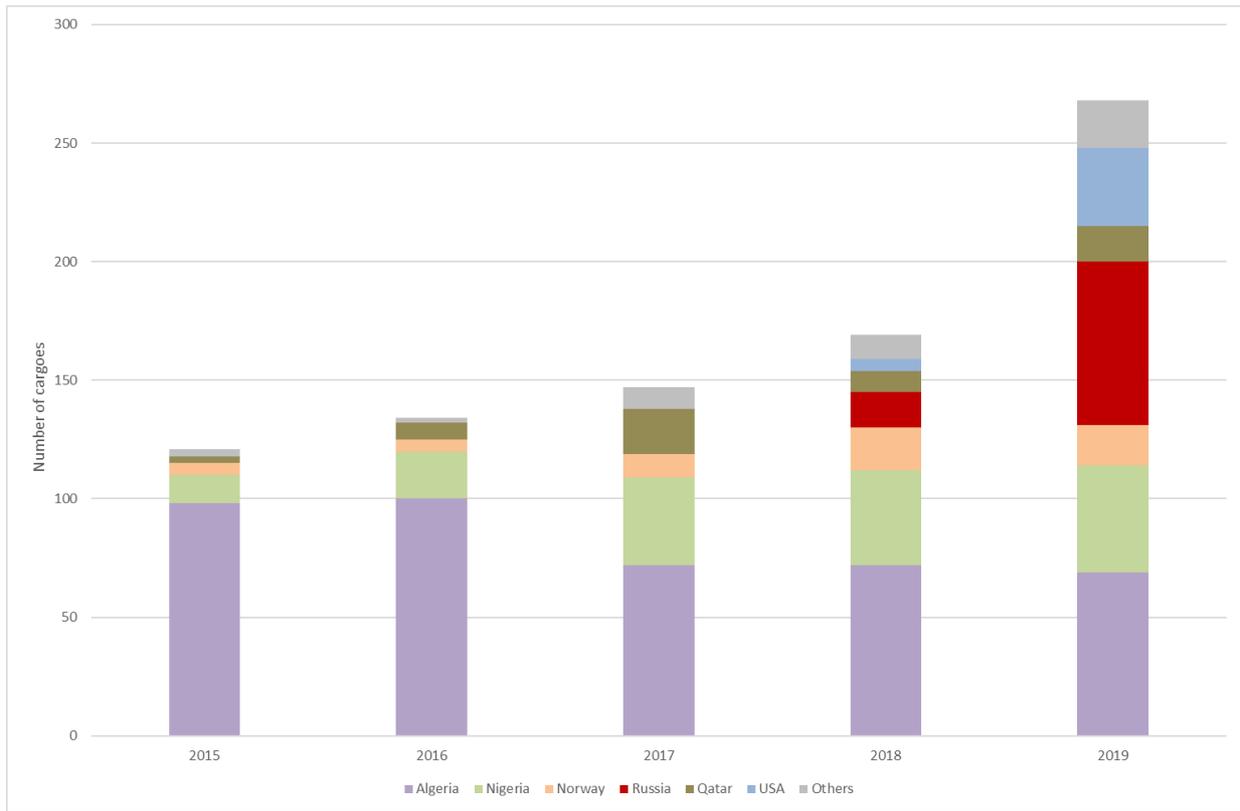
The number of LNG shipments received in France has been rising since 2015 but leapt in 2019. There were 169 of them in 2018 but 268 in 2019, meaning a 59% increase. As imports from Algeria and Nigeria have been relatively stable since 2017, the rise comes from countries that have recently invested in new liquefaction trains, such as the United States and Russia. Indeed, by late 2018, the third liquefaction train at the Yamal LNG terminal went into operation, while US activity rose in the Gulf of Mexico, when the Cameron LNG terminal was commissioned in May 2019. Russia exported 69 cargoes to France compared to 15 the previous year and the US, 33 compared to 5 in 2018. Qatar, a long-standing player in LNG, also stepped up its exports to France, from 9 cargoes in 2018 to 15 in 2019.

As such, French LNG imports rose by 87% to reach 219 TWh. France was Europe's biggest LNG importer in 2019, ahead of Spain (218 TWh) and the UK (177 TWh).

This rise in LNG supply to France and more generally, Europe is due to a plentiful supply on the global market. Indeed, while global demand continues to rise, it still falls short of absorbing the rise in exports from the US and Russia but also Australia. As Europe has plenty of storage capacity from a well-connected network and flexible supply contracts that can regulate overland pipeline arrivals, it offers an attractive backup market. As such, LNG carriers headed for the old continent when the Asian demand slackens.

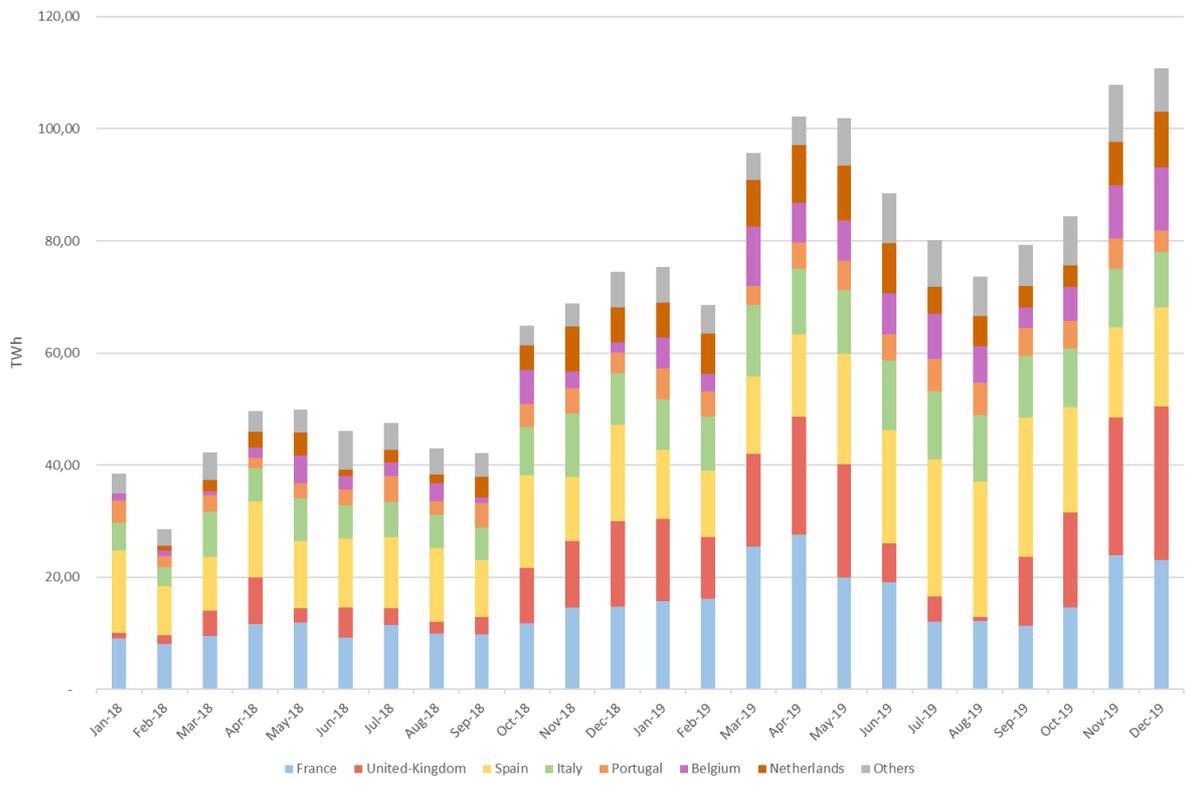
France's appeal in the European market has risen thanks to the single market zone introduced on 1st November 2018, as well as a flexible commercial offer from the LNG terminals and more generally, transparency in its infrastructure access rules for third parties.

Graph 52 Number of cargoes received the past years by country of origin



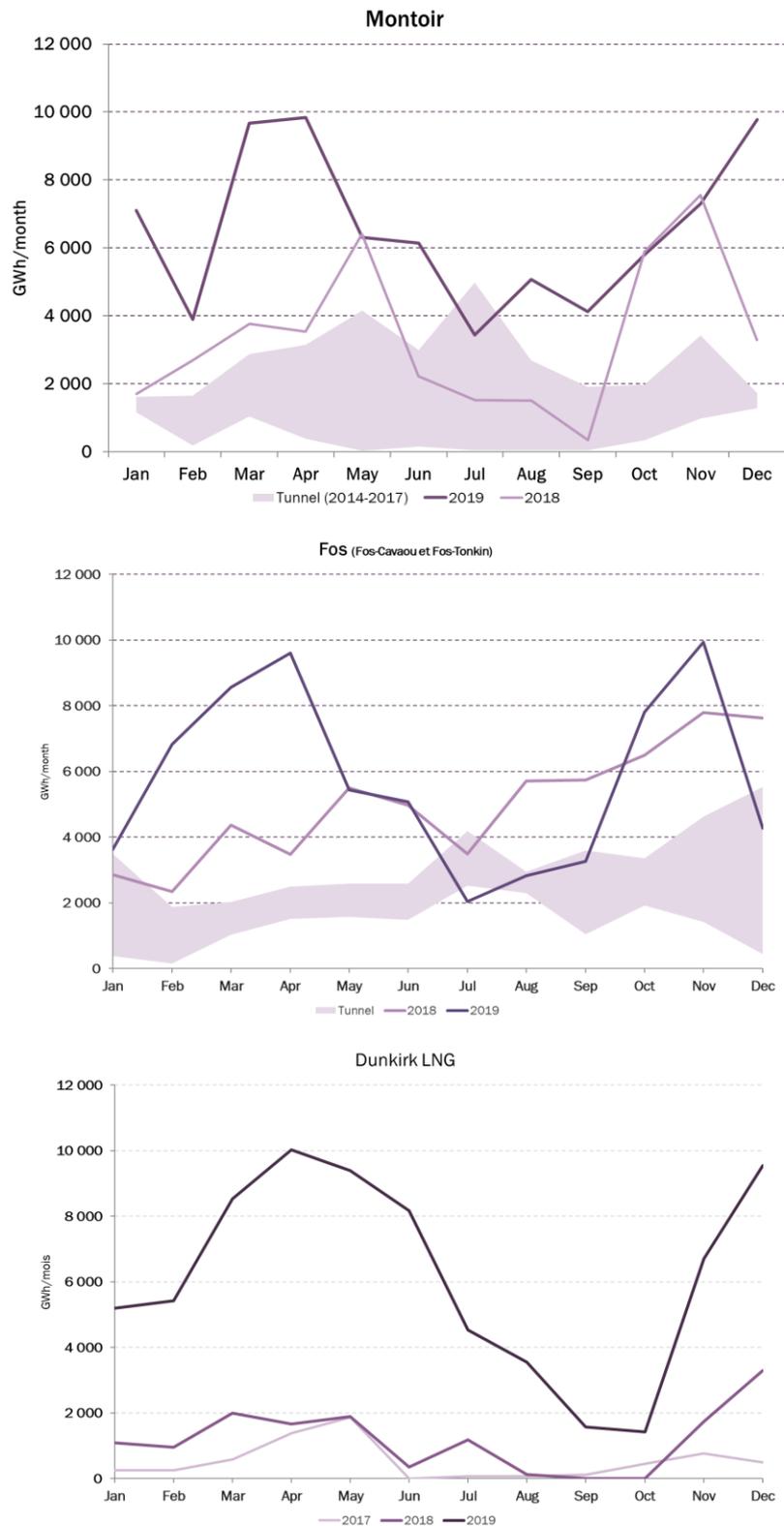
Source: Argus – Analysis: CRE

Graph 53: LNG imports by country in the European Union and the UK



Source: Reuters, GRTgaz – Analysis: CRE

Graph 54: LNG terminal send-outs (commercial flows)



Source: GRTgaz – Analysis: CRE

As a result of the sharp increase in the number of LNG shipments received in France in 2019, send-outs from LNG terminals have also risen accordingly. The Montoir terminal sent out 79 TWh compared to 40 TWh the previous year, with a highly seasonal pattern. Indeed send-outs dwindled throughout the summer gas season to reach a minimum of 3.4 TWh in July. Activity then picked up sharply, to reach 10 TWh in December. The terminal is therefore continuing the rebound in its activity since 2014, when it only reached 9 TWh. Activity at the Fos terminals followed a very similar pattern, with a dip in send-outs in July (2 TWh) and a peak in November (9.9 TWh). In total, the terminals sent out 69.2 TWh compared to 60 TWh in 2018. Finally, the Dunkirk terminal, which was commissioned in



2017 and relatively little used until now, saw its send-outs surge to 74 TWh in 2019, a five-fold increase on the previous year. Then, the terminals in North Western France saw the biggest rise in activity, in line with the increase in the number of shipments from Russia and the US.

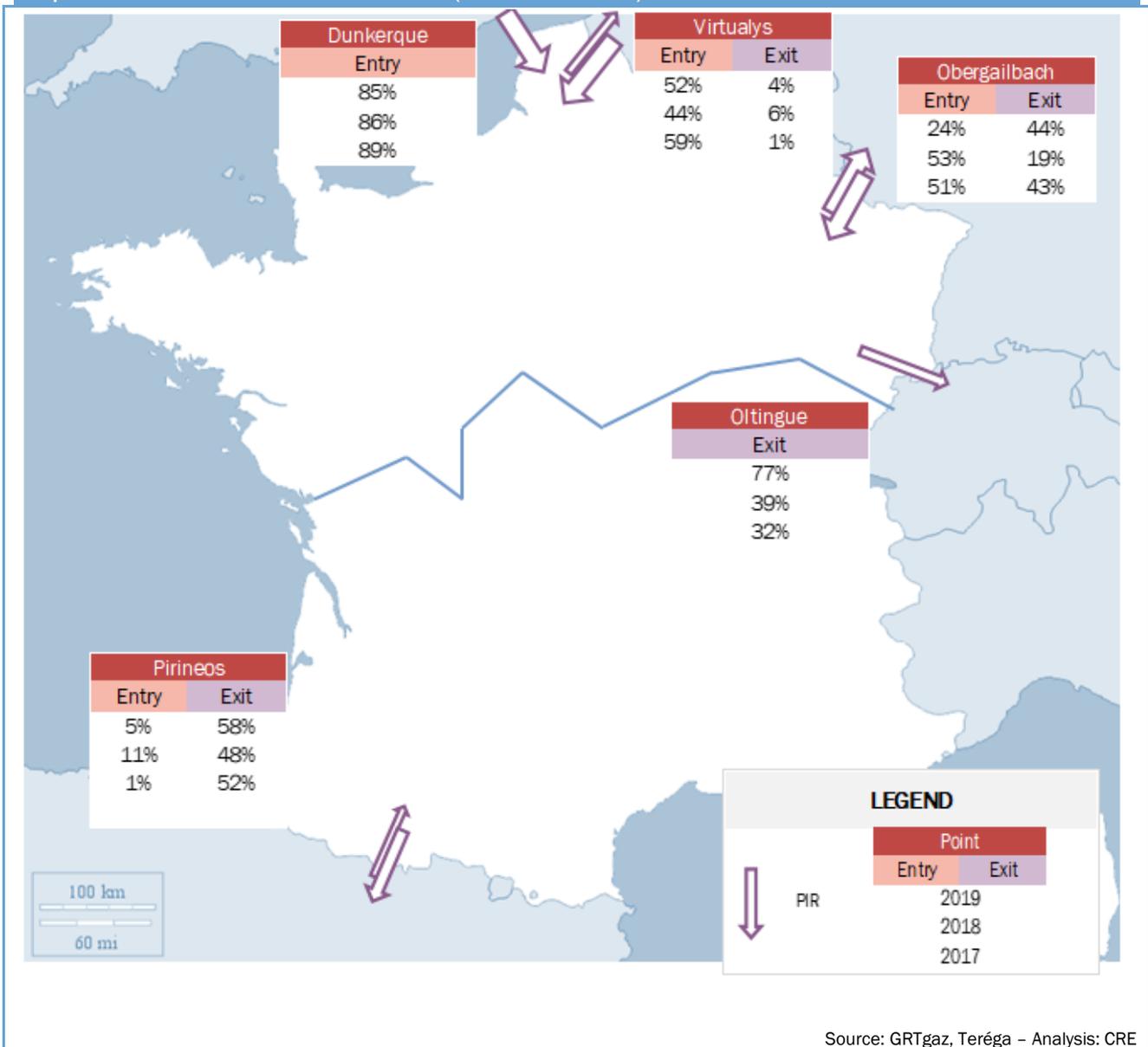
1.5. Drop in pipeline imports

Continuing into 2018, gas pipeline imports have declined. They fell by 47 TWh compared to 2018, especially due to low volume at Obergailbach, on the French-German border. Net imports dropped here by 55 TWh, while the interconnection use rate fell by half, to 24%. The use rate at Virtualys (52%) rose compared to 2018 (44%) but was still below the 2017 level (59%).

Exports rose by 47 TWh in 2019, driven by a rise in exports to Switzerland and Italy via the Oltingue interconnection point and exports to Spain via the Pirineos point. Exports to these countries increased by 33 TWh and 9 TWh respectively. As such, there has been a steep rise in use of interconnection exit points. Pirineos went from 48% in 2018 to 58% in 2019, Oltingue from 39% to 77% and Obergailbach from 19% to 44%. Only the use rate at Virtualys dropped, to 4% compared to 6% in 2018. This rate is still higher than 2017 (1%), as the *spot price* difference between France (PEG) and the Netherlands (TTF) has sometimes been advantageous for exports from France to Belgium.

These flow patterns at the interconnection points highlight the flexibility provided by French gas facilities to enable LNG flows in Europe to be absorbed and redistributed.

Graph 55: French interconnection use rates (commercial flows)

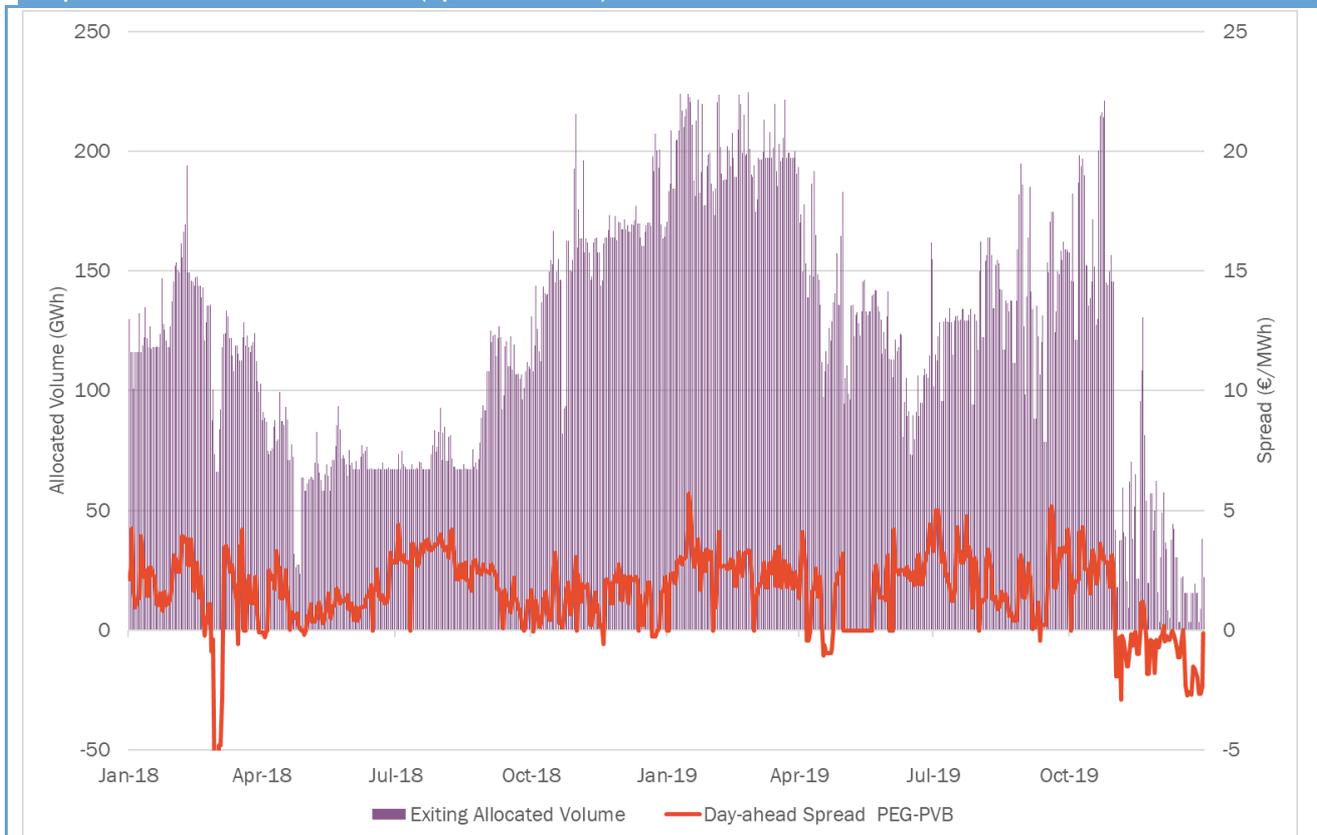


Source: GRTgaz, Teréga – Analysis: CRE



Exit flows from Pirineos rose sharply in the first quarter of 2019, due to a highly favourable price difference between France and Spain for French exports. Also, the creation of the single market zone in France, in 2018, has given better access to the network operated by Terega. The price difference became negative from October and exports flows consequently plunged.

Graph 56: Exit flows from Pirineos (Spanish border)



NB: PEG Nord and TRS were merged on 1 November 2018 to form a single PEG zone

Source: GRTgaz, ICIS- Analysis: CRE

1.6. 44 activations of the locational spread mechanism in 2019

The locational spread mechanism was introduced in winter 2017/2018 to manage congestion on the gas network, mainly from North to South. It works by allowing the transmission system operator to issue calls to market participants to buy gas upstream of the congestion and resell it on the other side.

In 2019, the locational spread was activated 44 times, including 8 times in April, 16 in May and 20 times in August. These periods coincided with sizeable injections to storage facilities to fill them, requiring high North to South flows, to move the gas to storage facilities located there. The locational spread mechanism cost a total of €7.2 m in 2019.

	April 2019	May 2019	August 2019	Total
Number of activations	8	16	20	44
Total allocated volume (GWh)	204	867	736	1,807
Average transaction price (€/MWh)	4.31	5.76	1.82	3.99

So as to limit network congestion from storage facility injections and thereby restricting the potentially costly recourse to the locational spread, the CRE decided to limit firm injection capacities in storage facilities to a level matching supply capacities in the transmission network, while enabling them to be completely filled during the summer gas season.

As for any episode of tightness in the markets, the locational spread mechanism is carefully assessed as part of the CRE's wholesale market surveillance activities.



2. PRICE OF NATURAL GAS IN 2019

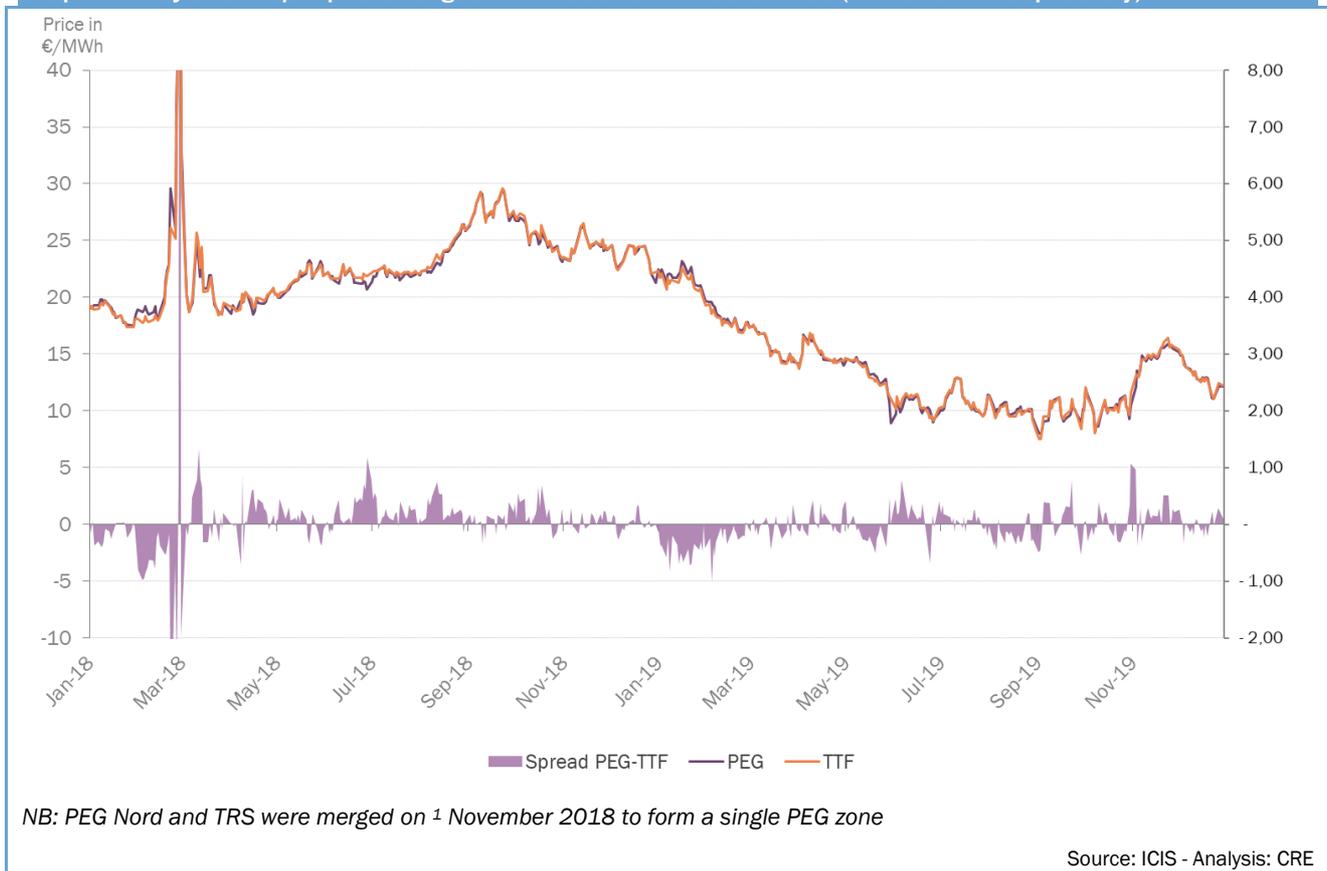
2.1. Spot prices fell by 43% in 2019

In 2019, on average, spot prices on key European market places dropped sharply compared to 2018. TTF and PEG prices reached an average of €13.5/MWh and €13.6/MWh respectively, compared to €23/MWh and €22.8/MWh in 2018, i.e. roughly a 68% drop for PEG prices.

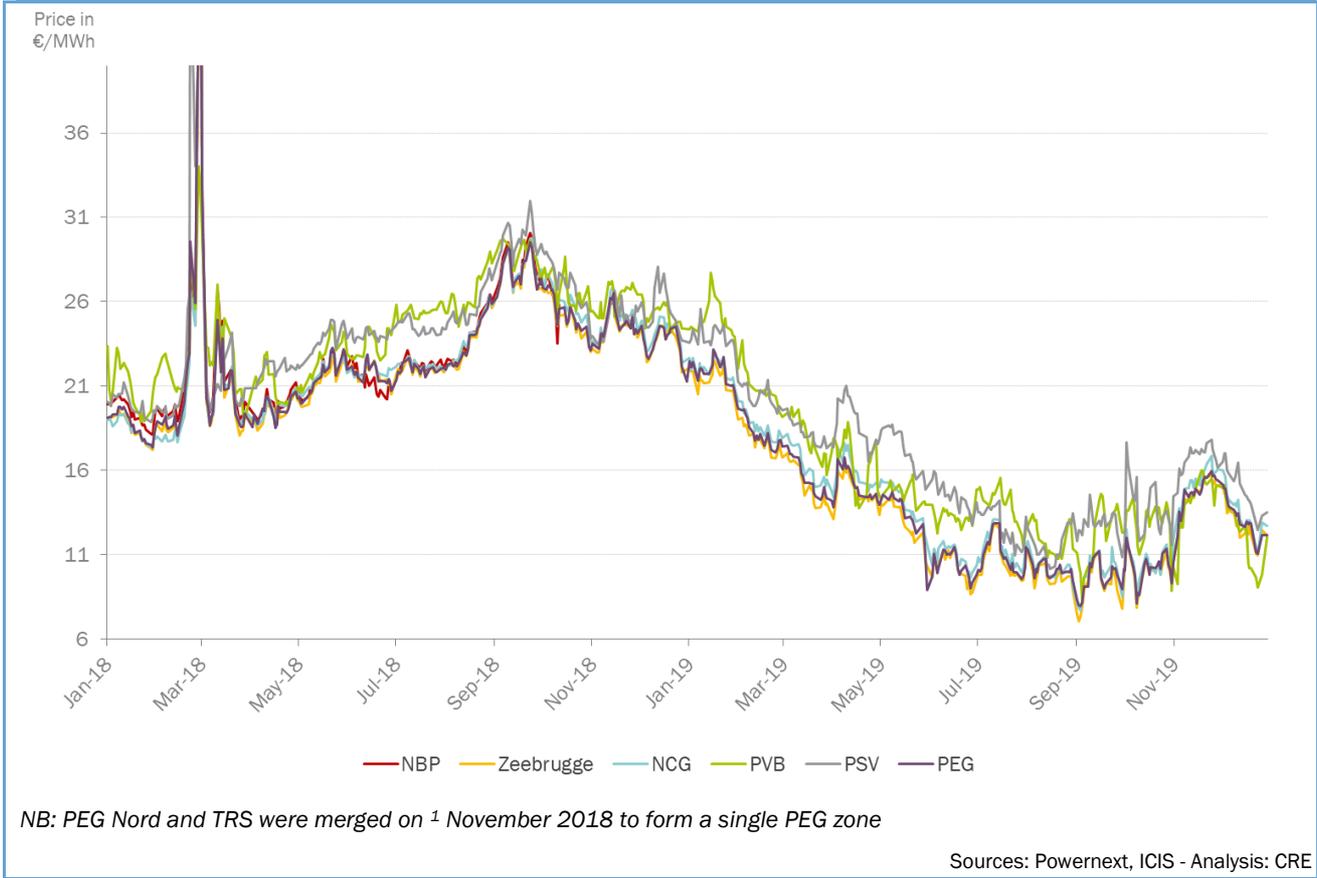
The *day-ahead* price fell almost continuously until mid-July 2019 due to plentiful LNG supplies but also to storage volumes. Indeed, right up to March, withdrawals from storage facilities created an additional supply that helped to lower the price. Then, from April, the additional demand coming from the storage injection contained the drop in prices, given relatively stable LNG imports and lower demand at the end of the winter. The mild temperatures also kept demand at a relatively low level; in contrast to 2018 when there was a cold spell coupled with tight supply and low stocks, prices rose sharply. In July, while gas-fired power stations were more on-demand due to high temperatures, spot prices were bullish, and reached almost €13/MWh on 12 July 2019. In November, after falling temperatures and unforeseen maintenance work on pipelines in the North Sea, the *day-ahead* PEG price tightened, to just under €16/MWh on 25 November 2019, while on the first day of the month, it was worth €10.6/MWh.

Broadly speaking, there was good convergence of prices at the main European gas hubs in 2019. The *day-ahead* PEG price was, on average, lower than the TTF, at €0.27/MWh compared to €0.32/MWh in 2018. Prices between the TTF and NBP, Zeebrugge and NCG, were on average less than 40 centimes in absolute value.

Graph 57: Day-ahead spot prices for gas in France and the Netherlands (PEG and TTF respectively)



Graph 58: Day-ahead spot prices for gas in Europe



Weak demand in Asia driving down the global LNG market As with European prices, global gas prices also fell in 2019. The American reference price at *Henry Hub* stayed far below other global prices due to the American schist gas production. As such, the month-ahead price (M+1) was on average \$2.5/MMBtu, €7.7/MWh compared to €8.9/MWh in 2018.

In Asia, after an upturn in prices in 2018, the following year began with an East Asia LNG price index of €26.8/MWh, which then dropped sharply in the first quarter of 2019 to be worth €13.7/MWh by 31 March. Prices then stabilised before bouncing back. At the end of the year, they were at €15.5/MWh. Prices therefore dropped by more than 40% over the year 2019 due to a demand for LNG at half-mast.

Weak demand in Asia was conducive to arbitrage of deliveries between Asia and Europe, causing European prices to fall in the wake of Asian prices. The difference in average prices between Asia and the PVB, the Spanish price index, which is the most responsive to LNG deliveries, was €1.1/MWh in 2019 compared to €7/MWh for 2018. The Spanish price was higher than that of Asia for 99 days in 2019 compared to 14 days the previous year.

Graph 59: Global gas prices



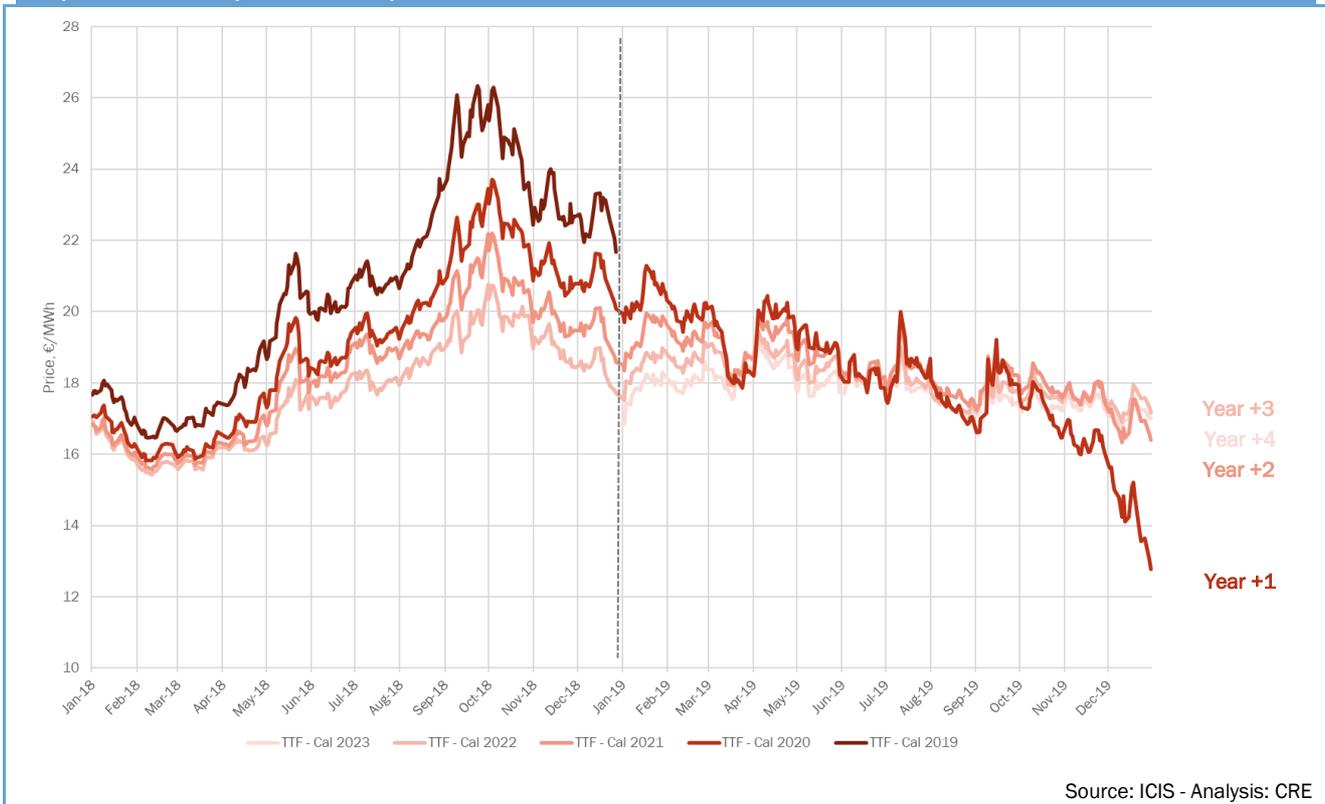
2.2. Futures prices drop sharply due to a lasting surplus in supply

There was a pronounced downward trend in European futures prices in 2019 driven by an oversupplied market.

During 2019, the 2020 calendar product was worth an average of €18.2/MWh while the average price for the same product in 2018 was €19.2/MWh, i.e. an average drop of €1/MWh. The calendar product fell to a low of €12.8/MWh on 31 December 2019 after being worth €19.9/MWh on 2 January 2019, amounting a 25% drop between the beginning and the end of the year.

The year 2018 ended with a futures prices structure in *backwardation* and large differences between products. In late 2019, pricing patterns reversed, with the market being in *contango*, i.e., when prices for longer timeframes were higher to those in the year Y+1. This change in the pattern of prices demonstrates the confidence market participants had in gas supplies for the 2020 after a year when Europe was awash with gas. As such, 2019 ended with a price difference between Year+1 and Year+2 calendar products of €3.6/MWh and €4.3/MWh between Year+1 and Year+3 products.

Graph 60: Futures prices in Europe



Source: ICIS - Analysis: CRE

2.3. A successful storage injection season

The difference in winter/summer prices at the beginning of the gas year was still relatively low, averaging about €1.3/MWh, from October to December 2018. From the start of 2019, the gap quickly widened to reach a maximum of €7.9/MWh on 22 July 2019. The gas year ended with a winter/summer price difference of €5.31/MWh. This rise was driven by a fall in gas product prices for summer delivery, which averaged €12.6/MWh between early April and late September, while price for the winter product at the same period averaged €18.6/MWh.

The 2020/2021 winter/summer price difference in the following year averaged €3.1/MWh in late 2019 before reaching €4.86/MWh at the close.

Graph 61: Winter/summer price difference in France



Source: ICIS - Analysis: CRE

Storage capacity auctions for 2019-2020 were held from 13 November 2018 to 21 February 2019. All available storage capacity was sold at an average price of €1.84/MWh. Some had already been subscribed on long-term contracts, totalling 130 TWh of subscribed capacity.

Storage capacities for 2020-2021 were traded at multi-annual auctions in June 2019 then from 12 November 2019 to 27 February 2020. These auctions sold the entire 128 TWh offered at an average price of €3.85/MWh.

The rise in average auction prices between these two gas years mirrors the pattern of winter/summer price differences during the auction periods. The difference at auction was actually €1.84/MWh for 2019-2020 and €3.99/MWh for 2020-2021.

3. HIGHER VOLUMES TRADED IN FRANCE IN 2019 DRIVEN BY FUTURES PRODUCTS

Volumes on intermediated *spot* markets (via Powernext or brokers) dropped by 13% in 2019, with a total volume of 159 TWh traded and almost 124,000 transactions. This fall came after ten years of uninterrupted growth in traded volumes, while the same applies to the number of transactions.

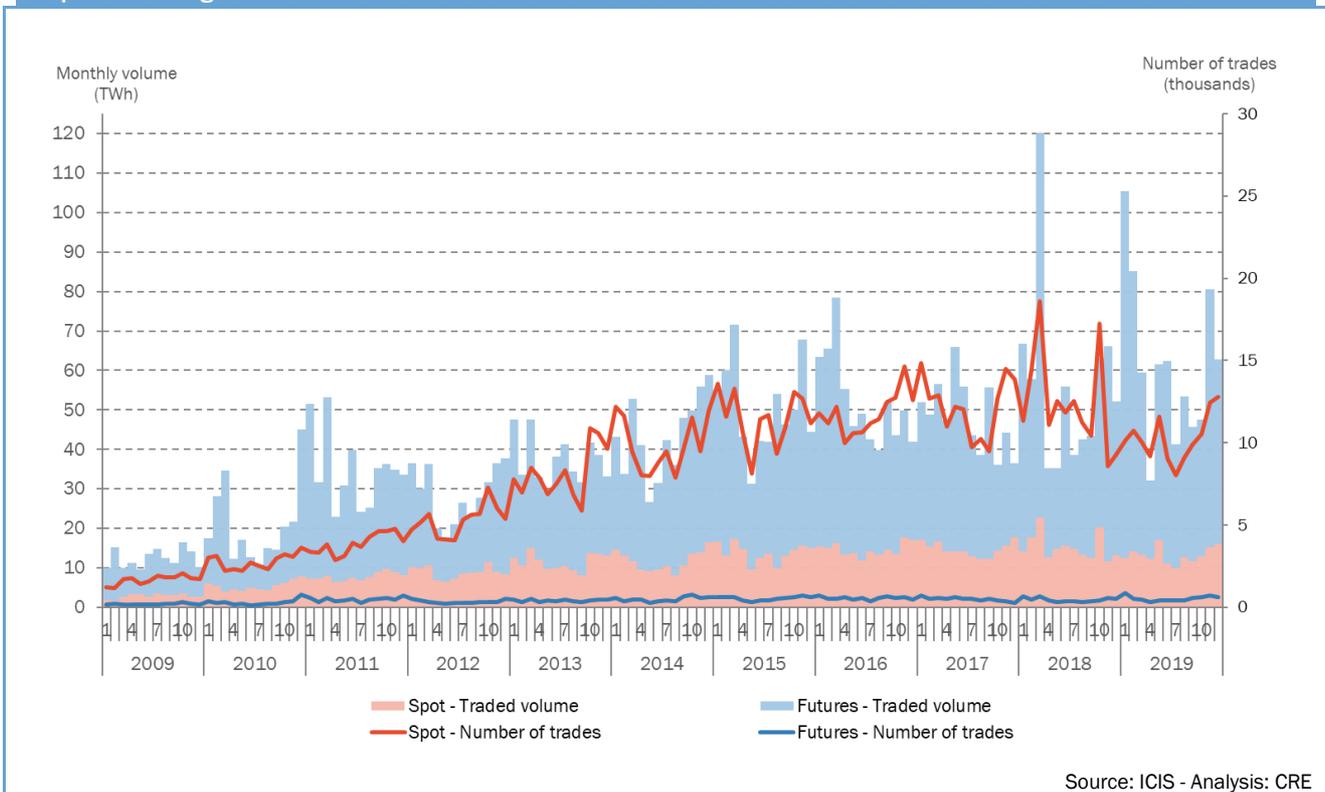
By contrast, volumes of traded future products rose by 17% compared to 2018, reaching 579 TWh compared to 494 TWh in 2018. Transactions also rose by 17%, to reach roughly 6,400, resulting in the largest volume traded for more than ten years. All products saw a steep rise in volumes traded: 21%, 12% and 11% for monthly, quarterly and season products respectively and finally, a 50% rise for annual products.

In all, volumes traded were up 9%, to 738 TWh. In futures markets, volumes traded accounted for 78% for just 5% of transactions.

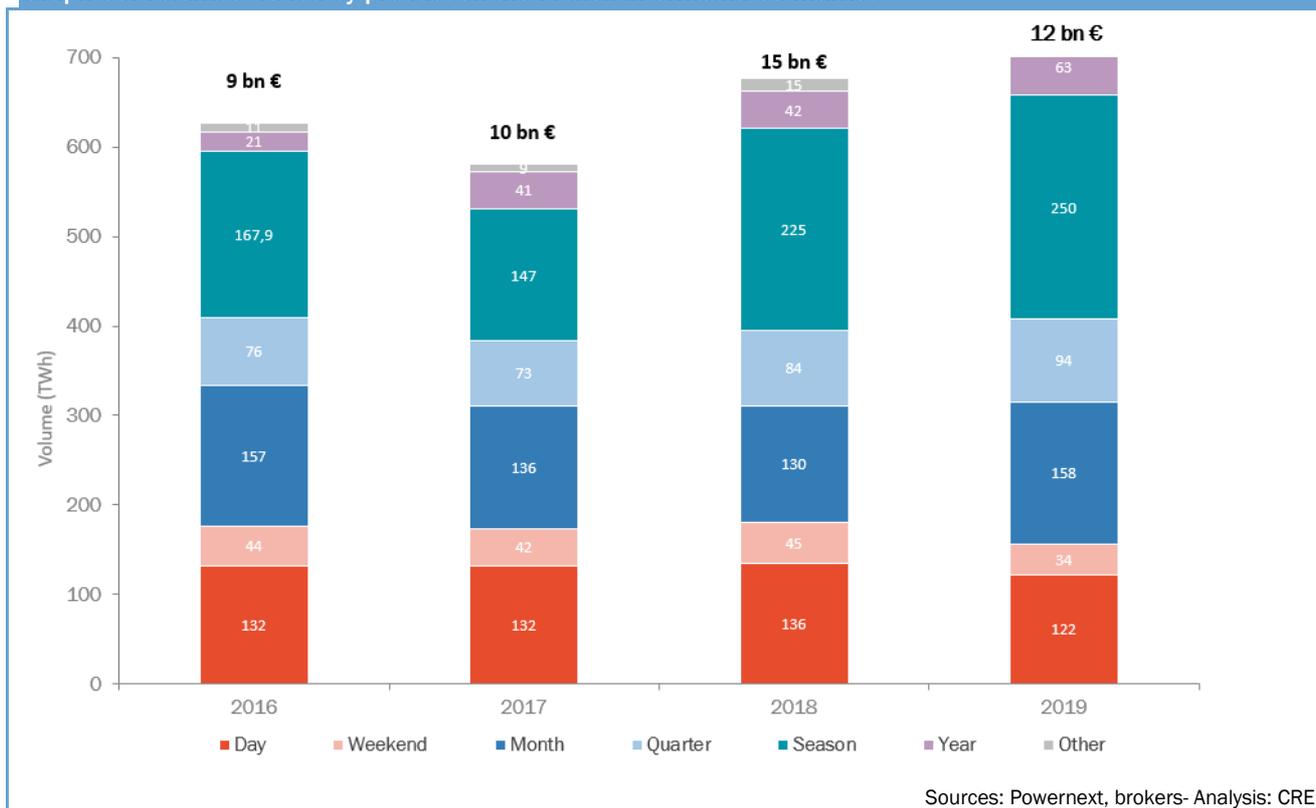
Despite the growth in volumes traded, the value of trade fell by 20% to €12 bn, due to lower gas prices compared to last year.

The higher volumes traded for futures products can be explained by the creation of the single market zone in France in November 2018 and the storage reform, giving better access to the French gas network infrastructure. The increase in LNG inflows, the flexibility offered by the French network together with numerous transit capacities to neighbouring countries and storage capacity have fostered the trades in the French marketplace.

Graph 62: Changes in volumes traded and number of transactions on the French intermediated market



Graph 63: Volumes traded by product on the French intermediated market



4. REVIEW OF WHOLESALE NATURAL GAS MARKET OPERATIONS IN FRANCE, IN 2019

As in 2018, the PEG price converged well with North West European markets in 2019, which meant that the French market was well integrated into its European counterpart. More generally, all the markets in North West Europe, particularly those in Germany, the UK, Benelux and France, were well correlated as well as for the spot market as the futures one.

The outcome is an interconnected European market that forms a benchmark for meaningful and attractive prices worldwide that also makes underlying markets like France more robust. Rising and falling prices have reacted well to the market conditions, changes to the balance of supply and demand and other external market signals. 2019 has also highlighted the influence of Asian demand in the global market. In an oversupplied market, Europe has shown itself to be an attractive backup market to absorb LNG inflows. The French network has been able to provide the necessary flexibility to fully exploit the competitiveness offered by LNG, especially through available storage and export capacities with neighbouring countries. Two years after it was introduced, the auction system to allocate storage capacities has once again shown that it can ensure security of supply at reasonable cost for French consumers and also deliver better price transparency, bringing greater liquidity to the French and European gas markets.

The CRE continues to monitor the behaviour of individual market participants that might compromise the integrity of the French wholesale gas market.

KEY FIGURES

1. THE ELECTRICITY MARKET

Table 14: Installed production capacity in France

	Annual variation 2018/2019				
	End 2017	End 2018	End 2019	As a pourcentage	As a value
Generating facilities (GW)	130,8	132,9	135,3	1,8%	2,4
Nuclear	63,1	63,1	63,1	0,0%	0,0
Hydraulic	25,5	25,5	25,6	0,2%	0,0
Fossil-fired	18,9	18,6	18,6	-0,3%	-0,1
Coal	3,0	3,0	3,0	0,0%	0,0
Fuel oil	4,1	3,5	3,4	-2,7%	-0,1
Gas	11,9	12,2	12,2	0,3%	0,0
Renewable (excluding hydraulic)	23,2	25,7	28,1	9,3%	2,4
Wind	13,6	15,1	16,5	9,2%	1,4
Solar	7,7	8,5	9,4	10,6%	0,9
Renewable thermal	1,9	2,0	2,1	4,7%	0,1

Source: RTE

Table 15: Production in the various technology sectors in France

	Annual variation 2018/2019				
	2017	2018	2019	As a pourcentage	As a value
Production (TWh)	529,4	548,6	537,7	-2,0%	-10,9
Nuclear	379,1	393,2	379,5	-3,5%	-13,7
Hydraulic	53,6	68,3	60,0	-12,2%	-8,3
Fossil-fired	54,4	39,4	42,6	8,1%	3,2
Coal	9,7	5,8	1,6	-72,4%	-4,2
Gas	40,9	31,4	38,6	22,9%	7,2
Fuel oil	3,8	2,2	2,3	4,5%	0,1
Renewable (excluding hydraulic)	42,3	47,7	55,6	16,6%	7,9
Wind	24,0	27,8	34,1	22,7%	6,3
Solar	9,2	10,2	11,6	13,7%	1,4
Renewable thermal	9,1	9,7	9,9	2,1%	0,2
Consumption (TWh)	482,0	478,2	473,0	-1,1%	-5,2

Source: RTE

Table 16: Imports and exports in France

	Annual variation 2018/2019				
	2017	2018	2019	As a pourcentage	As a value
Imports	38,5	30,8	28,5	-7,6%	-2,3
Peak imports (TWh)	14,6	11,9	13,1	10,4%	1,2
Off-peak imports (TWh)	23,9	18,9	15,3	-18,8%	-3,6
Exports	76,4	91,0	84,3	-7,4%	-6,7
Peak exports (TWh)	26,3	31,7	31,8	0,2%	0,1
Off-peak exports (TWh)	50,1	59,3	52,6	-11,4%	-6,8
Net export balance	37,9	60,2	55,8	-7,3%	-4,4

Source: RTE

Table 17: Balance at borders

	Annual variation 2018/2019				
	2017	2018	2019	As a pourcentage	As a value
Balance at borders, in TWh					
CWE zone	-10,9	6,1	2,7	-55,7%	-3,4
Spain	12,5	12,0	9,7	-19,2%	-2,3
United Kingdom	8,0	12,9	11,3	-12,4%	-1,6
Italy	18,2	18,6	18,8	1,1%	0,2
Switzerland	10,3	10,6	13,2	24,5%	2,6
Total	39,1	60,2	55,7	-8,1%	-4,5

Source: RTE

Table 18: Clean dark and clean spark spread and coal

	Annual variation 2018/2019				
	2017	2018	2019	As a pourcentage	As a value
Y+1 maturity					
Coal (€/t)	65,1	73,9	69,5	-5,9%	-4,4
Peak clean dark spread (€/MWh)	21,6	18,7	18,5	-0,7%	-0,1
Peak clean spark spread (€/MWh)	12,0	11,4	18,4	60,5%	6,9

Sources: ICE, EPEX SPOT, EEX

Table 19: Injections and withdrawals in the French electricity system

	Annual variation 2018/2019				
	2017	2018	2019	As a pourcentage	As a value
	Injections, in TWh				
Production, excluding ARENH and VPP, in TWh	447	452	415	-8,2%	-37,0
ARENH, in TWh	82	96	121	26,0%	25,0
Imports, in TWh	36	30	28	-6,7%	-2,0
Withdrawals, in TWh					
End customer consumption, en TWh	446	444	443	-0,2%	0,0
Pumping, in TWh	7	7	7	0,0%	0,0
Exports, in TWh	74	93	84	-9,4%	-8,7
Losses in TWh	36	35	30	-14,3%	-5,0

Source: RTE

Table 20: French electricity market participants

	Annual variation 2018/2019				
	2017	2018	2019	As a pourcentage	As a value
Balancing responsible	233	220	189	-14%	-31
Active in electricity generation	28	24	16	-33,3%	-8
Holder of rights of regulated access to ARENH	18	19	21	10,5%	2
Final customers provider	35	29	27	-6,9%	-2
Active on imports/exports	55	49	42	-14,3%	-7
Active on bloc exchange	108	89	79	-11,2%	-10
Active on Exchange	100	84	72	-14,3%	-12

Sources: RTE, EPEX Spot, Brokers

Table 21: Spot and futures prices in the French electricity market

	Annual variation 2018/2019				
	2017	2018	2019	As a pourcentage	As a value
Spot market prices					
Intraday price France, in €/MWh	45,05	52,36	38,47	-26,5%	-13,9
Day-Ahead price France Baseload, in €/MWh	44,99	50,20	39,49	-21,3%	-10,7
Day-Ahead price France Peakload, in €/MWh	53,66	59,14	46,43	-21,5%	-12,7
France-Germany Day-ahead Baseload spread, in €/MWh	10,68	6,01	1,55	-74,2%	-4,5
France-Germany Day-ahead peakload spread, in €/MWh	10,94	7,41	1,71	-76,9%	-5,7
Day-Ahead France-Germany convergence rate	0,35	0,34	0,42	22,1%	0,1
Forward market prices					
M+1 price France, in €/MWh	45,21	53,37	45,31	-15,1%	-8,1
M+1 France-Germany Spread , in €/MWh	9,42	6,36	3,06	-51,9%	-3,3
Q+1 price France, in €/MWh	42,50	53,32	49,22	-7,7%	-4,1
Spread Q+1 France-Germany, en €/MWh	7,04	6,55	4,10	-37,3%	-2,4
Y+1 price France, in €/MWh	38,29	48,99	50,84	3,8%	1,9
Spread Y+1 France-Germany, en €/MWh	5,87	4,84	2,72	-43,9%	-2,1
Y+1 Peakload/Baseload ratio					
France	1,31	1,27	1,25	-1,5%	0,0
Germany	1,25	1,23	1,21	-1,9%	0,0

Sources: EPEX SPOT, EEX

Table 22: Spot and futures volumes in the French electricity market

	Annual variation 2018/2019				
	2017	2018	2019	As a pourcentage	As a value
NEB					
NEB Volumes, in TWh	414,5	431,8	383,7	-11,1%	-48,1
NEB/French consumption ratio	0,9	1,0	0,9	90,3%	-0,1
Spot market in TWh	135,8	144,9	144,0	0,7	-0,9
Volumes in the EPEX SPOT intraday market, in TWh	6,5	9,0	11,5	27,2%	2,5
Portion of Intraday cross-border Fr-Ger volumes	0,7	0,7	0,7	-	0,0
Volumes in the EPEX SPOT Day-Ahead market, in TWh	105,7	113,8	113,2	-0,5%	-0,6
Volumes in the Broker Day-Ahead market, in TWh	23,7	22,1	19,4	-12,6%	-2,8
Forward market					
Volumes, in TWh	902,8	783,2	757,6	-3,3%	-25,6
Broker market share	0,9	0,8	0,8	-	0,0
EEX market share	0,1	0,2	0,2	-	0,0
Number of transactions	83379	93200	106828	14,6%	13628
Broker market share	0,8	0,8	0,8	-	0,0
EEX market share	0,2	0,2	0,2	-	0,0
Y+1 product					
Volumes, in TWh	338,7	240,7	196,4	-18,4%	-44,3
Number of transactions	8528	7437	8236	10,7%	799
Q+1 product					
Volumes, in TWh	121,8	106,4	105,3	-1,1%	-1,1
Number of transactions	10155	9296	10304	10,8%	1008
M+1 product					
Volumes, in TWh	108,9	125,2	132,7	6,0%	7,5
Number of transactions	21176	27457	30405	10,7%	2948

Sources: EPEX SPOT, EEX, Courtiers

Table 23: Concentration index (HHI) of various French wholesale electricity market segments

	HHI - Market Concentration			
	2018		2019	
		EDF inclus		EDF inclus
Deliveries				
OTC - block purchases	475	911	613	870
OTC - bloc sales	683	729	991	847
EPEX - purchases	360	774	583	1085
EPEX - sales	401	1978	526	2698
Injections				
Generation	2816	5517	4149	3618
ARENH	1754	-	1558	-
Imports	796	731	786	743
Withdrawals				
End-consumer consumption	1450	4326	1732	4415
Grid losses	2066	1789	1961	1639
Exports	721	2098	684	2476

Sources: RTE, EPEX SPOT, brokers

2. THE GAS MARKET

Table 24: Gas market fundamentals in France

Market fundamentals	Yearly values				Yearly variation 2019 / 2018	
	2016	2017	2018	2019	In percentage	In value
Entry and exit flows						
Supply (TWh)	678	703	701	761	8%	57
Storages withdrawals	118	111	116	122	4%	3
Imports	561	592	585	639	-1%	54
Pipeline	481	489	468	421	-4%	-47
LNG	80	102	117	219	15%	102
Production	0	0,2	0,1	0,2	-37%	0
Demand (TWh)	678	703	701	761	8%	57
Storages injections	113	99	143	143	-1%	-1
End consumers demand	488	490	463	479	2%	10
Distribution consumers	304	297	286	288	-1%	-3
Consumers connected to the transmission system	184	193	176	190	7%	12
Exports	71	107	82	135	53%	47
Other	7	6	13	4	43%	1
Deliveries at PEGs (TWh)	808	829	860	868	1%	8
Infrastructure figures						
Utilization de Dunkerque (UK -> France)	80%	89%	86%	85%		-1%
Utilization of Virtualys interconnection (Entry)	63%	59%	43%	52%		9%
Utilization of Pirineos interconnection (Exit)	45%	52%	48%	58%		10%
Stock levels (TWh as at the end of the Quarter)	96	83	69	94	36%	25
Avg. Net variation of French stocks (GWh/j)	-4	-11	27	26	-3%	38
Avg. LNG terminals send-out (GWh/j)	214	280	320	671	110%	40
Avg. Exports from France to Spain (GWh/j)	102	120	114	134	25%	12

*PEG after 1 November 2018

Sources: GRTgaz, Teréga – Analysis: CRE

Table 25: Gas prices in France

Prices	Yearly values				Yearly variation 2019 / 2018	
	2016	2017	2018	2019	In percentage	In value
Spot prices (€/MWh)						
PEG Nord day-ahead (avg.)*	14,3	17,5	22,8	13,6	-41%	-9,2
Day-ahead PEG Nord/TTF Spread (avg.)*	0,3	0,2	-0,2	0,1	-132%	0,2
Forward prices (€/MWh)						
PEG Nord M+1 (avg.)*	14,2	17,4	22,4	14,6	-35%	-7,8
PEG Nord Y+1 (avg.)*	15,6	17,3	20,9	18,3	-12%	-2,6
M+1 PEG Nord/TTF spread (avg.)*	0,2	0,3	0,3	0,1	-50%	-0,1
Summer-ahead/Winter-ahead spread (avg.)	1,9	1,4	1,1	4,0	258%	2,9

*PEG after 1 November 2018

Sources: Powernext, ICIS – Analysis: CRE

Table 26: Gas trading in France

Trading activity	Yearly values				Yearly variation 2019 / 2018	
	2016	2017	2018	2019	In percentage	In value
Wholesale markets activity in France						
Natural gas exchanged at PEG* (TWh)	621	598	634	671	6%	36
% of national consumption	127%	122%	137%	140%		3%
Trading volumes in the French intermediated markets						
Spot market (TWh)	176	177	183	159	-13%	-24
Intraday	27	27	32	33	3%	1,0
Day Ahead	104	105	102	88	-14%	-14,5
Exchange (DA, WD, WE, other spot)	137	158	161	137	-15%	-24,2
Brokers (DA, WD, WE, other spot)	39	18	22	37	63%	14,2
Forwards market (TWh)	451	404	494	579	17%	85
M+1	125	113	96	112	16%	15,5
Q+1	43	47	40	40	-1%	-0,5
S+1	71	78	132	124	-6%	-7,3
Y+1	7	25	19	25	34%	6,4
Exchange (all maturities)	39	19	11	17	50%	5,7
Brokers (all maturities)	412	385	482	562	16%	79,3
Number of transactions in the French intermediated markets						
Spot market	141 939	146 313	149 605	124 139	-17%	-25466
Intraday	29 487	29 881	32 716	31 883	-3%	-833
Day Ahead	91 935	94 792	93 065	74 127	-20%	-18938
Exchange (DA, WD, WE, other spot)	121 551	137 844	137 891	114 095	-17%	-23796
Brokers (DA, WD, WE, other spot)	20 388	8 469	11 714	10 044	-14%	-1670
Forwards market	6 270	5 766	4 978	5 828	17%	850
M+1	3 617	3 452	2 468	2 673	8%	205
Q+1	512	559	375	390	4%	15
S+1	438	411	520	446	-14%	-74
Y+1	54	117	106	143	35%	37
Exchange (all forward maturities)	1 334	867	554	1 019	84%	465
Brokers (all forward maturities)	4 936	4 899	4 424	4 809	9%	385

* Deliveries from trading on intermediated markets in France

Sources: GRTgaz, Teréga, Powernext, brokers – Analysis: CRE

Table 27: French gas market participants

Market participants on French gas markets	Yearly values				Yearly variation 2019 / 2018	
	2016	2017	2018	2019	In percentage	In value
Number of active shippers by type of point						
PEG	103	110	112	127	13%	15
PIR	49	56	52	60	15%	8
PITD	35	37	40	41	3%	1
PITS	43	45	52	56	8%	4
Number of companies importing LNG						
Montoir	2	2	5	5	0%	0
Fos Tonkin	1	1	2	4	100%	2
Fos Cavaou	2	4	5	4	-20%	-1
Dunkerque	na	2	2	5	150%	3

Sources: GRTgaz, Teréga – Analysis: CRE

NOTICE

The sources of some figures used to produce these graphs for previous surveillance reports, particularly prices indices, have been updated to provide greater accuracy, which explains the variation in some graphs for periods before 2019 compared to previous surveillance reports.

The underlying data for key figures are available from the CRE website, in the "Open data" section (www.cre.fr/Pages-annexes/Open-Data).

As additional data used to prepare this report is subject to confidentiality clauses for publication in non-aggregated or digital format these are unavailable other than in graph format.

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